UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2023

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-38221

Ecovyst Inc.

Delaware	**81-3406833**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
300 Lindenwood Drive Malvern, Pennsylvania	**19355**
(Address of principal executive offices)	(Zip Code)

(484) 617-1200
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol	Name of each exchange on which registered
Common stock, par value $0.01 per share	ECVT	New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company", and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The number of shares of common stock outstanding as of October 31, 2023 was 116,116,895.

Ecovyst Inc.

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September 30, 2023

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PART I—FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS (UNAUDITED)

ECOVYST INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME
(in thousands, except share and per share amounts)
(unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Sales	$ 173,326	$ 232,533	$ 518,310	$ 637,419
Cost of goods sold	120,142	164,864	367,662	462,156
Gross profit	53,184	67,669	150,648	175,263
Selling, general and administrative expenses	16,945	21,460	59,460	67,779
Other operating expense, net	4,310	7,673	17,288	25,101
Operating income	31,929	38,536	73,900	82,383
Equity in net (income) from affiliated companies	(4,708)	(3,169)	(16,305)	(17,422)
Interest expense, net	11,811	9,542	30,812	26,880
Other expense, net	361	1,872	543	2,497
Income before income taxes	24,465	30,291	58,850	70,428
Provision for income taxes	7,891	8,966	17,625	21,983
Net income	$ 16,574	$ 21,325	$ 41,225	$ 48,445
Net income per share:				
Basic income per share	$ 0.14	$ 0.16	$ 0.35	$ 0.36
Diluted income per share	$ 0.14	$ 0.16	$ 0.34	$ 0.35
Weighted average shares outstanding:				
Basic	116,446,085	132,622,105	119,042,161	136,115,598
Diluted	117,374,347	134,096,839	120,417,132	137,666,215

See accompanying notes to condensed consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)
(unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Net income	$ 16,574	$ 21,325	$ 41,225	$ 48,445
Other comprehensive income (loss), net of tax:				
Pension and postretirement benefits	(213)	(962)	228	(1,040)
Net gain (loss) from hedging activities	1,128	9,141	(1,393)	27,620
Foreign currency translation	(3,112)	(7,207)	(99)	(17,506)
Total other comprehensive income (loss)	(2,197)	972	(1,264)	9,074
Comprehensive income	$ 14,377	$ 22,297	$ 39,961	$ 57,519

See accompanying notes to condensed consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share amounts)
(unaudited)

	September 30, 2023	December 31, 2022
ASSETS		
Cash and cash equivalents	$ 38,317	$ 110,920
Accounts receivable, net	83,793	74,758
Inventories, net	48,263	44,362
Derivative assets	16,374	18,510
Prepaid and other current assets	17,570	19,154
Total current assets	204,317	267,704
Investments in affiliated companies	441,769	436,013
Property, plant and equipment, net	580,809	584,889
Goodwill	403,368	403,163
Other intangible assets, net	119,522	129,932
Right-of-use lease assets	26,431	28,265
Other long-term assets	36,609	34,587
Total assets	$ 1,812,825	$ 1,884,553
LIABILITIES		
Current maturities of long-term debt	$ 9,000	$ 9,000
Accounts payable	32,308	40,019
Operating lease liabilities—current	8,503	8,155
Accrued liabilities	50,611	72,229
Total current liabilities	100,422	129,403
Long-term debt, excluding current portion	860,668	865,870
Deferred income taxes	134,828	136,184
Operating lease liabilities—noncurrent	17,871	20,021
Other long-term liabilities	21,180	25,846
Total liabilities	1,134,969	1,177,324
Commitments and contingencies (Note 15)		
EQUITY		
Common stock ($0.01 par); authorized shares 450,000,000; issued shares 140,744,045 and 139,571,272 on September 30, 2023 and December 31, 2022, respectively; outstanding shares 116,116,895 and 122,186,238 on September 30, 2023 and December 31, 2022, respectively	1,407	1,396
Preferred stock ($0.01 par); authorized shares 50,000,000; no shares issued or outstanding on September 30, 2023 and December 31, 2022	—	—
Additional paid-in capital	1,099,216	1,091,475
Accumulated deficit	(200,785)	(242,010)
Treasury stock, at cost; shares 24,627,150 and 17,385,034 on September 30, 2023 and December 31, 2022, respectively	(226,710)	(149,624)
Accumulated other comprehensive income	4,728	5,992
Total equity	677,856	707,229
Total liabilities and equity	$ 1,812,825	$ 1,884,553

See accompanying notes to condensed consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)
(unaudited)

	Common stock	Additional paid-in capital	(Accumulated deficit)	Treasury stock, at cost	Accumulated other comprehensive income	Total
Balance, December 31, 2022	$ 1,396	$ 1,091,475	$ (242,010)	$ (149,624)	$ 5,992	$ 707,229
Net loss	—	—	(1,471)	—	—	(1,471)
Other comprehensive loss	—	—	—	—	(5,759)	(5,759)
Repurchases of common shares	—	—	—	(29,850)	—	(29,850)
Tax withholdings on equity award vesting	—	—	—	(866)	—	(866)
Stock compensation expense	—	4,756	—	—	—	4,756
Shares issued under equity incentive plan, net of forfeitures	10	102	—	—	—	112
Balance, March 31, 2023	$ 1,406	$ 1,096,333	$ (243,481)	$ (180,340)	$ 233	$ 674,151
Net income	—	—	26,122	—	—	26,122
Other comprehensive income	—	—	—	—	6,692	6,692
Repurchases of common shares	—	—	—	(43,524)	—	(43,524)
Excise tax on repurchases of common shares	—	—	—	(630)	—	(630)
Stock compensation expense	—	4,739	—	—	—	4,739
Shares issued under equity incentive plan, net of forfeitures	1	213	—	—	—	214
Balance, June 30, 2023	$ 1,407	$ 1,101,285	$ (217,359)	$ (224,494)	$ 6,925	$ 667,764
Net income	—	—	16,574	—	—	16,574
Other comprehensive loss	—	—	—	—	(2,197)	(2,197)
Repurchases of common shares	—	—	—	(5,344)	—	(5,344)
Tax withholdings on equity award vesting	—	—	—	(2,506)	—	(2,506)
Excise tax on repurchases of common shares	—	—	—	(8)	—	(8)
Stock compensation expense	—	3,392	—	—	—	3,392
Shares issued under equity incentive plan, net of forfeitures	—	(5,461)	—	5,642	—	181
Balance, September 30, 2023	$ 1,407	$ 1,099,216	$ (200,785)	$ (226,710)	$ 4,728	$ 677,856

	Common stock	Additional paid-in capital	(Accumulated deficit)	Treasury stock, at cost	Accumulated other comprehensive income (loss)	Total
Balance, December 31, 2021	$ 1,378	$ 1,073,409	$ (315,707)	$ (12,551)	$ (5,792)	$ 740,737
Net income	—	—	7,875	—	—	7,875
Other comprehensive income	—	—	—	—	11,378	11,378
Tax withholdings on equity award vesting	—	—	—	(332)	—	(332)
Stock compensation expense	—	5,946	—	—	—	5,946
Shares issued under equity incentive plan, net of forfeitures	18	9	—	—	—	27
Balance, March 31, 2022	$ 1,396	$ 1,079,364	$ (307,832)	$ (12,883)	$ 5,586	$ 765,631
Net income	—	—	19,245	—	—	19,245
Other comprehensive loss	—	—	—	—	(3,276)	(3,276)
Repurchases of common shares	—	—	—	(8,842)	—	(8,842)
Stock compensation expense	—	5,409	—	—	—	5,409
Shares issued under equity incentive plan, net of forfeitures	—	17	—	—	—	17
Balance, June 30, 2022	$ 1,396	$ 1,084,790	$ (288,587)	$ (21,725)	$ 2,310	$ 778,184
Net income	—	—	21,325	—	—	21,325
Other comprehensive income	—	—	—	—	972	972
Repurchase of common shares	—	—	—	(64,869)	—	(64,869)
Stock compensation expense	—	3,872	—	—	—	3,872
Shares issued under equity incentive plan, net of forfeitures	(1)	42	—	—	—	41
Balance, September 30, 2022	$ 1,395	$ 1,088,704	$ (267,262)	$ (86,594)	$ 3,282	$ 739,525

See accompanying notes to condensed consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)
(unaudited)

	Nine months ended September 30,	
	2023	2022
Cash flows from operating activities:		
Net income	$ 41,225	$ 48,445
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	51,920	48,256
Amortization	10,536	10,547
Amortization of deferred financing costs and original issue discount	1,548	1,515
Foreign currency exchange (gain) loss	(41)	2,179
Deferred income tax provision	(1,011)	12,454
Net loss on asset disposals	3,326	1,174
Stock compensation	12,547	17,419
Equity in net income from affiliated companies	(16,305)	(17,422)
Dividends received from affiliated companies	10,000	30,000
Other, net	(5,270)	(2,603)
Working capital changes that provided (used) cash:		
Receivables	(8,939)	(28,443)
Inventories	(3,909)	3,206
Prepaids and other current assets	856	(5,223)
Accounts payable	(3,694)	1,954
Accrued liabilities	(19,383)	(14,133)
Net cash provided by operating activities	73,406	109,325
Cash flows from investing activities:		
Purchases of property, plant and equipment	(53,642)	(39,474)
Payments for business divestiture, net of cash	—	(3,744)
Business combinations, net of cash acquired	—	(488)
Other, net	—	81
Net cash used in investing activities	(53,642)	(43,625)
Cash flows from financing activities:		
Draw down of revolving credit facilities	14,500	—
Repayments of revolving credit facilities	(14,500)	—
Repayments of long-term debt	(6,750)	(6,750)
Repurchases of common shares	(78,717)	(73,711)
Tax withholdings on equity award vesting	(3,372)	(332)
Repayment of financing obligation	(2,087)	(1,849)
Other, net	457	84
Net cash used in financing activities	(90,469)	(82,558)
Effect of exchange rate changes on cash and cash equivalents	(1,898)	(2,585)
Net change in cash and cash equivalents	(72,603)	(19,443)
Cash and cash equivalents at beginning of period	110,920	140,889
Cash and cash equivalents at end of period	$ 38,317	$ 121,446

For supplemental cash flow disclosures, see Note 19.

See accompanying notes to condensed consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in thousands, except share and per share amounts)
(unaudited)

1. Background and Basis of Presentation:

Description of Business

Ecovyst Inc. and subsidiaries (the "Company" or "Ecovyst") is a leading integrated and innovative global provider of specialty catalysts and services. The Company supports customers globally through its strategically located network of manufacturing facilities. The Company believes that its products, which are predominantly inorganic, and services contribute to improving the sustainability of the environment.

The Company has two uniquely positioned specialty businesses: Ecoservices provides sulfuric acid recycling to the North American refining industry for the production of alkylate and provides on-purpose virgin sulfuric acid for water treatment, mining and industrial applications; and Catalyst Technologies provides finished silica catalysts and catalyst supports necessary to produce high strength and high stiffness plastics and, through the Zeolyst Joint Venture, supplies zeolites used for catalysts that help produce renewable fuels, remove nitrogen oxides from diesel engine emissions as well as sulfur from fuels during the refining process.

The Company's regeneration services product group, which is a part of the Company's Ecoservices segment, typically experiences seasonal fluctuations as a result of higher demand for gasoline products in the summer months and lower demand in the winter months. These demand fluctuations result in higher sales and working capital requirements in the second and third quarters.

Basis of Presentation

The condensed consolidated financial statements included herein are unaudited. Certain information and footnote disclosures normally included in annual financial statements prepared in accordance with accounting principles generally accepted in the United States ("GAAP") have been condensed or omitted pursuant to such rules and regulations for interim reporting. In the opinion of management, all adjustments of a normal and recurring nature necessary to state fairly the financial position and results of operations have been included. The results of operations are not necessarily indicative of the expected results for the full year. The accompanying unaudited condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements and related notes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022.

Correction of an Error

During the preparation of the condensed consolidated financial statements for the period ended June 30, 2023, the Company identified a presentation error in the components of accumulated other comprehensive income (loss) that originated in the year ended December 31, 2021 and remained uncorrected through the quarter ended March 31, 2023. As a result, the presentation of accumulated other comprehensive income (loss) in Note 5 was corrected by revising the opening balances as follows:

	Defined benefit and other postretirement plans	Net gain (loss) from hedging activities	Foreign currency translation
As reported, December 31, 2021	$ 14,808	$ 2,254	$ (22,854)
Correction to opening balances	(12,640)	(1,964)	14,604
Revised, December 31, 2021	$ 2,168	$ 290	$ (8,250)
As reported, December 31, 2022	$ 12,132	$ 26,636	$ (32,776)
Correction to opening balances	(12,640)	(1,964)	14,604
Revised, December 31, 2022	$ (508)	$ 24,672	$ (18,172)

This classification error within accumulated other comprehensive income (loss) did not impact total accumulated other comprehensive income (loss) for the periods included in these condensed consolidated financial statements. Additionally, there was no impact on the condensed consolidated statements of income and other comprehensive income (loss), condensed consolidated balance sheets and condensed consolidated statements of cash flows for the periods included in these condensed consolidated financial statements. The Company assessed the materiality of this presentation error and concluded it was not material to the Company's previously issued financial statements.

Net income for the nine months ended September 30, 2023 increased by $1,390 from adjustments for the Company's interest rate cap agreements related to prior year interest expense amortization. The impact of this adjustment was not material to the consolidated financial statements for any prior quarterly or annual periods, and is not expected to be material to the current annual period.

2. New Accounting Standards:

Recently Adopted Accounting Standards

In October 2023, the Financial Accounting Standards Board ("FASB") issued guidance to amend either presentation or disclosure requirements related to fourteen subtopics in the FASB Accounting Standards Codification, that are currently in the SEC Regulation S-X or Regulation S-K. The new guidance was issued in response to the SEC's ruling on disclosure simplification. For entities subject to existing SEC disclosure requirements, the effective date of each amendment of the topics will be the date that the SEC removes the related disclosure from Regulation S-X or Regulation S-K. The guidance must be applied prospectively, with no early adoption permitted for entities subject to those existing SEC disclosures. The Company is currently evaluating the impact of the new guidance as it pertains to the fourteen subtopics that would impact the business and will apply prospectively once in effect.

In August 2023, the FASB issued guidance for entities that meet the definition of a joint venture or a corporate joint venture, to adopt a new basis of accounting upon the formation of the joint venture. The new guidance requires the initial measurement of contributed net assets and liabilities at fair value on the formation date, recognition of goodwill for the difference between the fair value of the joint venture's equity and net assets, and disclosures about the nature and financial impact of the transaction. The new guidance requires prospective application and is effective for all joint ventures that are formed on or after January 1, 2025, with early adoption permitted. Joint ventures that formed before January 1, 2025 may elect to retrospectively apply the new guidance. The Company will apply the guidance to any new joint ventures formed after the effective date.

In March 2020 and January 2021, the FASB issued guidance to address certain accounting consequences from the anticipated transition from the use of the London Interbank Offered Rate ("LIBOR") and other interbank offered rates to alternative reference rates. The new guidance contains practical expedients for reference rate reform related activities that impact debt, leases, derivatives and other contracts. The guidance is optional and may be elected over time as reference rate reform activities occur. The time period through which the practical expedients provided in the guidance is available was set to expire on December 31, 2022, but was extended through December 31, 2024 by the FASB in December 2022. During the year ended December 31, 2020, the Company elected to apply the hedge accounting expedients related to probability and the assessments of effectiveness for future LIBOR-indexed cash flows to assume that the index upon which future hedged transactions will be based matches the index of the corresponding derivatives. Application of these expedients preserves the presentation of derivatives consistent with past presentation. In February 2023, the Company amended the 2021 Term Loan Facility (as defined below), the ABL Facility (as defined below) and all existing interest rate caps agreements to replace LIBOR with a secured overnight financing rate ("SOFR") as the benchmark interest rate. See Note 11 and Note 12 to these condensed consolidated financial statements for additional information. The Company utilized the practical expedients under the guidance with respect to the transition of its debt facilities and interest rate hedging arrangements to SOFR, with no impact to its condensed consolidated financial statements.

In October 2021, the FASB issued guidance that requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with revenue recognition guidance. Under current GAAP, contract assets and contract liabilities acquired in a business combination are recorded by the acquirer at fair value. The new guidance creates an exception to the general recognition and measurement principles related to business combinations, and is expected to result in the acquirer recognizing contract assets and liabilities at the same amounts recorded by the acquiree. The new guidance is effective for business combinations occurring during fiscal years beginning after December 15, 2022, including interim periods within those fiscal years, with early adoption permitted. The Company adopted the new guidance effective January 1, 2023 as required, and will apply the guidance prospectively to business combinations that occur after the adoption date.

ECOVYST INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in thousands, except share and per share amounts)
(unaudited)

3. Revenue from Contracts with Customers:

Disaggregated Revenue

The Company’s primary means of disaggregating revenues is by reportable segments, which can be found in Note 16 to these condensed consolidated financial statements.

The Company’s portfolio of products is integrated into a variety of end uses, which are described in the table below.

Key End Uses	Key Products
Clean fuels, emission control & other	• Refining hydrocracking catalysts
	• Emission control catalysts
	• Catalysts used in production of renewable fuels
	• Catalyst activation
	• Aluminum sulfate solution
	• Ammonium bisulfite solution
Polymers & engineered plastics	• Catalysts for high-density polyethylene and chemicals syntheses
	• Antiblocks for film packaging
	• Niche custom catalyst
Regeneration and treatment services	• Sulfuric acid regeneration services
	• Treatment services
Industrial, mining & automotive	• Sulfur derivatives for industrial production
	• Sulfuric acid for mining
	• Sulfuric derivatives for nylon production

ECOVYST INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in thousands, except share and per share amounts)
(unaudited)

The following tables disaggregate the Company's sales, by segment and end uses, for the three and nine months ended September 30, 2023 and 2022, respectively:

	Three months ended September 30, 2023		
	Ecoservices	Catalyst Technologies[2]	Total
Clean fuels, emission control & other	$ 8,393	$ —	$ 8,393
Polymers & engineered plastics	—	25,697	25,697
Regeneration and treatment services[1]	87,692	—	87,692
Industrial, mining & automotive	51,544	—	51,544
Total segment sales	$ 147,629	$ 25,697	$ 173,326

	Three months ended September 30, 2022		
	Ecoservices	Catalyst Technologies[2]	Total
Clean fuels, emission control & other	$ 7,991	$ —	$ 7,991
Polymers & engineered plastics	—	36,859	36,859
Regeneration and treatment services[1]	92,676	—	92,676
Industrial, mining & automotive	95,007	—	95,007
Total segment sales	$ 195,674	$ 36,859	$ 232,533

	Nine months ended September 30, 2023		
	Ecoservices	Catalyst Technologies[2]	Total
Clean fuels, emission control & other	$ 21,559	$ —	$ 21,559
Polymers & engineered plastics	—	74,877	74,877
Regeneration and treatment services[1]	274,529	—	274,529
Industrial, mining & automotive	147,345	—	147,345
Total segment sales	$ 443,433	$ 74,877	$ 518,310

	Nine months ended September 30, 2022		
	Ecoservices	Catalyst Technologies[2]	Total
Clean fuels, emission control & other	$ 22,474	$ —	$ 22,474
Polymers & engineered plastics	—	94,716	94,716
Regeneration and treatment services[1]	253,793	—	253,793
Industrial, mining & automotive	266,436	—	266,436
Total segment sales	$ 542,703	$ 94,716	$ 637,419

(1) As described in Note 1 to these condensed consolidated financial statements, the Company experiences seasonal sales fluctuations to customers in the regeneration services product group.

(2) Excludes the Company's proportionate share of sales from the Zeolyst International and Zeolyst C.V. joint ventures (collectively, the "Zeolyst Joint Venture") accounted for using the equity method (see Note 9 to these condensed consolidated financial statements for further information).

ECOVYST INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in thousands, except share and per share amounts)
(unaudited)

4. Fair Value Measurements:

Fair values are based on quoted market prices when available. When market prices are not available, fair values are generally estimated using discounted cash flow analyses, incorporating current market inputs for similar financial instruments with comparable terms and credit quality. In instances where there is little or no market activity for the same or similar instruments, the Company estimates fair values using methods, models and assumptions that management believes a hypothetical market participant would use to determine a current transaction price. These valuation techniques involve some level of management estimation and judgment that becomes significant with increasingly complex instruments or pricing models. Where appropriate, adjustments are included to reflect the risk inherent in a particular methodology, model or input used.

The Company's financial assets and liabilities carried at fair value have been classified based upon a fair value hierarchy. The hierarchy gives the highest ranking to fair values determined using unadjusted quoted prices in active markets for identical assets and liabilities (Level 1) and the lowest ranking to fair values determined using methodologies and models with unobservable inputs (Level 3). The classification of an asset or a liability is based on the lowest level input that is significant to its measurement. For example, a Level 3 fair value measurement may include inputs that are both observable (Levels 1 and 2) and unobservable (Level 3). The levels of the fair value hierarchy are as follows:

- Level 1—Values are unadjusted quoted prices for identical assets and liabilities in active markets accessible at the measurement date. Active markets provide pricing data for trades occurring at least weekly and include exchanges and dealer markets.
- Level 2—Inputs include quoted prices for similar assets or liabilities in active markets, quoted prices from those willing to trade in markets that are not active, or other inputs that are observable or can be corroborated by market data for the term of the instrument. Such inputs include market interest rates and volatilities, spreads and yield curves.
- Level 3—Certain inputs are unobservable (supported by little or no market activity) and significant to the fair value measurement. Unobservable inputs reflect the Company's best estimate of what hypothetical market participants would use to determine a transaction price for the asset or liability at the reporting date.

The following tables present information about the Company's assets and liabilities that were measured at fair value on a recurring basis as of September 30, 2023 and December 31, 2022, and indicates the fair value hierarchy of the valuation techniques the Company utilized to determine such fair value.

	September 30, 2023	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Derivative assets:				
Interest rate caps (Note 12)	$ 32,178	$ —	$ 32,178	$ —

	December 31, 2022	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Derivative assets:				
Interest rate caps (Note 12)	$ 34,374	$ —	$ 34,374	$ —
Derivative liabilities:				
Interest rate caps (Note 12)	$ 2,071	$ —	$ 2,071	$ —

ECOVYST INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in thousands, except share and per share amounts)
(unaudited)

Derivative contracts

Derivative assets and liabilities can be exchange-traded or traded over-the-counter ("OTC"). The Company generally values exchange-traded derivatives using models that calibrate to market transactions and eliminate timing differences between the closing price of the exchange-traded derivatives and their underlying instruments. OTC derivatives are valued using market transactions and other market evidence whenever possible, including market-based inputs to models, model calibration to market transactions, broker or dealer quotations or alternative pricing sources with reasonable levels of price transparency. When models are used, the selection of a particular model to value an OTC derivative depends on the contractual terms of, and specific risks inherent in, the instrument as well as the availability of pricing information in the market. The Company generally uses similar models to value similar instruments. Valuation models require a variety of inputs, including contractual terms, market prices and rates, forward curves, measures of volatility, and correlations of such inputs. For OTC derivatives that trade in liquid markets, such as forward contracts, swaps and options, model inputs can generally be corroborated by observable market data by correlation or other means, and model selection does not involve significant management judgment.

As of September 30, 2023, the Company had interest rate caps that were fair valued using Level 2 inputs. In addition, the Company applies a credit valuation adjustment to reflect credit risk which is calculated based on credit default swaps. To the extent that the Company's net exposure under a specific master agreement is an asset, the Company utilizes the counterparty's default swap rate. If the net exposure under a specific master agreement is a liability, the Company utilizes a default swap rate comparable to Ecovyst. The credit valuation adjustment is added to the discounted fair value to reflect the exit price that a market participant would be willing to receive to assume the Company's liabilities or that a market participant would be willing to pay for the Company's assets.

5. Stockholders' Equity:

Accumulated Other Comprehensive Income (Loss)

The following tables present the tax effects of each component of other comprehensive income (loss) for the three and nine months ended September 30, 2023 and 2022, respectively:

	Three months ended September 30,					
	2023			2022		
	Pre-tax amount	Tax benefit/ (expense)	After-tax amount	Pre-tax amount	Tax benefit/ (expense)	After-tax amount
Defined benefit and other postretirement plans:						
Net prior service credit (cost)	$ (31)	$ 8	$ (23)	$ (53)	$ 13	$ (40)
Net gain (loss)	(253)	63	(190)	(1,226)	304	(922)
Benefit plans, net	(284)	71	(213)	(1,279)	317	(962)
Net gain (loss) from hedging activities	1,247	(119)	1,128	12,188	(3,047)	9,141
Foreign currency translation	(3,112)	—	(3,112)	(7,207)	—	(7,207)
Other comprehensive income (loss)	$ (2,149)	$ (48)	$ (2,197)	$ 3,702	$ (2,730)	$ 972

	Nine months ended September 30,					
	2023			2022		
	Pre-tax amount	Tax benefit/ (expense)	After-tax amount	Pre-tax amount	Tax benefit/ (expense)	After-tax amount
Defined benefit and other postretirement plans:						
Net prior service credit (cost)	$ (94)	$ 23	$ (71)	$ (158)	$ 39	$ (119)
Net gain (loss)	398	(99)	299	(1,225)	304	(921)
Benefit plans, net	304	(76)	228	(1,383)	343	(1,040)
Net gain (loss) from hedging activities	(1,998)	605	(1,393)	36,827	(9,207)	27,620
Foreign currency translation	(99)	—	(99)	(17,506)	—	(17,506)
Other comprehensive income (loss)	$ (1,793)	$ 529	$ (1,264)	$ 17,938	$ (8,864)	$ 9,074

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The following tables present the changes in accumulated other comprehensive income, net of tax, by component for the nine months ended September 30, 2023 and 2022, respectively:

	Defined benefit and other postretirement plans	Net gain (loss) from hedging activities	Foreign currency translation	Total
December 31, 2022	$ (508)	$ 24,672	$ (18,172)	$ 5,992
Other comprehensive income (loss) before reclassifications	207	12,057	(99)	12,165
Amounts reclassified from accumulated other comprehensive income[1]	21	(13,450)	—	(13,429)
Net current period other comprehensive income (loss)	228	(1,393)	(99)	(1,264)
September 30, 2023	$ (280)	$ 23,279	$ (18,271)	$ 4,728
December 31, 2021	$ 2,168	$ 290	$ (8,250)	$ (5,792)
Other comprehensive income (loss) before reclassifications	(1,157)	27,148	(17,506)	8,485
Amounts reclassified from accumulated other comprehensive income[1]	117	472	—	589
Net current period other comprehensive income (loss)	(1,040)	27,620	(17,506)	9,074
September 30, 2022	$ 1,128	$ 27,910	$ (25,756)	$ 3,282

(1) See the following table for details about these reclassifications. Amounts in parentheses indicate debits.

The following table presents the reclassifications out of accumulated other comprehensive income for the three and nine months ended September 30, 2023 and 2022, respectively:

Details about Accumulated Other Comprehensive Income Components	Amounts reclassified from Accumulated Other Comprehensive Income[1]				Affected line item where Income is presented
	Three months ended September 30,		Nine months ended September 30,		
	2023	2022	2023	2022	
Amortization of defined benefit and other postretirement items:					
Net prior service (credit) cost	$ (31)	$ (53)	$ (94)	$ (158)	Other (expense) income[2]
Net (gain) loss	21	1	48	3	Other (expense) income[2]
	(10)	(52)	(46)	(155)	Total before tax
	7	12	25	38	Tax benefit
	$ (3)	$ (40)	$ (21)	$ (117)	Net of tax
Gains and losses on cash flow hedges:					
Interest rate caps	$ 6,048	$ (29)	$ 17,933	$ (627)	Interest expense
	(1,511)	7	(4,483)	155	Tax (expense) benefit
	$ 4,537	$ (22)	$ 13,450	$ (472)	Net of tax
Total reclassifications for the period	$ 4,534	$ (62)	$ 13,429	$ (589)	Net of tax

(1) Amounts in parentheses indicate debits to profit/loss.

(2) These accumulated other comprehensive income (loss) components are components of net periodic pension and other postretirement cost (see Note 14 to these condensed consolidated financial statements for additional details).

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Treasury Stock Repurchases

2022 Stock Repurchase Program

On April 27, 2022, the Board approved a stock repurchase program that authorized the Company to purchase up to $450,000 of the Company's common stock over the four-year period from the date of approval. Under the plan, the Company is permitted to repurchase shares from time to time for cash in open market transactions or in privately negotiated transactions in accordance with applicable federal securities laws, with the Company determining the timing and the amount of any repurchases based on its evaluation of market conditions, share price and other factors.

During the nine months ended September 30, 2023, the Company repurchased 541,494 shares on the open market at an average price of $9.85 per share, for a total of $5,333, excluding brokerage commissions and accrued excise tax. Additionally, in connection with secondary offerings of the Company's common stock in March and May 2023, the Company repurchased 7,000,000 shares of its common stock sold in the offerings from the underwriters at a weighted average price of $10.48 per share concurrently with the closing of the offerings, for a total of $73,374, excluding accrued excise tax. As of September 30, 2023, $234,592 was available for additional share repurchases under the program.

During the nine months ended September 30, 2023, the Company accrued excise tax of $638 related to these repurchases, net of shares issued under the Company's equity incentive program (see Note 17 to these condensed consolidated financial statements). This amount is included in accrued liabilities in the condensed consolidated balance sheet and is treated by the Company as a cost of the treasury stock transactions in equity.

During the nine months ended September 30, 2022, the Company repurchased 1,970,763 shares on the open market at an average price of $9.82 per share, for a total of $19,356, excluding brokerage commissions. Additionally, in connection with a secondary offering of the Company's common stock in August 2022, the Company repurchased 6,500,000 shares of its common stock sold in the offering from underwriters at a price of $8.36 per share concurrently with the closing of the offering, for a total of $54,316.

Tax Withholdings on Equity Award Vesting

In connection with the vesting of restricted stock awards, restricted stock units and performance stock units, shares of common stock may be delivered to the Company by employees to satisfy withholding tax obligations at the instruction of the employee award holders. These transactions, when they occur, are accounted for as stock repurchases by the Company, with the shares returned to treasury stock at a cost representing the payment by the Company of the tax obligations on behalf of the employees in lieu of shares for the vesting unit. There were 315,635 and 32,058 shares delivered to the Company to cover tax payments for the nine months ended September 30, 2023 and 2022, respectively and the fair value of those shares withheld were $3,372 and $332 for the nine months ended September 30, 2023 and 2022, respectively.

6. Goodwill:

The change in the carrying amount of goodwill for the nine months ended September 30, 2023 is summarized as follows:

	Ecoservices	Catalyst Technologies	Total
Balance as of December 31, 2022	$ 326,589	$ 76,574	$ 403,163
Foreign exchange impact	—	205	205
Balance as of September 30, 2023	$ 326,589	$ 76,779	$ 403,368

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7. Other Operating Expense, Net:

A summary of other operating expense, net is as follows:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Amortization expense	$ 2,645	$ 2,632	$ 7,924	$ 7,931
Transaction and other related costs	187	1,789	2,811	6,860
Restructuring, integration and business optimization costs[(1)]	310	2,338	2,438	8,011
Net loss on asset disposals	1,020	468	3,326	1,174
Other, net	148	446	789	1,125
	$ 4,310	$ 7,673	$ 17,288	$ 25,101

(1) During the three and nine months ended September 30, 2022, respectively, the Company's results were impacted by costs associated with severance charges for certain former executives and employees.

8. Inventories, Net:

Inventories, net are classified and valued as follows:

	September 30, 2023	December 31, 2022
Finished products and work in process	$ 44,406	$ 39,909
Raw materials	3,857	4,453
	$ 48,263	$ 44,362
Valued at lower of cost or market:		
LIFO basis	$ 28,157	$ 25,258
Valued at lower of cost and net realizable value:		
FIFO or average cost basis	20,106	19,104
	$ 48,263	$ 44,362

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9. Investments in Affiliated Companies:

The Company accounts for investments in affiliated companies under the equity method. Affiliated companies accounted for on the equity basis as of September 30, 2023 are as follows:

Company	Country	Percent ownership
Zeolyst International	USA	50%
Zeolyst C.V.	Netherlands	50%

Following is summarized information of the combined investments[(1)]:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Sales	$ 81,115	$ 67,043	$ 236,200	$ 218,389
Gross profit	22,205	17,794	66,776	70,546
Operating income	12,414	10,228	39,916	44,340
Net income	12,617	9,540	42,189	44,448

(1) Summarized information of the combined investments is presented at 100%; the Company’s share of the net assets and net income of affiliates is calculated based on the percent ownership specified in the table above.

The Company’s investments in affiliated companies balance as of September 30, 2023 and December 31, 2022 includes net purchase accounting fair value adjustments of $226,215 and $231,017, respectively, related to a prior business combination, consisting primarily of goodwill and intangible assets such as customer relationships, technical know-how and trade names. Consolidated equity in net income from affiliates is net of $1,601 and $4,802 of amortization expense related to purchase accounting fair value adjustments for the three and nine months ended September 30, 2023, respectively. Consolidated equity in net income from affiliates is net of $1,601 and $4,802 of amortization expense related to purchase accounting fair value adjustments for the three and nine months ended September 30, 2022, respectively.

10. Property, Plant and Equipment:

A summary of property, plant and equipment, at cost, and related accumulated depreciation is as follows:

	September 30, 2023	December 31, 2022
Land	$ 96,686	$ 96,659
Buildings and improvements	83,346	82,061
Machinery and equipment	802,823	751,145
Construction in progress	47,974	56,448
	1,030,829	986,313
Less: accumulated depreciation	(450,020)	(401,424)
	$ 580,809	$ 584,889

Depreciation expense was $17,773 and $51,920 for the three and nine months ended September 30, 2023, respectively. Depreciation expense was $16,103 and $48,256 for the three and nine months ended September 30, 2022, respectively.

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11. Long-term Debt:

The summary of long-term debt is as follows:

	September 30, 2023	December 31, 2022
Senior Secured Term Loan Facility due June 2028 (the "2021 Term Loan Facility")	$ 879,750	$ 886,500
ABL Facility	—	—
Total debt	879,750	886,500
Original issue discount	(6,496)	(7,472)
Deferred financing costs	(3,586)	(4,158)
Total debt, net of original issue discount and deferred financing costs	869,668	874,870
Less: current portion	(9,000)	(9,000)
Total long-term debt, excluding current portion	$ 860,668	$ 865,870

In February 2023, the Company amended the 2021 Term Loan Facility to replace LIBOR with SOFR as the benchmark interest rate. Following this amendment, the 2021 Term Loan Facility bears interest at an adjusted term SOFR, which includes a credit spread adjustment of 10 basis points (with a 0.50% minimum floor) plus 2.75% per annum (or, depending on the Company's first lien net leverage ratio, 2.50%). The interest rate on the 2021 Term Loan Facility was 7.97% as of September 30, 2023.

Also in February 2023, the Company amended its senior secured asset-based revolving credit facility (the "ABL Facility") to replace LIBOR with SOFR as the benchmark interest rate. Following this amendment, the borrowings under the ABL Facility bear interest at a rate equal to an adjusted term SOFR rate or the base rate, which includes a credit spread adjustment of 10 basis points, plus a margin of between 1.25% to 1.75% or 0.25% to 0.75%, respectively. The interest rate on the ABL Facility was 8.75% as of September 30, 2023.

Fair Value of Debt

The fair value of a financial instrument is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. As of September 30, 2023 and December 31, 2022, the fair value of the senior secured term loan facility was $875,351 and $870,986, respectively. The fair value is classified as Level 2 based upon the fair value hierarchy (see Note 4 to these condensed consolidated financial statements for further information on fair value measurements).

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12. Financial Instruments:

The Company uses interest rate related derivative instruments to manage its exposure to changes in interest rates on its variable-rate debt instruments. The Company does not speculate using derivative instruments.

By using derivative financial instruments to hedge exposures to changes in interest rates, the Company exposes itself to credit risk and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is an asset, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is a liability, the Company owes the counterparty and therefore, the Company is not exposed to the counterparty's credit risk in those circumstances. The Company minimizes counterparty credit risk in derivative instruments by entering into transactions with high quality counterparties. The derivative instruments entered into by the Company do not contain credit-risk-related contingent features.

Market risk is the adverse effect on the value of a derivative instrument that results from a change in interest rates. The market risk associated with the Company's derivative instruments is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.

Use of Derivative Financial Instruments to Manage Interest Rate Risk. The Company is exposed to fluctuations in interest rates on its senior secured credit facilities. Changes in interest rates will not affect the market value of such debt but will affect the Company's interest payments over the term of the loans. Likewise, an increase in interest rates could have a material impact on the Company's condensed consolidated statements of cash flows. The Company hedges the interest rate fluctuations on debt obligations through interest rate cap agreements. The Company records these agreements at fair value as assets or liabilities in its condensed consolidated balance sheets. As the derivatives are designated and qualify as cash flow hedges, the gains or losses on the interest rate cap agreements are recorded in stockholders' equity as a component of other comprehensive income, net of tax. Reclassifications of the gains and losses on the interest rate cap agreements into earnings are recorded as part of interest expense in the condensed consolidated statements of income as the Company makes its interest payments on the hedged portion of its senior secured credit facilities. Fair value is determined based on estimated amounts that would be received or paid to terminate the contracts at the reporting date based on quoted market prices.

The following table provides a summary of the Company's interest rate cap agreements:

Financial instrument	Number of instruments	In effect as of September 30, 2023	Current notional amount of instruments in effect	Annuitized premium of instruments in effect
Interest rate cap	4	3	$ 650,000	$ 24,817

The current notional amounts of the three interest rate cap agreements in effect at September 30, 2023 are $250,000, $250,000 and $150,000. The Company entered into a $250,000 interest rate cap to mitigate interest rate volatility from August 2022 to October 2024, a $250,000 interest rate cap agreement to mitigate interest rate volatility from September 2023 to October 2025 and a $150,000 interest rate cap agreement to mitigate interest rate volatility from August 2023 to July 2024. The $150,000 interest rate cap agreement will increase to $175,000 to mitigate interest rate volatility from August 2024 to July 2026. The cap rate in effect at September 30, 2023 for all agreements in effect was 1.00%.

The Company has also entered into a forward starting interest rate cap agreement to mitigate interest volatility from November 2024 to October 2026.

In February 2023, the Company amended all existing interest rate cap agreements to replace LIBOR with SOFR as the benchmark interest rate, with all other terms of the agreements remaining the same. This amendment changed the previously annuitized premiums on the existing interest rate cap agreements.

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The fair values of derivative instruments held as of September 30, 2023 and December 31, 2022, respectively are shown below:

	Balance sheet location	September 30, 2023	December 31, 2022
Derivative assets			
Derivatives designated as cash flow hedges:			
Interest rate caps	Prepaid and other current assets	$ 16,374	$ 18,510
Interest rate caps	Other long-term assets	15,804	15,864
Total derivative assets		$ 32,178	$ 34,374
Derivative liabilities			
Derivatives designated as cash flow hedges:			
Interest rate caps	Other long-term liabilities	$ —	$ 2,071
Total derivative liabilities		$ —	$ 2,071

The following table shows the effect of the Company's derivative instruments designated as cash flow hedges on AOCI for the three and nine months ended September 30, 2023 and 2022, respectively:

		Three months ended September 30,			
		2023		2022	
	Location of gain (loss) reclassified from AOCI into income	Amount of gain (loss) recognized in OCI on derivatives	Amount of gain (loss) reclassified from AOCI into income	Amount of gain (loss) recognized in OCI on derivatives	Amount of gain (loss) reclassified from AOCI into income
Interest rate caps	Interest (expense) income	$ 7,294	$ 6,048	$ 12,159	$ (29)

		Nine months ended September 30,			
		2023		2022	
	Location of gain (loss) reclassified from AOCI into income	Amount of gain (loss) recognized in OCI on derivatives	Amount of gain (loss) reclassified from AOCI into income	Amount of gain (loss) recognized in OCI on derivatives	Amount of gain (loss) reclassified from AOCI into income
Interest rate caps	Interest (expense) income	$ 15,935	$ 17,933	$ 36,200	$ (627)

The following table shows the effect of the Company's cash flow hedge accounting on the condensed consolidated statements of income for the three and nine months ended September 30, 2023 and 2022, respectively:

	Location and amount of gain (loss) recognized in income on cash flow hedging relationships			
	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Total amounts of income and expense line items presented in the statement of income in which the effects of cash flow hedges are recorded in interest (expense) income	$ (11,811)	$ (9,542)	$ (30,812)	$ (26,880)
The effects of cash flow hedging:				
Gain (loss) on cash flow hedging relationships:				
Interest contracts:				
Amount of loss reclassified from AOCI into income	6,048	(29)	17,933	(627)

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The amount of unrealized losses in AOCI related to the Company's cash flow hedges that is expected to be reclassified to the condensed consolidated statement of income over the next twelve months is $9,963 as of September 30, 2023.

13. Income Taxes:

The effective income tax rate for the three months ended September 30, 2023 was 32.3%, compared to 29.6% for the three months ended September 30, 2022. The effective income tax rate for the nine months ended September 30, 2023 was 29.9%, compared to 31.2% for the nine months ended September 30, 2022. The Company's effective income tax rate fluctuated primarily due to a reduced discrete tax impact related to a stock compensation shortfall and a discrete tax benefit associated with state and local tax law changes.

The difference between the U.S. federal statutory income tax rate and the Company's effective income tax rate for the nine months ended September 30, 2023 was mainly due to state and local taxes, a discrete shortfall tax expense related to stock compensation, a discrete tax expense associated with the recording of accrued penalties and interest associated with historical uncertain tax positions, and a discrete tax benefit connected to state and local tax law changes.

The difference between the U.S. federal statutory income tax rate and the Company's effective income tax rate for the nine months ended September 30, 2022 was mainly due to state and local taxes, a discrete shortfall tax expense related to stock compensation and a discrete tax expense associated with the Employee Retention Credit.

14. Benefit Plans:

The following tables present the components of net periodic expense (benefit) for the Company-sponsored defined benefit pension and postretirement plans, which cover certain employees and retirees located in the U.S.

Defined Benefit Pension Plans

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Interest cost	$ 863	$ 681	$ 2,590	$ 1,888
Expected return on plan assets	(826)	(380)	(2,479)	(2,599)
Settlement loss	22	38	50	38
Net periodic expense (benefit)	$ 59	$ 339	$ 161	$ (673)

Other Postretirement Benefit Plan

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Interest cost	$ 6	$ 5	$ 18	$ 13
Amortization of prior service credit	(31)	(53)	(94)	(158)
Amortization of net loss	(1)	1	(2)	3
Net periodic benefit	$ (26)	$ (47)	$ (78)	$ (142)

15. Commitments and Contingent Liabilities:

There is a risk of environmental impact in the Company's manufacturing operations. The Company's environmental policies and practices are designed to comply with existing laws and regulations and to minimize the possibility of significant environmental impact. The Company is also subject to various other lawsuits and claims with respect to matters such as governmental regulations, labor and other actions arising out of the normal course of business. All claims that are probable and reasonably estimable have been accrued for in the Company's condensed consolidated financial statements. When these matters are ultimately concluded and determined, the Company believes that there will be no material adverse effect on its consolidated financial position, results of operations or liquidity.

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16. Reportable Segments:

Summarized financial information for the Company's reportable segments is shown in the following table:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Sales:				
Ecoservices	$ 147,629	$ 195,674	$ 443,433	$ 542,703
Catalyst Technologies[1]	25,697	36,859	74,877	94,716
Total	$ 173,326	$ 232,533	$ 518,310	$ 637,419
Adjusted EBITDA:[2]				
Ecoservices	$ 54,674	$ 64,110	$ 151,598	$ 173,435
Catalyst Technologies[3]	16,360	19,272	54,718	57,676
Adjusted EBITDA from reportable segments	$ 71,034	$ 83,382	$ 206,316	$ 231,111

(1) Excludes the Company's proportionate share of sales from the Zeolyst Joint Venture accounted for using the equity method (see Note 9 to these condensed consolidated financial statements for further information). The proportionate share of sales excluded is $36,958 and $103,721 for the three and nine months ended September 30, 2023, respectively. The proportionate share of sales excluded is $27,773 and $92,656 for the three and nine months ended September 30, 2022, respectively.

(2) The Company defines Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Management evaluates the performance of its segments and allocates resources based on several factors, of which the primary measure is Adjusted EBITDA. Adjusted EBITDA should not be considered as an alternative to net income as an indicator of the Company's operating performance. Adjusted EBITDA as defined by the Company may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(3) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $9,640 for the three months ended September 30, 2023, which includes $4,748 of equity in net income plus $1,601 of amortization of investment in affiliate step-up and $3,291 of joint venture depreciation, amortization and interest. The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $31,270 for the nine months ended September 30, 2023, which includes $16,356 of equity in net income plus $4,802 of amortization of investment in affiliate step-up and $10,112 of joint venture depreciation, amortization and interest.

The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $8,704 for the three months ended September 30, 2022, which includes $3,187 of equity in net income plus $1,601 of amortization of investment in affiliate step-up and $3,917 of joint venture depreciation, amortization and interest. The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $34,306 for the nine months ended September 30, 2022, which includes $17,500 of equity in net income plus $4,802 of amortization of investment in affiliate step-up and $12,004 of joint venture depreciation, amortization and interest.

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A reconciliation of income before income taxes to Adjusted EBITDA is as follows:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Reconciliation of income before income taxes to Adjusted EBITDA from reportable segments				
Income before income taxes	$ 24,465	$ 30,291	$ 58,850	$ 70,428
Interest expense, net	11,811	9,542	30,812	26,880
Depreciation and amortization	21,290	19,599	62,456	58,803
Unallocated corporate expenses	3,163	7,945	16,243	23,543
Joint venture depreciation, amortization and interest	3,292	3,917	10,112	12,004
Amortization of investment in affiliate step-up	1,601	1,601	4,802	4,802
Net loss on asset disposals	1,020	468	3,326	1,174
Foreign exchange loss (gain)	774	1,030	(362)	2,179
LIFO (benefit) expense	—	(436)	2,510	(4)
Transaction and other related costs	187	1,789	2,811	6,860
Equity-based compensation	3,477	4,740	12,547	17,419
Restructuring, integration and business optimization expenses	310	2,338	2,438	8,011
Other	(356)	558	(229)	(988)
Adjusted EBITDA from reportable segments	$ 71,034	$ 83,382	$ 206,316	$ 231,111

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17. Stock-Based Compensation:

The Company has an equity incentive plan under which it grants common stock awards to employees, directors and affiliates of the Company. At September 30, 2023, 9,413,264 shares of common stock were available for issuance under the plan. The Company historically has settled these awards through the issuance of new shares. Beginning on July 1, 2023, the Company commenced reissuing shares from treasury in connection with the settlement of awards under its equity incentive plan.

Restricted Stock Units and Performance Stock Units

Restricted Stock Units

During the nine months ended September 30, 2023, the Company granted 1,195,835 restricted stock units under its equity incentive plan. Each restricted stock unit provides the recipient with the right to receive a share of common stock subject to graded vesting terms based on service, which for the awards granted during the nine months ended September 30, 2023, generally requires approximately one year of service for members of the Company’s board of directors and approximately three years of service for employees. The value of the restricted stock units granted during the nine months ended September 30, 2023 was based on the average of the high and low trading prices of the Company’s common stock on the NYSE on the preceding trading day, in accordance with the Company’s policy for valuing such awards. Compensation expense related to the restricted stock units is recognized on a straight-line basis over the respective vesting period.

Performance Stock Units

2023 Grants

During the nine months ended September 30, 2023, the Company granted 721,537 performance stock units (at target) under its equity incentive plan. The performance stock units granted during the nine months ended September 30, 2023 provide the recipients with the right to receive shares of common stock dependent on the achievement of a total shareholder return (“TSR”) goal, and are generally subject to the provision of service through the vesting date of the award. The performance period for the TSR goal is measured based on a three-year performance period from January 1, 2023 through December 31, 2025. The TSR goal is based on the Company’s actual TSR percentage increase over the performance period. Depending on the Company’s performance relative to the TSR goal, each performance stock unit award recipient is eligible to receive a percentage of the target number of shares granted to the recipient, ranging from zero to 200%. The performance stock units, to the extent earned, will vest on the date the Compensation Committee of the Company’s Board of Directors (“Compensation Committee”) certifies the achievement of the performance metric for the three-year period ending December 31, 2025, which will occur subsequent to the end of the performance period and after the Company files its annual consolidated financial statements for the year ending December 31, 2025.

The TSR goal is considered a market condition as opposed to a vesting condition. Because a market condition is not considered a vesting condition, it is reflected in the grant date fair value of the award and the associated compensation cost based on the fair value of the award is recognized over the performance period, regardless of whether the Company actually achieves the market condition or the level of achievement, as long as service is provided by the recipient. The Company used a Monte Carlo simulation to estimate the $12.28 weighted average fair value of the awards granted during the nine months ended September 30, 2023, with the following weighted average assumptions:

Expected dividend yield	— %
Risk-free interest rate	3.80 %
Expected volatility	48.82 %
Expected term (in years)	2.96

ECOVYST INC. AND SUBSIDIARIES
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(Dollars in thousands, except share and per share amounts)
(unaudited)

2020 Grants

In March 2023, the Compensation Committee certified the achievement of the performance metrics for the three-year period ended December 31, 2022, related to the performance stock units ("PSUs") granted during the year ended December 31, 2020. Fifty percent of the target number of such PSUs could be earned depending on performance against a Company-specific financial performance target, and 50% of the target number of such PSUs could be earned depending on performance against a TSR goal, subject to the provision of service through the vesting date of the awards. The Company-specific financial performance target and the TSR goal were measured independently of each other, and each PSU award recipient was eligible to earn a percentage of the target number of shares granted to the recipient, ranging from zero to 200%. The awards vested during the nine months ended September 30, 2023 as follows: 53.3% of target with respect to the portion of the PSU award subject to the Company-specific financial measure, and 56.0% of target with respect to the portion of the PSU award subject to the TSR goal.

Award Activity

The following table summarizes the activity for the Company's restricted stock units and performance stock units for the nine months ended September 30, 2023:

	Restricted Stock Units		Performance Stock Units	
	Number of units	Weighted average grant date fair value (per share)	Number of units	Weighted average grant date fair value (per share)
Nonvested as of December 31, 2022	2,464,718	$ 11.73	639,532 [1]	$ 16.32
Granted	1,195,835	$ 9.84	721,537	$ 12.28
Vested	(1,436,301)	$ 11.84	(200,204)	$ 20.48
Forfeited	(195,334)	$ 11.37	(183,864)	$ 19.50
Nonvested as of September 30, 2023	2,028,918	$ 10.57	977,001 [1]	$ 11.88

(1) Based on target.

During the nine months ended September 30, 2023, the Company also granted 5,081 restricted stock awards with a weighted average grant date fair value of $9.84 per share that immediately vested.

Stock-Based Compensation Expense

For the three months ended September 30, 2023 and 2022, stock-based compensation expense for the Company was $3,477 and $4,740, respectively. The associated income tax benefit recognized in the condensed consolidated statements of income for the three months ended September 30, 2023 and 2022 was $826 and $1,162, respectively. For the nine months ended September 30, 2023 and 2022, stock-based compensation expense for the Company was $12,547 and $17,419, respectively. The associated income tax benefit based on the applicable statutory rate recognized in the condensed consolidated statements of income for the nine months ended September 30, 2023 and 2022 was $2,980 and $4,271, respectively.

Performance-based restricted stock awards and performance-based stock options would vest only on the achievement with respect to shares of our common stock of an average closing trading price equal or exceeding, in any ten trading-day period, the lowest amount which, when multiplied by the number of shares of our common stock then held by investment funds affiliated with CCMP Capital Advisors, LP ("CCMP") and added to the aggregate net proceeds received by investment funds affiliated with CCMP with respect to their shares of capital stock of the Company, would yield a quotient of equal or greater than two when divided by the equity investment in the Company by investment funds affiliated with CCMP (such quotient, the "MOI Target"). On March 7, 2023, all of the outstanding performance-based stock options (284,956 options) and performance-based restricted shares (277,056 shares) that would vest upon the achievement of the MOI Target were canceled due to the failure of the MOI Target to be achieved upon the sale by investment funds affiliated with CCMP of all of their remaining shares of our common stock. No expense had previously been recognized for either the restricted stock awards or the stock options subject to this performance condition, as the condition was not achieved nor was previously considered probable of achievement.

In addition to the forfeitures described above, 328,677 vested stock options expired unexercised during the nine months ended September 30, 2023. Cash proceeds received by the Company from the exercise of stock options were not material for the nine months ended September 30, 2023.

ECOVYST INC. AND SUBSIDIARIES
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(Dollars in thousands, except share and per share amounts)
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As of September 30, 2023, unrecognized compensation cost was $13,205 for restricted stock units and $7,377 for performance stock units, and the weighted-average period over which these costs are expected to be recognized at September 30, 2023 was 2.02 years for the restricted stock units and 2.31 years for the performance stock units.

18. Earnings per Share:

Basic earnings per share is calculated as income available to common stockholders, divided by the weighted average number of common shares outstanding during the period. The weighted average number of common shares outstanding during the period for the computation of basic earnings per share excludes restricted stock awards that have legally been issued but are nonvested during the period, as the sale of these shares is prohibited pending satisfaction of certain vesting conditions by the award recipients in order to earn the rights to the shares.

Diluted earnings per share is calculated as income available to common stockholders, divided by the weighted average number of common and potential common shares outstanding during the period, if dilutive. Potential common shares reflect (1) unvested restricted stock awards and restricted stock units with service vesting conditions, (2) performance stock units with vesting conditions considered probable of achievement and (3) options to purchase common stock, all of which have been included in the diluted earnings per share calculation using the treasury stock method.

The reconciliation from basic to diluted weighted average shares outstanding is as follows:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Weighted average shares outstanding – Basic	116,446,085	132,622,105	119,042,161	136,115,598
Dilutive effect of unvested common shares and restricted stock units with service conditions, performance stock units considered probable of vesting and assumed stock option exercises and conversions	928,262	1,474,734	1,374,971	1,550,617
Weighted average shares outstanding – Diluted	117,374,347	134,096,839	120,417,132	137,666,215

Basic and diluted income per share are calculated as follows:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Numerator:				
Net income	$ 16,574	$ 21,325	$ 41,225	$ 48,445
Denominator:				
Weighted average shares outstanding – Basic	116,446,085	132,622,105	119,042,161	136,115,598
Weighted average shares outstanding – Diluted	117,374,347	134,096,839	120,417,132	137,666,215
Net income per share:				
Basic income per share	$ 0.14	$ 0.16	$ 0.35	$ 0.36
Diluted income per share	$ 0.14	$ 0.16	$ 0.34	$ 0.35

(Dollars in thousands, except share and per share amounts)

The table below presents the details of the Company's weighted average equity-based awards outstanding during each respective period that were excluded from the calculation of diluted earnings per share:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Restricted stock awards with performance only targets not achieved	—	505,439	65,966	574,048
Stock options with performance only targets not achieved	—	300,788	68,890	316,187
Anti-dilutive restricted stock units and performance stock units	—	487,322	—	19,306
Anti-dilutive stock options	454,461	751,539	556,114	788,509

Restricted stock awards and stock options with performance only vesting conditions were not included in the dilution calculation, as the performance targets have not been achieved nor were probable of achievement as of the end of the respective periods. These awards and stock options were canceled on March 7, 2023 (see Note 17 to these condensed consolidated financial statements for additional information). Certain stock options to purchase shares of common stock were excluded from the computation of diluted earnings per share for the respective periods because the options' exercise price was greater than the average market price of the common shares. These stock options and anti-dilutive awards are not included in the dilution calculation, as their inclusion would have the effect of increasing diluted income per share or reducing diluted loss per share.

19. Supplemental Cash Flow Information:

The following table presents supplemental cash flow information for the Company:

	Nine months ended September 30,	
	2023	2022
Cash paid during the period for:		
Income taxes, net of refunds	$ 19,019	$ 24,367
Interest[(1)]	28,466	24,390
Non-cash investing activity:		
Capital expenditures acquired on account but unpaid as of the period end	589	4,993
Non-cash financing activity:		
Accrued excise tax on share repurchases (Note 5)	638	—
Right-of-use assets obtained in exchange for new lease liabilities (non-cash):		
Operating leases	8,048	6,187

(1) Cash paid for interest is shown net of capitalized interest and includes the cash received or paid on the Company's interest rate cap agreements designated as cash flow hedges for the periods presented (see Note 12 to these condensed consolidated financial statements for details).

20. Subsequent Events:

The Company has evaluated subsequent events since the balance sheet date and determined that there are no additional items to disclose.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

Unless the context requires otherwise, references in this report to "Ecovyst," "the company," "we," "us" or "our" refer to Ecovyst Inc. and its consolidated subsidiaries.

Forward-looking Statements

This periodic report on Form 10-Q ("Form 10-Q") includes "forward-looking statements" that express our opinions, expectations, beliefs, plans, objectives, assumptions or projections regarding future events or future results. The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "should" and similar expressions are intended to identify these forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short- and long-term business operations and objectives, and financial needs. Examples of forward-looking statements include, but are not limited to, statements we make regarding demand trends, economic effects on our operations and financial results and our liquidity, and our belief that our current level of operations, cash and cash equivalents, cash flow from operations and borrowings under our credit facilities and other lines of credit will provide us adequate cash to fund the working capital, capital expenditure, debt service and other requirements for our business for at least the next twelve months.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions. Moreover, we operate in a very competitive and rapidly changing environment and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed herein may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

Some of the key factors that could cause actual results to differ from our expectations include the following risks related to our business:

- as a global business, we are exposed to local business risks in different countries;
- we are affected by general economic conditions and economic downturns;
- exchange rate fluctuations could adversely affect our financial condition, results of operations and cash flows;
- our international operations require us to comply with anti-corruption laws, trade and export controls and regulations of the U.S. government and various international jurisdictions in which we do business;
- alternative technology or other changes in our customers' products may reduce or eliminate the need for certain of our products;
- our new product development and research and development efforts may not succeed and our competitors may develop more effective or successful products;
- our substantial level of indebtedness could adversely affect our financial condition;
- if we are unable to manage the current and future inflationary environment and to pass on increases in raw material prices, including natural gas, or labor costs to our customers or to retain or replace our key suppliers, our results of operations and cash flows may be negatively affected;
- we face substantial competition in the industries in which we operate;
- we are subject to the risk of loss resulting from non-payment or non-performance by our customers;
- we rely on a limited number of customers for a meaningful portion of our business;
- multi-year customer contracts in our Ecoservices segment are subject to potential early termination and such contracts may not be renewed at the end of their respective terms;
- our quarterly results of operations are subject to fluctuations because demand for some of our products is seasonal;
- our growth projects may result in significant expenditures before generating revenues, if any, which may materially and adversely affect our ability to implement our business strategy;
- we may be liable to damages based on product liability claims brought against us or our customers for costs associated with recalls of our or our customers' products;

- we are subject to extensive environmental, health and safety regulations and face various risks associated with potential non-compliance or releases of hazardous materials;
- existing and proposed regulations to address climate change by limiting greenhouse gas emissions may cause us to incur significant additional operating and capital expenses and may impact our business and results of operations;
- production and distribution of our products could be disrupted for a variety of reasons, including as a result of supply chain constraints, and such disruptions could expose us to significant losses or liabilities;
- the insurance that we maintain may not fully cover all potential exposures;
- we could be subject to damages based on claims brought against us by our customers or lose customers as a result of the failure of our products to meet certain quality specifications;
- our failure to protect our intellectual property and infringement on the intellectual property rights of third parties;
- disruption, failure or cyber security breaches affecting or targeting computers and infrastructure used by us or our business partners may adversely impact our business and operations; and
- other factors set forth in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022, as supplemented in “Item 1A, Risk Factors” in our quarterly reports on Form 10-Q for the quarters ended March 31, 2023 and June 30, 2023.

The forward-looking statements included herein are made only as of the date hereof. You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this Form 10-Q to conform these statements to actual results or to changes in our expectations.

Overview

We are a leading integrated and innovative global provider of specialty catalysts and services. We believe that our products, which are predominantly inorganic, and services contribute to improving the sustainability of the environment.

We conduct operations through two reporting segments: (1) Ecoservices and (2) Catalyst Technologies (including our 50% interest in the Zeolyst Joint Venture).

Ecoservices: We are a leading provider of sulfuric acid recycling to the North American refining industry for the production of alkylate, an essential gasoline component for lowering vapor pressure and increasing octane to meet stringent gasoline specifications and fuel efficiency standards. We are also a leading North American producer of on-purpose virgin sulfuric acid for water treatment, mining and industrial applications.

Catalyst Technologies: We are a global supplier of finished silica catalysts and catalyst supports necessary to produce high strength and high stiffness plastics used in packaging films, bottles, containers, and other molded applications. This segment includes our 50% interest in the Zeolyst Joint Venture, where we are a leading global supplier of zeolites used for catalysts that help produce renewable fuels, remove nitrogen oxides from diesel engine emissions as well as sulfur from fuels during the refining process.

Stock Repurchase Program

On April 27, 2022, the Board approved a stock repurchase program that authorized the Company to purchase up to $450 million of the Company’s common stock over the four-year period from the date of approval. For the nine months ended September 30, 2023, the Company repurchased 541,494 shares on the open market at an average price of $9.85, for a total of $5.3 million, excluding brokerage commissions and accrued excise tax. Additionally, in connection with secondary offerings of the Company’s common stock in March and May 2023, the Company repurchased 7,000,000 shares of its common stock sold in the offerings from the underwriters at a weighted average price of $10.48 per share concurrently with the closing of the offerings, for a total of $73.4 million, excluding accrued excise tax.

As of September 30, 2023, $234.6 million was available for additional share repurchases under the program.

For the nine months ended September 30, 2022, the Company repurchased 1,970,763 shares on the open market at an average price of $9.82, for a total of $19.4 million, excluding brokerage commissions. Additionally, in connection with a secondary offering of the Company’s common stock in August 2022, the Company repurchased 6,500,000 shares of its common stock sold in the offering from the underwriters at a price of $8.36 per share concurrently with the closing of the offering, for a total of $54.3 million.

Key Performance Indicators

Adjusted EBITDA and Adjusted Net Income

Adjusted EBITDA and adjusted net income are financial measures that are not prepared in accordance with accounting principles generally accepted in the United States ("GAAP") and that we use to evaluate our operating performance, for business planning purposes and to measure our performance relative to that of our competitors. Adjusted EBITDA and adjusted net income are presented as key performance indicators as we believe these financial measures will enhance a prospective investor's understanding of our results of operations and financial condition. EBITDA consists of net income attributable to continuing operations before interest, taxes, depreciation and amortization. Adjusted EBITDA consists of EBITDA adjusted for (i) non-operating income or expense, (ii) the impact of certain non-cash, nonrecurring or other items included in net income and EBITDA that we do not consider indicative of our ongoing operating performance, and (iii) depreciation, amortization and interest of our 50% share of the Zeolyst Joint Venture. Adjusted net income consists of net income adjusted for (i) non-operating income or expense and (ii) the impact of certain non-cash, nonrecurring or other items included in net income that we do not consider indicative of our ongoing operating performance. We believe that these non-GAAP financial measures provide investors with useful financial metrics to assess our operating performance from period-to-period by excluding certain items that we believe are not representative of our core business.

You should not consider Adjusted EBITDA or adjusted net income in isolation or as alternatives to the presentation of our financial results in accordance with GAAP. The presentation of Adjusted EBITDA and adjusted net income financial measures may differ from similar measures reported by other companies and may not be comparable to other similarly titled measures. In evaluating Adjusted EBITDA and adjusted net income, you should be aware that we are likely to incur expenses similar to those eliminated in this presentation in the future and that certain of these items could be considered recurring in nature. Our presentation of Adjusted EBITDA and adjusted net income should not be construed as an inference that our future results will be unaffected by unusual or nonrecurring items. Reconciliations of Adjusted EBITDA and adjusted net income to GAAP net income are included in the results of operations discussion that follows for each of the respective periods.

Key Factors and Trends Affecting Operating Results and Financial Condition

Sales

Overall, our Ecoservices and Catalyst Technologies segments continued to benefit from positive demand trends for our products and services in the industries we serve. Strong domestic and export demand for refined products continued to support high refinery utilization rates, while more stringent gasoline standards and growing demand for premium gasoline to power higher-compression and turbocharged engines continued to drive demand for alkylate and for our regeneration services. In addition, demand for virgin sulfuric acid across a wide range of industrial applications remained favorable. However, sales in our Ecoservices segment were impacted primarily by unplanned production downtime at our sites, which adversely impacted sales and maintenance costs in 2023. During the second quarter of 2023, we began to see a slowdown in global polyethylene demand impact the sales of our silica-based catalyst, while still seeing increasing demand for renewable fuels and more stringent regulation in traditional fuels, and in emission control applications.

For the remainder of 2023, we believe weaker demand fundamentals may adversely impact sales of virgin sulfuric acid into nylon production. In addition, we anticipate declining global polyethylene demand and lower polyethylene production plant operating rates may adversely impact sales of polyethylene catalysts.

Sales in our Ecoservices and Catalyst Technologies segments are made on both a purchase order basis and pursuant to long-term contracts.

Our Catalyst Technologies segment may experience demand fluctuations based upon the timing of some of our customer's fixed bed catalyst replacements.

Cost of Goods Sold

Cost of goods sold consists of variable product costs, fixed manufacturing expenses, depreciation expense and freight expenses. Variable product costs include all raw materials, energy and packaging costs that are directly related to the manufacturing process. Fixed manufacturing expenses include all plant employment costs, manufacturing overhead and periodic maintenance costs.

The primary raw materials for our Ecoservices segment include spent sulfuric acid, sulfur, acids, bases (including sodium hydroxide, or "caustic soda"), and certain metals. Spent sulfuric acid for our Ecoservices segment is supplied by customers for a nominal charge as part of their contracts. The primary raw materials used in the manufacture of products in our Catalyst Technologies segment include sodium silicate and cesium hydroxide. During the second quarter of 2023, inflationary pressures began to ease, which reduced the cost of goods for sulfur, energy, logistics and other raw materials.

Most of our Ecoservices contracts feature take-or-pay volume protection and/or quarterly price adjustments for commodity inputs, labor, the Chemical Engineering Index (U.S. chemical plant construction cost index) and natural gas. Over 80% of our Ecoservices segment sales for the year ended December 31, 2022 were under contracts featuring quarterly price adjustments. The price adjustments generally reflect actual costs for producing acid and tend to protect us from volatility in labor, fixed costs and raw material pricing. The take-or-pay volume protection allows us to cover fixed costs through intermittent, temporary production issues at customer refineries.

While natural gas is not a direct feedstock for any product, natural gas powered machinery and equipment are used to heat raw materials and create the chemical reactions necessary to produce end-products. We maintain multiple suppliers wherever possible and structure our customer contracts when possible to allow for the pass-through of raw material, labor and natural gas costs.

Joint Venture

We account for our investments in our equity joint ventures under the equity method. Our joint venture, the Zeolyst Joint Venture, manufactures high-performance, specialty, zeolite-based catalysts, used in emission control, refining and petrochemical industry applications and by the broader chemicals industry. Demand for the Zeolyst Joint Venture products fluctuates based upon the timing of our customer's fixed bed catalyst replacements. We share proportionally in the management of our joint venture with the other parties to such joint venture.

Seasonality

Our regeneration services product group, which is a part of our Ecoservices segment, typically experiences seasonal fluctuations as a result of higher demand for gasoline products in the summer months and lower demand in the winter months. These demand fluctuations generally result in higher sales and working capital requirements in the second and third quarter.

Foreign Currency

As a global business, we are subject to the impact of gains and losses on currency translations, which occur when the financial statements of foreign operations are translated into U.S. dollars. We operate in various geographies with approximately 6% of our sales for the nine months ended September 30, 2023 and for the year ended December 31, 2022 in currencies other than the U.S. dollar. Because our consolidated financial results are reported in U.S. dollars, sales or earnings generated in currencies other than the U.S. dollar can result in a significant increase or decrease in the amount of those sales and earnings when translated to U.S. dollars. The foreign currency to which we have the most significant exchange rate exposure is the British pound.

Results of Operations

Three Months Ended September 30, 2023 Compared to the Three Months Ended September 30, 2022

Highlights

The following is a summary of our financial performance for the three months ended September 30, 2023 compared to the three months ended September 30, 2022.

Sales

- Sales decreased $59.2 million to $173.3 million. The decrease in sales was primarily due to the result of the pass-through of lower sulfur costs within our virgin sulfuric acid product group and lower sales volume.

Gross Profit

- Gross profit decreased $14.5 million to $53.2 million. The decrease in gross profit was primarily due to lower sales volume and higher manufacturing costs.

Operating Income

- Operating income decreased by $6.5 million to $32.0 million. The decrease in operating income was due to a decrease in gross profit, offset by lower selling, general and administrative expenses and other operating expenses.

Equity in Net Income of Affiliated Companies

- Equity in net income of affiliated companies for the three months ended September 30, 2023 was $4.7 million, compared to $3.2 million for the three months ended September 30, 2022. The increase of $1.5 million was due to higher earnings generated by the Zeolyst Joint Venture for the three months ended September 30, 2023, driven by higher sales volume of catalyst used in the production of renewable fuels and hydrocracking catalysts.

The following is our unaudited condensed consolidated statements of income and a summary of financial results for the three months ended September 30, 2023 and 2022:

	Three months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Sales	$ 173.3	$ 232.5	$ (59.2)	(25.5)%
Cost of goods sold	120.1	164.8	(44.7)	(27.1)%
Gross profit	53.2	67.7	(14.5)	(21.4)%
Gross profit margin	*30.7 %*	*29.1 %*		
Selling, general and administrative expenses	16.9	21.5	(4.6)	(21.4)%
Other operating expense, net	4.3	7.7	(3.4)	(44.2)%
Operating income	32.0	38.5	(6.5)	(16.9)%
Operating income margin	*18.4 %*	*16.6 %*		
Equity in net (income) from affiliated companies	(4.7)	(3.2)	(1.5)	46.9 %
Interest expense, net	11.8	9.5	2.3	24.2 %
Other expense, net	0.4	1.9	(1.5)	(78.9)%
Income before income taxes	24.5	30.3	(5.8)	(19.1)%
Provision for income taxes	7.9	9.0	(1.1)	(12.2)%
Effective tax rate	*32.3 %*	*29.6 %*		
Net income	$ 16.6	$ 21.3	$ (4.7)	(22.1)%

Sales

	Three months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Sales:				
Ecoservices	$ 147.6	$ 195.7	$ (48.1)	(24.6)%
Catalyst Technologies	25.7	36.8	(11.1)	(30.2)%
Total sales	$ 173.3	$ 232.5	$ (59.2)	(25.5)%

Ecoservices: Sales in Ecoservices for the three months ended September 30, 2023 were $147.6 million, a decrease of $48.1 million, or 24.6%, compared to sales of $195.7 million for the three months ended September 30, 2022. The decrease in sales was due to lower sales volume of $9.3 million and lower average selling prices of $38.8 million, inclusive of the negative impact associated with the pass-through of lower sulfur costs of approximately $39 million.

Lower average selling prices were primarily a result of the pass-through of lower sulfur costs of approximately $39 million within our virgin sulfuric acid product group. The decrease in sales volume was primarily related to the lower end use demand of virgin sulfuric acid, primarily into the production of nylon intermediates during the quarter.

Catalyst Technologies: Sales in Catalyst Technologies for the three months ended September 30, 2023 were $25.7 million, a decrease of $11.1 million, or 30.2%, compared to sales of $36.8 million for the three months ended September 30, 2022. Of the decrease in sales, $13.3 million was associated with lower sales volume, which was partially offset by higher average selling prices of $1.5 million and $0.7 million of favorable foreign exchange.

The decrease in sales volume was primarily driven by lower end use demand for polyethylene catalysts associated with destocking and lower customer operating rates and the absence of certain niche custom catalyst sales realized in the third quarter of 2022 that did not occur in the third quarter of 2023. Higher average selling prices was driven by the implemented price increases.

Gross Profit

Gross profit for the three months ended September 30, 2023 was $53.2 million, a decrease of $14.5 million, or 21.4%, compared to $67.7 million for the three months ended September 30, 2022. The decrease in gross profit was primarily due to unfavorable manufacturing costs, including higher variable and maintenance costs, and lower sales volume of $0.9 million, partially offset by favorable average selling prices of $1.7 million, exclusive of the pass-through of lower sulfur costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses for the three months ended September 30, 2023 were $16.9 million, a decrease of $4.6 million, compared to $21.5 million for the three months ended September 30, 2022. The decrease in selling, general and administrative expenses was primarily due to a decrease in other compensation-related expenses of $3.9 million and a decrease in stock compensation of $1.3 million due to fewer overall awards granted and outstanding for the three months ended September 30, 2023 as compared to the prior year period. This was partly offset by an increase in professional fees of $1.1 million primarily related to consulting and recruiting charges.

Other Operating Expense, Net

Other operating expense, net for the three months ended September 30, 2023 was $4.3 million, a decrease of $3.4 million, compared to $7.7 million for the three months ended September 30, 2022. The decrease in other operating expense, net was primarily due to $2.0 million decrease in restructuring, integration and business optimization costs, driven by severance charges incurred in the prior period from contracts associated with former executives and a decrease of $1.6 million in transactions costs, primarily associated with the sale of the Performance Chemicals business in 2021 and costs associated with share repurchases.

Equity in Net Income of Affiliated Companies

Equity in net income of affiliated companies for the three months ended September 30, 2023 was $4.7 million, compared to $3.2 million for the three months ended September 30, 2022. The increase was due to $1.5 million of higher earnings from the Zeolyst Joint Venture during the three months ended September 30, 2023, as compared to the three months ended September 30, 2022. The increase in earnings from the Zeolyst Joint Venture was due to higher sales volume of catalyst used in the production of renewable fuels and hydrocracking catalysts.

Interest Expense, Net

Interest expense, net for the three months ended September 30, 2023 was $11.8 million, an increase of $2.3 million, as compared to $9.5 million for the three months ended September 30, 2022. The increase in interest expense, net was primarily due to the year over year increase in variable rates, which was partially offset by lower outstanding debt during the three months ended September 30, 2023, as compared to the three months ended September 30, 2022 and benefits associated with the interest rate caps.

Other Expense, Net

Other expense, net for the three months ended September 30, 2023 was $0.4 million, a change of $1.5 million, as compared to $1.9 million for the three months ended September 30, 2022. The decrease in other expense, net primarily relates to lower foreign currency exchange of $0.4 million mainly related to the non-permanent intercompany debt denominated in local currency and translated to the U.S. dollar, a lower net periodic benefit for the defined benefit pension and postretirement plans of $0.3 million and $0.4 million in other income.

Provision for Income Taxes

The provision for income taxes for the three months ended September 30, 2023 was $7.9 million, compared to a $9.0 million provision for the three months ended September 30, 2022. The effective income tax rate for the three months ended September 30, 2023 was 32.3%, compared to 29.6% for the three months ended September 30, 2022.

The Company’s quarter over quarter effective income tax rate has fluctuated primarily due to the impact of the Section 162m Compensation disallowance on the Company’s annualized effective tax rate, discrete tax benefit related to a stock compensation shortfall and a discrete tax benefit associated with state and local tax law changes. The difference between the U.S. federal statutory income tax rate and the Company’s effective income tax rate for the three months ended September 30, 2023 was mainly due to state and local taxes, a discrete shortfall tax expense related to stock compensation, a discrete tax expense associated with the recording of accrued penalties and interest associated with historical uncertain tax positions, and a discrete tax benefit connected to state and local tax law changes.

Net Income

For the foregoing reasons, net income was $16.6 million for the three months ended September 30, 2023, compared to $21.3 million for the three months ended September 30, 2022.

Adjusted EBITDA

Summarized Adjusted EBITDA information is shown below in the following table:

	Three months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Adjusted EBITDA:[1]				
Ecoservices	$ 54.7	$ 64.1	$ (9.4)	(14.7)%
Catalyst Technologies[2]	16.4	19.3	(2.9)	(15.0)%
Unallocated corporate expenses	(3.2)	(8.0)	4.8	(60.0)%
Total	$ 67.9	$ 75.4	$ (7.5)	(9.9)%

(1) We define Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Our management evaluates the performance of our segments and allocates resources based primarily on Adjusted EBITDA. Adjusted EBITDA does not represent cash flow for periods presented and should not be considered as an alternative to net income as an indicator of our operating performance or as an alternative to cash flows as a source of liquidity. Adjusted EBITDA may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(2) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment was $9.6 million for the three months ended September 30, 2023, which includes $4.7 million of equity in net income, excluding $1.6 million of amortization of investment in affiliate step-up plus $3.3 million of joint venture depreciation, amortization and interest. The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment was $8.7 million for the three months ended September 30, 2022, which includes $3.2 million of equity in net income, excluding $1.6 million of amortization of investment in affiliate step-up plus $3.9 million of joint venture depreciation, amortization and interest.

Ecoservices: Adjusted EBITDA for the three months ended September 30, 2023 was $54.7 million, a decrease of $9.4 million, or 14.7%, compared to $64.1 million for the three months ended September 30, 2022. The decrease in Adjusted EBITDA was a result of lower virgin sulfuric acid sales volume and higher costs associated with increased maintenance and networking costs arising from production downtime in July at our Dominguez site.

Catalyst Technologies: Adjusted EBITDA for the three months ended September 30, 2023 was $16.4 million, a decrease of $2.9 million, or 15.0%, compared to $19.3 million for the three months ended September 30, 2022. The decrease in Adjusted EBITDA was primarily a result of lower sales of silica-based catalysts, partially offset by the impact of higher sales in the Zeolyst Joint Venture and higher pricing.

A reconciliation of net income to Adjusted EBITDA is as follows:

	Three months ended September 30, 2023	2022
	(in millions)	
Reconciliation of net income to Adjusted EBITDA		
Net income	$ 16.6	$ 21.3
Provision for income taxes	7.9	9.0
Interest expense, net	11.8	9.5
Depreciation and amortization	21.3	19.6
EBITDA	57.6	59.4
Joint venture depreciation, amortization and interest[(a)]	3.3	3.9
Amortization of investment in affiliate step-up[(b)]	1.6	1.6
Net loss on asset disposals[(c)]	1.0	0.5
Foreign currency exchange loss[(d)]	0.8	1.0
LIFO benefit[(e)]	—	(0.4)
Transaction and other related costs[(f)]	0.2	1.8
Equity-based compensation	3.5	4.7
Restructuring, integration and business optimization expenses[(g)]	0.3	2.3
Other[(h)]	(0.4)	0.6
Adjusted EBITDA	$ 67.9	$ 75.4

(a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Catalyst Technologies segment includes our 50% interest in the Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of the Zeolyst Joint Venture.

(b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in the Zeolyst Joint Venture as a result of the combination of the businesses of PQ Holdings Inc. and Eco Services Operations LLC in May 2016. We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of the Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with intangible assets, including customer relationships and technical know-how.

(c) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.

(d) Reflects the exclusion of the foreign currency transaction gains and losses in the statements of income related to the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.

(e) Represents non-cash adjustments to the Company's LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, effectively reflecting the results as if these inventories were valued using the FIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.

(f) Relates to certain transaction costs, including debt financing, due diligence and other costs related to transactions that are completed, pending or abandoned, that we believe are not representative of our ongoing business operations.

(g) Includes the impact of restructuring, integration and business optimization expenses, which are incremental costs that are not representative of our ongoing business operations.

(h) Other consists of adjustments for items that are not core to our ongoing business operations. These adjustments include environmental remediation and other legal costs, expenses for capital and franchise taxes, and defined benefit pension and postretirement plan (benefits) costs, for which our obligations are under plans that are frozen. Also included in this amount are adjustments to eliminate the benefit realized in cost of goods sold of the allocation of a portion of the contract manufacturing payments under the five-year agreement with the buyer of the Performance Chemicals business to the financing obligation under the failed sale-leaseback. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

Adjusted Net Income

Summarized adjusted net income information is shown below in the following table:

	Three months ended September 30,					
	2023			2022		
	Pre-tax	Tax expense (benefit)	After-tax	Pre-tax	Tax expense (benefit)	After-tax
	(in millions)					
Reconciliation of net income to Adjusted Net Income[(1)(2)]						
Net income	$ 24.5	$ 7.9	$ 16.6	$ 30.3	$ 9.0	$ 21.3
Amortization of investment in affiliate step-up[(b)]	1.6	0.5	1.1	1.6	0.5	1.1
Net loss on asset disposals[(c)]	1.0	0.3	0.7	0.5	0.2	0.3
Foreign currency exchange loss[(d)]	0.8	0.2	0.6	1.0	0.2	0.8
LIFO benefit[(e)]	—	—	—	(0.4)	(0.1)	(0.3)
Transaction and other related costs[(f)]	0.2	0.1	0.1	1.8	0.5	1.3
Equity-based compensation	3.5	0.3	3.2	4.7	0.1	4.6
Restructuring, integration and business optimization expenses[(g)]	0.3	0.1	0.2	2.3	0.7	1.6
Other[(h)]	(0.4)	(0.1)	(0.3)	0.6	0.2	0.4
Adjusted Net Income	$ 31.5	$ 9.3	$ 22.2	$ 42.4	$ 11.3	$ 31.1

(1) We define adjusted net income as net income adjusted for non-operating income or expense and the impact of certain non-cash or other items that are included in net income that we do not consider indicative of our ongoing operating performance. Adjusted net income is presented as a key performance indicator as we believe it will enhance a prospective investor’s understanding of our results of operations and financial condition. Adjusted net income may not be comparable with net income or adjusted net income as defined by other companies.

(2) Refer to the Adjusted EBITDA notes above for more information with respect to each adjustment.

The adjustments to net income are shown net of applicable tax rates as determined by the calculation of our quarterly tax provision under interim financial reporting for the three months ended September 30, 2023 and September 30, 2022, except for the foreign currency exchange (gain) loss and equity-based compensation. The tax effect on equity-based compensation is derived by removing the tax effect of any equity-based compensation expense disallowed as a result of its inclusion within IRC Sec. 162(m), and adding the tax effect of equity-based stock compensation shortfall recorded as a discrete item. The tax effect of the foreign currency exchange (gain) loss is derived from tax effecting the actual year to date foreign currency exchange (gain) loss by the respective local country statutory rates which is recorded as a discrete item.

Results of Operations

Nine Months Ended September 30, 2023 Compared to the Nine Months Ended September 30, 2022

Highlights

The following is a summary of our financial performance for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022.

Sales

- Sales decreased $119.1 million to $518.3 million. The decrease in sales was primarily due to lower sales volume and the result of the pass-through of lower sulfur costs within our virgin sulfuric acid product group.

Gross Profit

- Gross profit decreased $24.7 million to $150.6 million. The decrease in gross profit was primarily due to higher manufacturing costs and lower sales volume.

Operating Income

- Operating income decreased by $8.5 million to $73.9 million. The decrease in operating income was due to a decrease in gross profit, offset by lower selling, general and administrative expenses and other operating expenses.

Equity in Net Income of Affiliated Companies

- Equity in net income of affiliated companies for the nine months ended September 30, 2023 was $16.3 million, compared to $17.4 million for the nine months ended September 30, 2022. The decrease of $1.1 million was due to lower earnings from the Zeolyst Joint Venture during the nine months ended September 30, 2023.

The following is our unaudited condensed consolidated statements of income and a summary of financial results for the nine months ended September 30, 2023 and 2022:

	Nine months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Sales	$ 518.3	$ 637.4	$ (119.1)	(18.7)%
Cost of goods sold	367.7	462.2	(94.5)	(20.4)%
Gross profit	150.6	175.3	(24.7)	(14.1)%
Gross profit margin	*29.1 %*	*27.5 %*		
Selling, general and administrative expenses	59.5	67.8	(8.3)	(12.2)%
Other operating expense, net	17.2	25.1	(7.9)	(31.5)%
Operating income	73.9	82.4	(8.5)	(10.3)%
Operating income margin	*14.3 %*	*12.9 %*		
Equity in net (income) from affiliated companies	(16.3)	(17.4)	1.1	(6.3)%
Interest expense, net	30.8	26.9	3.9	14.5 %
Other expense, net	0.6	2.5	(1.9)	(76.0)%
Income before income taxes	58.8	70.4	(11.6)	(16.5)%
Provision for income taxes	17.6	22.0	(4.4)	(20.0)%
Effective tax rate	*29.9 %*	*31.2 %*		
Net income	$ 41.2	$ 48.4	$ (7.2)	(14.9)%

Sales

	Nine months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Sales:				
Ecoservices	$ 443.4	$ 542.7	$ (99.3)	(18.3)%
Catalyst Technologies	74.9	94.7	(19.8)	(20.9)%
Total sales	$ 518.3	$ 637.4	$ (119.1)	(18.7)%

Ecoservices: Sales in Ecoservices for the nine months ended September 30, 2023 were $443.4 million, a decrease of $99.3 million, or 18.3%, compared to sales of $542.7 million for the nine months ended September 30, 2022. The decrease in sales reflects lower sales volume of $60.3 million and the negative impact associated with the pass-through of sulfur costs of approximately $75 million, offset by higher average selling pricing of $39.0 million, after adjusting for the impact of the pass-through of sulfur costs.

Sales volume was lower primarily due to lower virgin sulfuric acid sales associated with the adverse impact of Winter Storm Elliott earlier in the year, extended maintenance turnaround activity at our facilities that limited our ability to produce inventory in advance of significant planned turnaround activity to meet customer demand, and lower end use demand of virgin sulfuric acid, primarily into the production of nylon intermediates during the nine months ended September 30, 2023.

Catalyst Technologies: Sales in Catalyst Technologies for the nine months ended September 30, 2023 were $74.9 million, a decrease of $19.8 million, or 20.9%, compared to sales of $94.7 million for the nine months ended September 30, 2022. The decrease in sales was due to lower sales volume of $26.0 million, lower average selling prices of $6.4 million and the unfavorable effects of foreign currency of $0.2 million.

The decrease in sales volume was primarily driven by lower end use demand for polyethylene catalysts during the nine months ended September 30, 2023. The lower average selling prices were driven by customer mix.

Gross Profit

Gross profit for the nine months ended September 30, 2023 was $150.6 million, a decrease of $24.7 million, or 14.1%, compared to $175.3 million for the nine months ended September 30, 2022. The decrease in gross profit is primarily driven by lower sales volume of $23.6 million as well as unfavorable manufacturing costs of $43.5 million, partially offset by favorable average selling prices of $42.4 million, exclusive of the pass-through of sulfur costs.

Sales volume was lower primarily due to lower virgin sulfuric acid sales and lower polyethylene catalysts sales. The unfavorable manufacturing costs was primarily driven by costs related to the extended maintenance turnaround activity, planned turnaround activity, and higher unplanned repair and maintenance costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses for the nine months ended September 30, 2023 was $59.5 million, a decrease of $8.3 million, as compared to $67.8 million for the nine months ended September 30, 2022. The decrease in selling, general and administrative expenses was mainly due to a decrease in other compensation-related expenses of $7.3 million and a decrease in stock-based compensation expense of $4.9 million due to fewer overall awards granted and outstanding for the nine months ended September 30, 2023 as compared to the prior year period. This was partly offset by an increase in professional fees of $3.6 million primarily related to consulting and recruiting charges.

Other Operating Expense, Net

Other operating expense, net for the nine months ended September 30, 2023 was $17.2 million, a decrease of $7.9 million, compared to $25.1 million for the nine months ended September 30, 2022. The decrease in other operating expense, net was mainly driven by a decrease of $4.0 million in transactions costs, primarily associated with the sale of the Performance Chemicals business and a decrease of $5.4 million in restructuring, integration and business optimization costs driven by severance charges incurred in the prior period from contracts associated with former executives. This was also offset by an increase in net losses on asset disposals of $2.2 million, primarily associated with costs related to Winter Storm Elliott.

Equity in Net Income of Affiliated Companies

Equity in net income of affiliated companies for the nine months ended September 30, 2023 was $16.3 million, compared to $17.4 million for the nine months ended September 30, 2022. The decrease was due to lower earnings from the Zeolyst Joint Venture during the nine months ended September 30, 2023.

Interest Expense, Net

Interest expense, net for the nine months ended September 30, 2023 was $30.8 million, an increase of $3.9 million, as compared to $26.9 million for the nine months ended September 30, 2022. The increase in interest expense, net was primarily due to year over year increase in variable rates, which was partially offset by lower outstanding debt during the nine months ended September 30, 2023, as compared to the nine months ended September 30, 2022 and the benefits associated with our interest rate caps, which included an adjustment related to prior year interest rate amortization.

Other Expense, Net

Other expense, net for the nine months ended September 30, 2023 was $0.6 million, a decrease of $1.9 million, as compared to $2.5 million for the nine months ended September 30, 2022. The decrease in other expense, net primarily consisted of favorable foreign currency exchange of $2.2 million mainly related to the non-permanent intercompany debt denominated in local currency and translated to the U.S. dollar.

Provision for Income Taxes

The provision for income taxes for the nine months ended September 30, 2023 was $17.6 million, compared to a $22.0 million for the nine months ended September 30, 2022. The effective income tax rate for the nine months ended September 30, 2023 was 29.9%, compared to 31.2% for the nine months ended September 30, 2022. The Company's effective income tax rate fluctuated primarily due to a reduced discrete tax impact related to a stock compensation shortfall and a discrete tax benefit associated with state and local tax law changes.

The difference between the U.S. federal statutory income tax rate and the Company's effective income tax rate for the nine months ended September 30, 2023 was mainly due to state and local taxes, a discrete shortfall tax expense related to stock compensation, a discrete tax expense associated with the recording of accrued penalties and interest associated with historical uncertain tax positions, and a discrete tax benefit connected to state and local tax law changes.

Net Income

For the foregoing reasons, net income was $41.2 million for the nine months ended September 30, 2023, compared to $48.4 million for the nine months ended September 30, 2022.

Adjusted EBITDA

Summarized Adjusted EBITDA information is shown below in the following table:

	Nine months ended September 30,		Change	
	2023	2022	$	%
	(in millions, except percentages)			
Adjusted EBITDA:[(1)]				
Ecoservices	$ 151.6	$ 173.4	$ (21.8)	(12.6)%
Catalyst Technologies[(2)]	54.7	57.7	(3.0)	(5.2)%
Unallocated corporate expenses	(16.2)	(23.5)	7.3	(31.1)%
Total	$ 190.1	$ 207.6	$ (17.5)	(8.4)%

(1) We define Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Our management evaluates the performance of our segments and allocates resources based primarily on Adjusted EBITDA. Adjusted EBITDA does not represent cash flow for periods presented and should not be considered as an alternative to net income as an indicator of our operating performance or as an alternative to cash flows as a source of liquidity. Adjusted EBITDA may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(2) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $31.3 million for the nine months ended September 30, 2023, which includes $16.4 million of equity in net income, excluding $4.8 million of amortization of investment in affiliate step-up plus $10.1 million of joint venture depreciation, amortization and interest.

The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $34.3 million for the nine months ended September 30, 2022, which includes $17.5 million of equity in net income, excluding $4.8 million of amortization of investment in affiliate step-up plus $12.0 million of joint venture depreciation, amortization and interest.

Ecoservices: Adjusted EBITDA for the nine months ended September 30, 2023 was $151.6 million, a decrease of $21.8 million, or 12.6%, compared to $173.4 million for the nine months ended September 30, 2022. The decrease in Adjusted EBITDA was primarily a result of lower virgin sulfuric acid sales volume related to Winter Storm Elliott and the extended maintenance turnaround activity, higher unplanned repair and maintenance costs and costs associated with planned turnaround activity, partially offset by higher pricing for regeneration services.

Catalyst Technologies: Adjusted EBITDA for the nine months ended September 30, 2023 was $54.7 million, a decrease of $3.0 million or 5.2%, compared to $57.7 million for the nine months ended September 30, 2022. The decrease was primarily a result of a decrease in sales volume offset by continued strong pricing.

A reconciliation of net income to Adjusted EBITDA is as follows:

	Nine months ended September 30, 2023	Nine months ended September 30, 2022
	(in millions)	
Reconciliation of net income to Adjusted EBITDA		
Net income	$ 41.2	$ 48.4
Provision for income taxes	17.6	22.0
Interest expense, net	30.8	26.9
Depreciation and amortization	62.5	58.8
EBITDA	152.1	156.1
Joint venture depreciation, amortization and interest[(a)]	10.1	12.0
Amortization of investment in affiliate step-up[(b)]	4.8	4.8
Net loss on asset disposals[(c)]	3.3	1.2
Foreign currency exchange (gain) loss[(d)]	(0.4)	2.2
LIFO expense[(e)]	2.5	—
Transaction and other related costs[(f)]	2.8	6.9
Equity-based compensation	12.6	17.4
Restructuring, integration and business optimization expenses[(g)]	2.4	8.0
Other[(h)]	(0.1)	(1.0)
Adjusted EBITDA	$ 190.1	$ 207.6

(a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Catalyst Technologies segment includes our 50% interest in the Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of the Zeolyst Joint Venture.

(b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in the Zeolyst Joint Venture as a result of the combination of the businesses of PQ Holdings Inc. and Eco Services Operations LLC in May 2016. We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of the Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with intangible assets, including customer relationships and technical know-how.

(c) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.

(d) Reflects the exclusion of the foreign currency transaction gains and losses in the statements of income related to the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.

(e) Represents non-cash adjustments to the Company’s LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, effectively reflecting the results as if these inventories were valued using the FIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.

(f) Relates to certain transaction costs, including debt financing, due diligence and other costs related to transactions that are completed, pending or abandoned, that we believe are not representative of our ongoing business operations.

(g) Includes the impact of restructuring, integration and business optimization expenses, which are incremental costs that are not representative of our ongoing business operations.

(h) Other consists of adjustments for items that are not core to our ongoing business operations. These adjustments include environmental remediation and other legal costs, expenses for capital and franchise taxes, and defined benefit pension and postretirement plan (benefits) costs, for which our obligations are under plans that are frozen. Also included in this amount are adjustments to eliminate the benefit realized in cost of goods sold of the allocation of a portion of the contract manufacturing payments under the five-year agreement with the buyer of the Performance Chemicals business to the financing obligation under the failed sale-leaseback. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

Adjusted Net Income

Summarized adjusted net income information is shown below in the following table:

	Nine months ended September 30,					
	2023			2022		
	Pre-tax amount	Tax expense (benefit)	After-tax amount	Pre-tax amount	Tax expense (benefit)	After-tax amount
	(in millions)					
Reconciliation of net income to Adjusted Net Income[1][2]						
Net income	$ 58.8	$ 17.6	$ 41.2	$ 70.4	$ 22.0	$ 48.4
Amortization of investment in affiliate step-up[b]	4.8	1.3	3.5	4.8	1.3	3.5
Net loss on asset disposals[c]	3.3	0.9	2.4	1.2	0.3	0.9
Foreign currency exchange (gain) loss[d]	(0.4)	(0.1)	(0.3)	2.2	0.4	1.8
LIFO expense[e]	2.5	0.7	1.8	—	—	—
Transaction and other related costs[f]	2.8	0.8	2.0	6.9	1.7	5.2
Equity-based compensation	12.6	1.1	11.5	17.4	0.6	16.8
Restructuring, integration and business optimization expenses[g]	2.4	0.7	1.7	8.0	2.2	5.8
Other[h]	(0.1)	—	(0.1)	(1.0)	(0.2)	(0.8)
Adjusted Net Income	$ 86.7	$ 23.0	$ 63.7	$ 109.9	$ 28.3	$ 81.6

(1) We define adjusted net income as net income adjusted for non-operating income or expense and the impact of certain non-cash or other items that are included in net income that we do not consider indicative of our ongoing operating performance. Adjusted net income is presented as a key performance indicator as we believe it will enhance a prospective investor's understanding of our results of operations and financial condition. Adjusted net income may not be comparable with net income or adjusted net income as defined by other companies.

(2) Refer to the Adjusted EBITDA notes above for more information with respect to each adjustment.

The adjustments to net income are shown net of applicable tax rates of 27.4% and 27.7% for the nine months ended September 30, 2023 and 2022, respectively, except for the foreign currency exchange (gain) loss and equity-based compensation. The tax effect on equity-based compensation is derived by removing the tax effect of any equity-based compensation expense disallowed as a result of its inclusion within IRC Sec. 162(m), and adding the tax effect of equity-based stock compensation shortfall recorded as a discrete item. The tax effect of the foreign currency exchange (gain) loss is derived from tax effecting the actual year to date foreign currency exchange (gain) loss by the respective local country statutory rates which is recorded as a discrete item.

Financial Condition, Liquidity and Capital Resources

Our primary sources of liquidity consist of cash flows from operations, existing cash balances as well as funds available under our asset based lending revolving credit facility (“ABL Facility”). We expect that ongoing requirements for debt service and capital expenditures will be funded from these sources of funds. Our primary liquidity requirements include funding working capital requirements (primarily inventory and accounts receivable, net of accounts payable and other accrued liabilities), debt service requirements and capital expenditures. Our capital expenditures include both maintenance of business, which include spending on maintenance and health, safety and environmental initiatives as well as growth, which includes spending to drive organic sales growth and cost savings initiatives.

We believe that our existing cash, cash equivalents and cash flows from operations, combined with availability under our ABL Facility, will be sufficient to meet our presently anticipated future cash needs for at least the next twelve months. We may also pursue strategic acquisition or divestiture opportunities, which may impact our future cash requirements. We may, from time to time, increase borrowings under our ABL Facility to meet our future cash needs. As of September 30, 2023, we had cash and cash equivalents of $38.3 million and availability of $70.8 million under our ABL Facility, after giving effect to $4.0 million of outstanding letters of credit, for a total available liquidity of $109.1 million. We did not have any revolving credit facility borrowings as of September 30, 2023. As of September 30, 2023, we were in compliance with all covenants under our debt agreements.

Our ABL Facility has one financial covenant with two ratios to maintain. The first ratio compares the total ABL availability against a threshold: the greater of 10% of the line cap (which is defined as the lesser of our revolving loan commitments and the value of our assets) or $20.0 million. The greater of this threshold cannot be greater than the total availability of the ABL Facility. The second ratio compares the ABL Facility availability of the U.S. revolving credit facility against a $15.0 million threshold. As of September 30, 2023, we were in compliance with the financial covenant under the ABL Facility.

The 2021 Term Loan Facility and the ABL Facility contain various restrictive covenants. Each limits the ability of the Company and its restricted subsidiaries to incur certain indebtedness or liens, merge, consolidate or liquidate, dispose of certain property, make investments or declare or pay dividends, make optional payments, modify certain debt instruments, enter into certain transactions with affiliates, enter into certain sales and leasebacks, and certain other non-financial restrictive covenants. During such time, the Company is required to maintain a fixed-charge coverage ratio of at least 1.0 to 1.0. The Company was in compliance with all debt covenants under the 2021 Term Loan Facility and the ABL Facility as of September 30, 2023.

Included in our cash and cash equivalents balance as of September 30, 2023 was $8.5 million of cash and cash equivalents in foreign jurisdictions. Depending on foreign cash balances, we have certain flexibility to repatriate funds should the need arise. Should the need arise, we would repatriate the funds in the most tax efficient manner from those subsidiaries. Repatriation of foreign cash is generally not subject to U.S. federal income taxes at the time of cash distribution. However, foreign earnings may still be taxed for state income tax purposes, as well as subject to certain foreign withholding tax obligations, when cash amounts are distributed back to the U.S.

Our liquidity requirements include interest payments related to our debt structure. As reported, our cash interest paid for the nine months ended September 30, 2023 and 2022 was approximately $28.5 million and $24.4 million, respectively. Before any impact of hedges, a one percent change in assumed interest rates for our variable interest credit facilities would have an annual impact of approximately $8.8 million on interest expense.

We hedge the interest rate fluctuations on debt obligations through interest rate cap agreements. For more information about our interest rate cap agreements, refer to Note 12 — Financial Instrument of our condensed consolidated financials statements included in Part 1, Item 1 — Financial Statements (Unaudited).

The Company’s off-balance sheet arrangements include $4.0 million of outstanding letters of credit on our ABL Facility as of September 30, 2023.

Cash Flow

	Nine months ended September 30, 2023	Nine months ended September 30, 2022
	(in millions)	
Net cash provided by (used in):		
Operating activities	$ 73.4	$ 109.3
Investing activities	(53.6)	(43.6)
Financing activities	(90.5)	(82.6)
Effect of exchange rate changes on cash and cash equivalents	(1.9)	(2.6)
Net change in cash and cash equivalents	(72.6)	(19.5)
Cash and cash equivalents at beginning of period	110.9	140.9
Cash and cash equivalents at end of period	$ 38.3	$ 121.4

	Nine months ended September 30, 2023	Nine months ended September 30, 2022
	(in millions)	
Net income	$ 41.2	$ 48.4
Non-cash and non-working capital related activities[1]	72.4	106.2
Changes in working capital	(35.0)	(42.5)
Other operating activities	(5.2)	(2.8)
Net cash provided by operating activities	$ 73.4	$ 109.3

(1) Includes depreciation, amortization, amortization of deferred financing costs and original issue discount, foreign currency exchange (gain) loss, deferred income tax provision (benefit), net (gain) loss on asset disposals, stock compensation expense, equity in net income and dividends received from affiliated companies.

	Nine months ended September 30, 2023	Nine months ended September 30, 2022
	(in millions)	
Working capital changes that (used) provided cash:		
Receivables	$ (8.9)	$ (28.4)
Inventories	(3.9)	3.2
Prepaids and other current assets	0.9	(5.2)
Accounts payable	(3.7)	2.0
Accrued liabilities	(19.4)	(14.1)
	$ (35.0)	$ (42.5)

	Nine months ended September 30, 2023	Nine months ended September 30, 2022
	(in millions)	
Purchases of property, plant and equipment	$ (53.6)	$ (39.5)
Payments for business divestiture, net of cash	—	(3.7)
Business combinations, net of cash acquired	—	(0.5)
Other, net	—	0.1
Net cash used in investing activities	$ (53.6)	$ (43.6)

	Nine months ended September 30, 2023	2022
	(in millions)	
Cash repayments on debt obligations	$ (6.8)	$ (6.8)
Repurchases of common shares	(78.7)	(73.7)
Tax withholdings on equity award vesting	(3.4)	(0.3)
Repayment of financing obligation	(2.1)	(1.8)
Other	0.5	—
Net cash used in financing activities	$ (90.5)	$ (82.6)

Net cash provided by operating activities was $73.4 million for the nine months ended September 30, 2023, compared to $109.3 million for the nine months ended September 30, 2022. Cash generated by operating activities, other than changes in working capital was lower by $43.4 million during the nine months ended September 30, 2023, as compared to the same period in the prior year primarily due to a decrease in dividends received from affiliated companies and deferred income tax provision. The increase in cash from working capital during the nine months ended September 30, 2023 of $7.5 million was favorable, compared to the nine months ended September 30, 2022 primarily due to favorable changes in receivables and prepaids and other current assets, offset by unfavorable changes in inventories, accounts payable and accrued liabilities.

The favorable change in receivables was driven by the collection of sales. The favorable change in prepaid and other current assets primarily relates to the timing of non-trade receivables from related parties and the interest rate cap agreements. The unfavorable change in accrued liabilities mainly relates to payments for other compensation-related liabilities in the current period offset by higher income tax payments in the prior period. The unfavorable change in accounts payable is due to the timing of vendor payments. The unfavorable change in inventory was primarily due to the timing of sales orders and inventory build.

Net cash used in investing activities was $53.6 million for the nine months ended September 30, 2023, compared to $43.6 million during the same period in 2022. Cash used in investing activities consisted of $53.6 million and $39.5 million to fund capital expenditures during the nine months ended September 30, 2023 and 2022, respectively. During the nine months ended September 30, 2022, we made an additional payment of $3.7 million related to our divestiture of our Performance Chemicals business representing the final adjustments to the sale price.

Net cash used in financing activities was $90.5 million for the nine months ended September 30, 2023, compared to $82.6 million during the same period in 2022. Net cash used in financing activities was primarily driven by the Company repurchases of common stock of $78.7 million during the nine months ended September 30, 2023, compared to $73.7 million during the nine months ended September 30, 2022.

Debt

	September 30, 2023	December 31, 2022
	(in millions)	
Senior Secured Term Loan Facility due June 2028	$ 879.8	$ 886.5
ABL Facility	—	—
Total debt	879.8	886.5
Original issue discount	(6.5)	(7.5)
Deferred financing costs	(3.6)	(4.1)
Total debt, net of original issue discount and deferred financing costs	869.7	874.9
Less: current portion	(9.0)	(9.0)
Total long-term debt, excluding current portion	$ 860.7	$ 865.9

As of September 30, 2023, our total debt was $879.8 million, excluding the original issue discount of $6.5 million and deferred financing costs of $3.6 million for our senior secured credit facilities. Our net debt as of September 30, 2023 was $841.5 million, including cash and cash equivalents of $38.3 million. We may seek, subject to market conditions and other factors, opportunities to repurchase, refinance or otherwise reprice our debt.

Capital Expenditures

Maintenance capital expenditures include spending on maintenance of business, health, safety and environmental initiatives. Growth capital expenditures include spending to drive organic sales growth and cost savings initiatives. These capital expenditures represent our "book" capital expenditures for which the company has recorded, but not necessarily paid for the capital expenditures.

	Nine months ended September 30,	
	2023	2022
	(in millions)	
Maintenance capital expenditures	$ 42.6	$ 31.5
Growth capital expenditures	5.1	6.0
Total capital expenditures	$ 47.7	$ 37.5

Capital expenditures remained at a level sufficient for required maintenance and certain expansion growth initiatives during these periods. Maintenance capital expenditures were higher in the nine months ended September 30, 2023, compared to the nine months ended September 30, 2022 due to extended turnaround activities and additional expenditures incurred related to Winter Storm Elliott impacting our manufacturing facilities. Growth capital expenditures were slightly lower in the nine months ended September 30, 2023, compared to the nine months ended September 30, 2022 due to the completion of several expansion projects in 2022.

Critical Accounting Policies and Estimates

We prepare our condensed consolidated financial statements in conformity with GAAP and our significant accounting policies are described in Note 2 to our audited consolidated financial statements included in our Annual Report on Form 10-K. The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect reported amounts and related disclosures. We base our estimates and judgments on historical experience and other relevant factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We evaluate our critical accounting estimates, assumptions and judgments on an ongoing basis.

There has been no material change in our critical accounting policies and use of estimates from those described in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," included in our Annual Report on Form 10-K.

Accounting Standards Not Yet Adopted

See Note 2 to our unaudited condensed consolidated financial statements for a discussion of recently issued accounting standards and their effect on us.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Our major market risk exposure is potential losses arising from changing rates and prices regarding foreign currency exchange rate risk, interest rate risk and credit risk. The audit committee of our board of directors regularly reviews foreign exchange and interest rate activity, and monitors compliance with our hedging policy. We do not use financial instruments for speculative purposes, and we limit our hedging activity to the underlying economic exposure.

There have been no material changes in the foreign currency exchange rate risk, interest rate risk or credit risk discussed in Item 7A., "Quantitative and Qualitative Disclosures about Market Risk," included in our Annual Report on Form 10-K.

ITEM 4. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2023, the end of the period covered by this Quarterly Report on Form 10-Q.

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended ("Exchange Act"), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at a reasonable assurance level.

Changes in Internal Control Over Financial Reporting

No changes in our internal control over financial reporting occurred during the quarter ended September 30, 2023 that materially affected, or which are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS.

From time to time, we may be subject to various legal claims and proceedings incidental to the normal conduct of business, relating to such matters as personal injury, product liability and warranty claims, waste disposal practices, release of chemicals into the environment and other matters that may arise in the ordinary course of our business. We currently believe that there is no litigation pending that is likely to have a material adverse effect on our business. Regardless of the outcome, legal proceedings can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

ITEM 1A. RISK FACTORS.

"Item 1A, Risk Factors" in our Annual Report on Form 10-K, as supplemented by "Item 1A, Risk Factors" in our quarterly report on Form 10-Q for the quarter ended March 31, 2023, which we refer to as the First Quarter Form 10-Q, and by "Item 1A, Risk Factors" in our quarterly report on Form 10-Q for the quarter ended June 30, 2023, which we refer to as the Second Quarter Form 10-Q, includes a discussion of our risk factors. The information should be read in conjunction with, the risk factors disclosed in our Annual Report on Form 10-K, as supplemented by our First and Second Quarter Form 10-Q. There have been no material changes from the risk factors described in our Annual Report on Form 10-K, as supplemented by our First and Second Quarter Form 10-Q.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS.

The following table contains information about purchases of our common stock, excluding excise tax, during the third quarter of 2023:

	Total number of shares of common stock purchased		Average price paid per share of common stock [(1)]	Total number of shares of common stock purchased as part of publicly announced plan or programs	Maximum number (or dollar value) of shares of common stock that may yet be purchased under the plans or programs (in thousands)
July 1, 2023—July 31, 2023	220,366	[(2)]	$ 11.37	N/A	N/A
August 1, 2023—August 31, 2023	541,494	[(3)]	$ 9.85	541,494	$ 234,592
September 1, 2023—September 30, 2023	—		$ —	—	$ 234,592
Total	761,860				

(1) Excludes brokerage commissions and other costs of execution.

(2) Represents shares of common stock delivered to the Company by employees to satisfy income tax withholding obligations of the employees in connection with the vesting of restricted stock units.

(3) In April 2022, our Board of Directors approved and announced a new stock repurchase program authorizing the repurchase of up to $450 million of the Company's outstanding common stock over the next four years. This program is expected to be funded using cash on hand and cash generated from operations. We primarily expect to conduct the repurchase program through negotiated transactions with the Company's equity sponsors, as well as through open market repurchases or other means, including through Rule 10b-18 trading plans or through the use of other techniques such as accelerated share repurchases. The actual timing, number and nature of shares repurchased will depend on a variety of factors, including stock, price, trading volume, and general business and market conditions. The repurchase program does not obligate us to acquire any number of shares in any specific period or at all and may be amended, suspended or discontinued at any time at our discretion.

During the three months ended September 30, 2023, the Company repurchased 541,494 shares on the open market at an average price of $9.85 per share, for a total of $5.3 million, excluding brokerage commissions and accrued excise tax.

ITEM 5. OTHER INFORMATION.

Trading Arrangements

During the three months ended September 30, 2023, none of the Company's directors or executive officers adopted or terminated a "Rule 10b5-1 trading arrangement" or "non-Rule 10b5-1 trading arrangement," as each item is defined in Item 408(a) of Regulation S-K.

ITEM 6. EXHIBITS.

The following exhibits are being filed or furnished as part of this Quarterly Report on Form 10-Q:

Exhibit No.	Description
31.1	Certification of Chief Executive Officer of Ecovyst Inc. pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Certification of Chief Financial Officer of Ecovyst Inc. pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	Certification of Chief Executive Officer of Ecovyst Inc. pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2	Certification of Chief Financial Officer of Ecovyst Inc. pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101	The following materials from the Quarterly Report on Form 10-Q of Ecovyst Inc. for the quarter ended September 30, 2023, formatted in Inline XBRL: (i) Condensed Consolidated Statements of Income, (ii) Condensed Consolidated Statements of Comprehensive Income, (iii) Condensed Consolidated Balance Sheets, (iv) Condensed Consolidated Statements of Stockholders' Equity, (v) Condensed Consolidated Statements of Cash Flows, (vi) Notes to Condensed Consolidated Financial Statements and (vii) document and entity information, tagged as blocks of text and including detailed tags
104	The cover page from the Quarterly Report on Form 10-Q of Ecovyst Inc. for the quarter ended September 30, 2023, formatted in Inline XBRL and included as Exhibit 101

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Ecovyst Inc.

Date: November 3, 2023	By: /s/ MICHAEL FEEHAN
	Michael Feehan
	Vice President and Chief Financial Officer
	(Duly Authorized Officer and Principal Financial and Accounting Officer)

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002

I, Kurt J. Bitting, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Ecovyst Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 3, 2023

/s/ KURT J. BITTING
Kurt J. Bitting
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002

I, Michael Feehan, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Ecovyst Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 3, 2023

/s/ MICHAEL FEEHAN
Michael Feehan
Vice President and Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Ecovyst Inc. (the “Company”) on Form 10-Q for the quarterly period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Kurt J. Bitting, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 3, 2023	/s/ KURT J. BITTING
	Kurt J. Bitting
	Chief Executive Officer
	(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Ecovyst Inc. (the “Company”) on Form 10-Q for the quarterly period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Michael Feehan, Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 3, 2023	/s/ MICHAEL FEEHAN
	Michael Feehan
	Vice President and Chief Financial Officer
	(Principal Financial Officer)