



Steel Founders' Society of America

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2024 Industry Market Forecast

Marketing Committee Role

The function of the Marketing Committee is to **broaden the market for and promote the use of steel castings** by investigating and developing new markets, developing and implementing an effective marketing program, and communicating the advantages of steel castings to present and prospective consumers in an effective manner.

To carry out its mission, the committee maintains liaison with other committees of the Society through the staff, identifies technical, business and market topics of interest to customers and SFSA members, directs development of the material and delivery of the information. The committee develops the deliverables for the marketing program such as messaging, competitive input, target market, and specific planning, The committee also performs related market research to help guide the work of the Society and **prepares each year for the Society an annual forecast of steel casting demand.....**

Properties/Chemistry By Standard By Alloy Family By Microstructure By UNS By Wrought Equivalent

Mechanical

Standards specify either a minimum or a range of mechanical properties. Your entered value(s) must be equal to or higher than the minimum or within the range of the maximum or within the range of the minimum and maximum mechanical properties specified for a grade in a standard to have a match result. You can search tensile strength (UTS), yield strength (YS), impact toughness, and rupture strength in Metric (SI) or Imperial System. You only need to input values using one unit and your entered value will automatically be converted to the other unit.

Hardness BHN HBW HRC

Tensile strength ksi or MPa

Yield strength ksi or MPa

Elongation%

Reduction in area%

Impact Foot-pounds or Joules

Impact test temperature in °F or °C

Stress rupture test ksi or MPa

100 hour rupture test MPa at temperature in °C (Optional)

Chemistry

All values are in weight percent (wt%)

Standards specify either a maximum or a range of wt% for various elements. Your entered value(s) must be equal to or lower than the maximum or within the range of the minimum of elements specified for a grade in a standard to have a match result. Elements that are specified as "Others" in a standard are not included in the search algorithm. To see these "Other" elements of a certain grade, click the "Others" tab for that specific grade (either shown in the search results or by going to the other tabs e.g. By Standard)

Al% As% Ba% Bi%

C% Co% Cr%

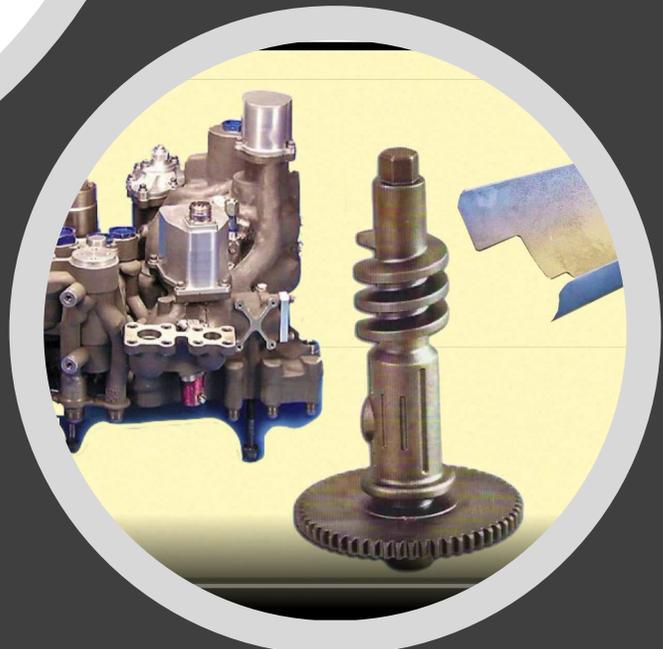
Mn% Mo% Ni% N%

S% Se% Si% Sn%

Ti% V% W%



Customer Education Resources



- Steel Foundry Directory
- Free SFSA Publications
- Online Specification/Material Database
- Customer Webinars
- White Papers
- Foundry Glossary
- **New Steel Casting Design Videos**
- **Handbook Supplement 6 Update**
- **Steel Casting NDT Methods**

RESOURCES

About the Steel Founders' Society

Dedicated to the advancement of the steel casting industry through manufacturing and design R&D, customer education, specifications development, and 120 years of operating and business knowledge

[Join Now](#)

Customer Education

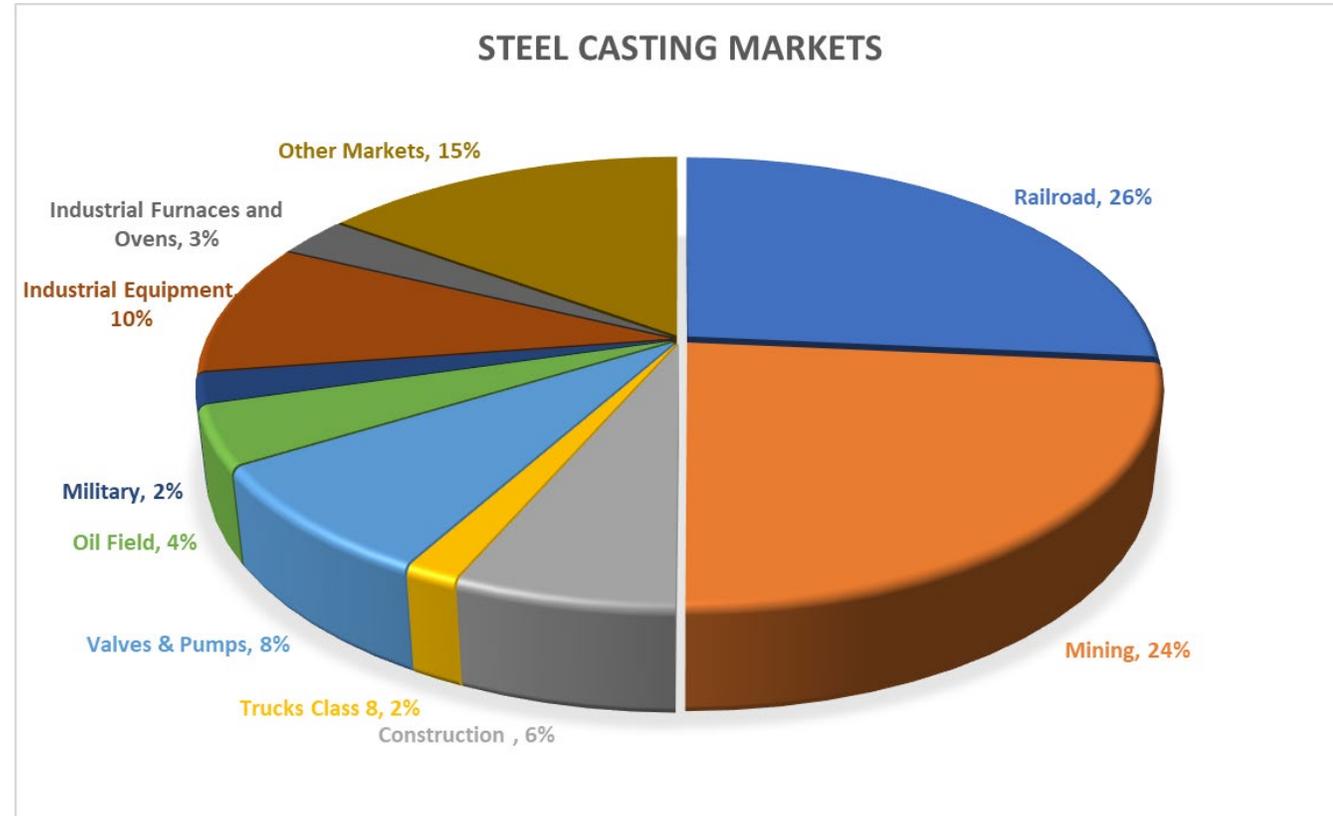
Mold-Metal Challenges

Training

Cas

Forecast Process

- Segmented primary markets
- Identified key customers and users in each market
- Analyze customer top line sales
- Market survey to members
- Leverage customer associations
 - Pumps, Valves, Rail, Equip. Mfg.
- Review analyst reports



Steel Markets Survey

SFSA Markets	Steel Casting Examples
Rail/Transit	frames, couplings, bolsters, track components
Mining - Equipment	axle housing, frame components, suspension, gear case
Mining - Consumables	G.E.T., liners, hammers, grate plates, cement and aggregate components
Construction Equipment	axle components, sprocket, end caps, transmission housing
Truck - Class 8	suspension brackets, brake components, axle spindles, fifth wheels
Pump	housing, impeller, covers, bowls
Valve	strainer bodies, bonnets, butterfly valves
Oil & Gas	port adapters, brackets, levers, slip linkages
Military	ground vehicle and maritime components
Industrial Furnace and Oven Mfg.	Furnace, heat treat, steel mill components - rollers, links, baskets
Industrial Machinery	Industrial equipment parts - pulp & paper, food, shotblast - plates, wheels, sprockets, flanges
OTHER MARKETS	
Agricultural Implement Manufacturing	Agricultural Products - Hitch Links, Sprockets
Electric Power Generation	Power Generation - Coreforms, deflector blocks
Aerospace Product and Parts Manufacturing	Aerospace bearing supports, combustor cases, compressor cases, exhaust diffusers, stationary inlet guides, swirlers
Engine, Turbine, and Power Transmission Equipment	Turbine engine - compressor cases, combustor basket
Special Die and Tool Manufacturing	Dies, Tooling, fixtures

Market Segments – Annual Production

Market	Industry	% of total market prod.	SFSA Members	% of Industry Production
Railroad	267,000	26%	58,500	22%
Mining	246,000	24%	151,500	62%
Valve and Pump	82,700	8%	45,000	54%
Oil & Gas	31,700	3%	18,000	57%
Construction	65,000	6%	15,000	23%
Trucks	17,000	2%	4,500	26%
Military	23,000	2%	18,300	80%
Industrial Equip.	95,200	9%	35,700	38%
Industrial Furn.	26,200	3%	17,000	65%
Other Industrial	171,200	17%	73,000	43%
Total	1,025,000		436,500	43%

The US economy will likely tip into a short and shallow recession in early 2024

THE CONFERENCE BOARD US ECONOMIC OUTLOOK, 2019-2020-2021-2022-2023 Percentage Change, Seasonally Adjusted Annual Rates*

		2021				2022				2023				2024				2020*	2021*	2022*	2023	2024
		I Q*	II Q*	III Q*	IV Q*	I Q*	II Q*	III Q*	IV Q*	I Q*	II Q*	III Q	IV Q	I Q	II Q	III Q	IV Q					
Gross Domestic Product (GDP)	Real GDP	6.3	7.0	2.7	7.0	-1.6	-0.6	3.2	2.6	2.0	2.1	3.0	1.3	-1.0	-0.7	1.9	2.5	-2.8	5.9	2.1	2.2	0.8
	Real GDP (YoY)	1.2	12.5	5.0	5.7	3.7	1.8	1.9	0.9	1.8	2.5	2.4	2.1	1.3	0.6	0.4	0.7	-2.8	5.9	2.1	2.2	0.8
	Real disposable income	52.4	-28.8	-4.6	-4.9	-10.6	-2.3	3.2	2.5	8.5	3.3	0.9	0.6	0.5	0.5	1.0	2.0	6.2	1.9	-6.2	3.6	0.9
	Real consumer spending	10.8	12.1	3.0	3.1	1.3	2.0	2.3	1.0	4.2	1.7	3.8	0.8	-1.1	-1.0	1.2	1.8	-3.0	8.3	2.7	2.5	0.5
	Residential investment	11.6	-4.8	-5.8	-1.1	-3.1	-17.8	-27.1	-25.1	-4.0	-3.6	-2.0	0.0	0.0	2.0	4.0	4.0	7.2	10.7	-10.6	-12.1	0.6
	Nonresidential investment	8.9	9.9	0.6	1.1	7.9	0.1	6.2	4.0	0.6	6.2	1.7	-1.7	-3.7	-2.7	2.5	5.0	-4.9	6.4	3.9	2.9	-0.6
	Inventory change (bln chn '12\$)	-83	-144	-49	198	215	110	39	137	4	-2	-10	0	-10	-15	0	4	-55	-19	125	-2	-5.3
	Total gov't spending	6.5	-3.0	-0.2	-0.9	-2.3	-1.6	3.7	3.8	5.0	3.3	2.0	1.1	1.0	1.8	2.3	2.2	2.6	0.6	-0.6	3.3	1.7
	Exports	0.4	4.8	-1.1	23.5	-4.6	13.8	14.6	-3.7	7.8	-10.6	3.0	3.0	3.0	3.0	3.0	3.0	-13.2	6.1	7.1	2.1	2.1
	Imports	7.6	7.9	6.6	18.6	18.4	2.3	-7.3	-5.5	2.0	-7.0	2.0	-1.0	0.0	1.0	2.5	2.5	-9.0	14.1	8.1	-2.5	0.3
Labor Markets	Unemployment rate (%)	6.2	5.9	5.1	4.2	3.8	3.6	3.6	3.6	3.5	3.6	3.7	3.8	3.8	4.0	4.2	4.1	8.1	5.4	3.6	3.6	4.0
	Labor Force Participation Rate (%)	61.4	61.6	61.7	61.9	62.3	62.2	62.2	62.2	62.5	62.6	62.7	62.8	62.7	62.6	62.5	62.4	61.7	61.7	62.2	62.6	62.6
Inflation & Interest Rates	PCE Inflation (%Y/Y)	1.9	4.0	4.5	5.7	6.4	6.6	6.3	5.7	4.9	3.7	3.2	2.9	2.6	2.3	2.2	2.0	1.1	4.0	6.3	3.6	2.3
	Core PCE Inflation (%Y/Y)	1.7	3.5	3.9	4.7	5.3	5.0	4.9	4.8	4.6	4.4	3.9	3.4	2.9	2.5	2.1	2.0	1.3	3.5	5.0	4.1	2.4
	Fed Funds (% , Midpoint, Period End)	0.125	0.125	0.125	0.125	0.375	1.625	3.125	4.375	4.875	5.125	5.375	5.625	5.625	5.125	4.625	4.125	0.125	0.125	4.375	5.625	4.125

Source: The Conference Board

*Units: Quarterly growth rates are QoQ SAAR unless otherwise noted.
Annual growth rates are year-over-year unless otherwise noted

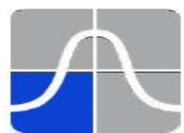


The Manufacturing US Economy At-a-Glance

	12/12	12MMT/A	Current 12/12	2023	2024	2025	Highlights
US Metalworking Machinery New Orders			-6.5	-3.2	-5.0	8.0	The 12MMT will generally decline, to around 5%-8% below the current level, into late 2024, then rise through at least 2025.
US Machinery New Orders			2.1	0.2	-3.0	4.7	12MMT decline is likely in 2024 given elevated interest rates and earlier supply chain improvements.
US Construction Machinery New Orders			12.0	0.8	-14.3	9.7	New Orders rise is largely attributable to pricing; construction machinery inflation is elevated. Upcoming decline will last through 2024.
US Electrical Equipment New Orders			-0.1	6.3	-3.3	4.0	Expect 12/12 rise in the near term, followed by a general Phase C-to-Phase D trajectory in 2024 following housing market trends.
US Computers & Electronics New Orders			3.6	-0.4	-4.4	2.9	The New Orders 12MMT is nearing a peak. It will subsequently decline through 2024. Rise will characterize 2025.
US Defense Capital Goods New Orders			19.3	9.2	-1.0	5.9	New Orders tentatively transitioned to Phase C. New Orders will likely remain elevated due to heightened geopolitical tensions.
North America Light Vehicle Production			15.4	7.7	-4.3	8.3	The Production 12MMT will rise into late this year, then decline through 2024 as high prices and high rates hinder demand.
US Oil & Gas Extraction Production			7.2	6.3	-0.8	2.1	We lifted the forecast to account for data revisions and a thriving natural gas sector. Anticipate 12MMA rise into the first half of 2024.
US Mining Production (excluding oil & gas)			-1.7	0.8	-4.1	3.4	Downside pressure will persist into 2024 as end markets contend with weakness during that time.
US Chemicals & Chemical Products Production			0.5	1.1	-3.1	2.5	Chemical sectors in which prices are declining may see reduced profitability, disincentivizing Production.
US Civilian Aircraft Equipment Production			5.9	3.3	7.2	-1.3	We revised the Production outlook to account for a data revision. 12MMA rise will extend into early 2025.
US Medical Equipment & Supplies Production			5.1	1.2	-0.9	3.5	Constrained hospital finances and investor hesitancy suggest reduced demand ahead. 12MMA decline will persist into late 2024.
US Heavy-Duty Truck Production			13.1	3.1	-12.9	6.3	We revised the outlook due to a data revision. The 12MMA will rise into late this year, then decline through mid-2025.
US Food Production			0.1	0.8	-0.1	0.9	Production is likely to trend below the forecast range in the near term. Expect a general 12MMA plateau into the first half of 2025.

Note: Forecast color represents what Phase the market will be in at the end of the year.

PHASE KEY



Phase A:
Recovery



Phase B:
Accelerating Growth



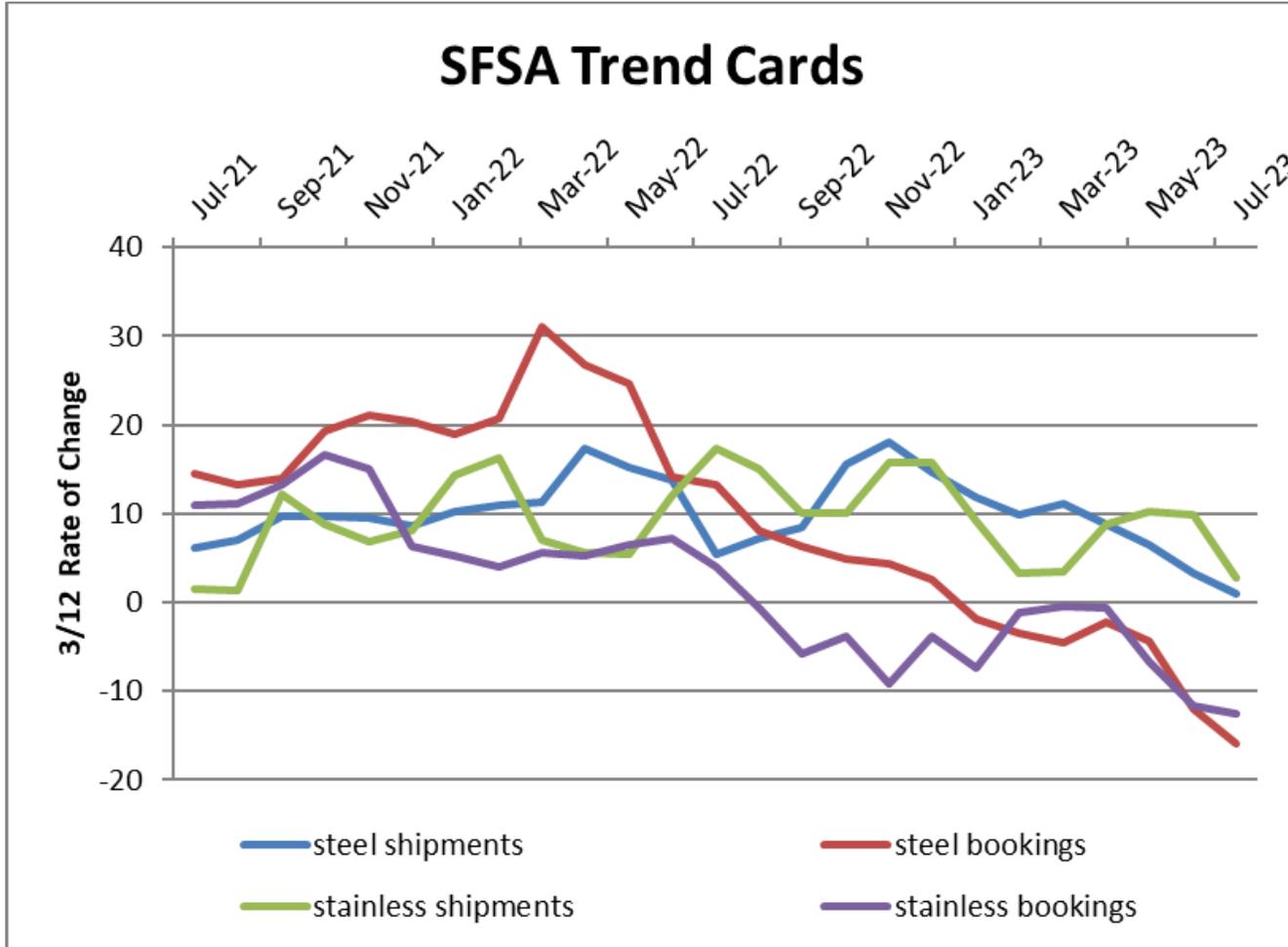
Phase C:
Slowing Growth



Phase D:
Recession

Source: [ITR Economics](#) – September '23 Trends Report

SFSA Trends Report



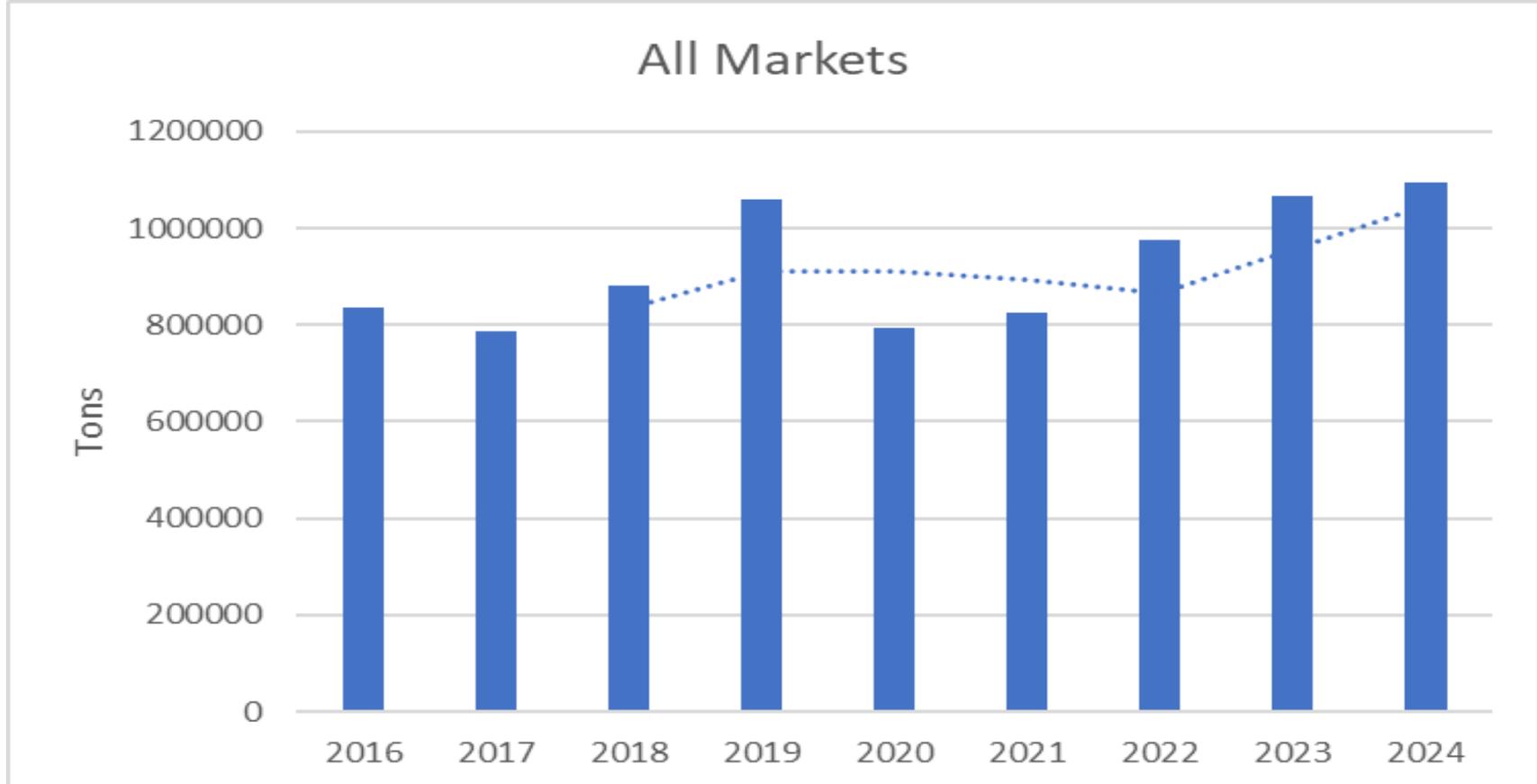
Monthly Business Trends Survey

- YoY comparison of C&LA and stainless steel shipments and bookings
- Current order backlog
- Business bookings – 3 month outlook
- Workforce – 3 month outlook

Current Trends

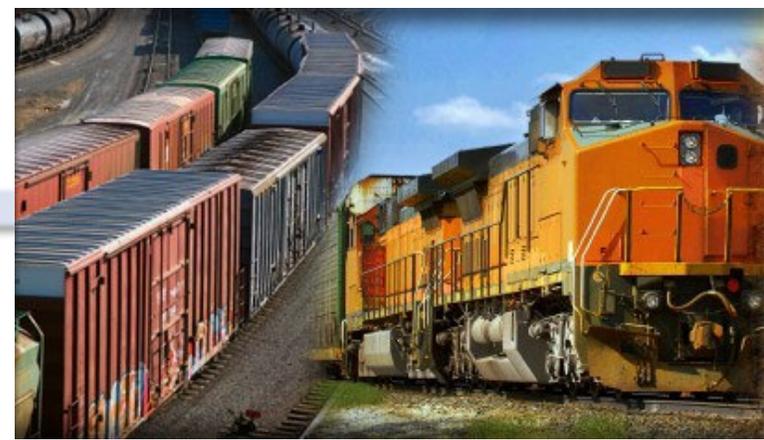
- Bookings and shipments on downward trend since Q1 2023.
- Steel order backlog: 10 weeks
- Stainless order backlog: 9.5 weeks
- 80% of members anticipate bookings will be flat or decrease in next 3 months and are not looking to increase their workforce

Total Steel Castings Market



2023		2024	
Total Market	Excluding Rail	Total Market	Excluding Rail
9%	9%	3%	6%

Rail Forecast



Projected Car Deliveries
 2023 – 43,000
 2024 – 40,000
 2025 – 35,000

Customer Market Sales Forecast

% change from prior year

Railroad	2021	2022	2023	2024
Railroads (sales)	11.9%	14.4%	-1.6%	4.4%
Equipment (sales)	-2.8%	57.5%	29.8%	-3.3%
SFSA Forecast (tonnage)	15%	27%	9%	-6%

Note: Customer market data is percentage change in sales, SFSA forecast is percentage change in tonnage.

Mining Forecast



2023	2024
11%	7%

Equipment

- 2023 Projection – up 5%
- 2024 Forecast – up 5%

Consumables

- 2023 Projection – up 15%
- 2024 Forecast – up 7.5%

Customer Market Sales Forecast

% change from prior year

Mining	2021	2022	2023	2024
Mines (sales)	38%	-7.1%	-8.1%	2%
Equipment (sales)	9.9%	19.8%	11.9%	2.7%
SFSA Consumables (tonnage)	6%	26%	15%	11%
SFSA Equipment (tonnage)	10%	20%	5%	7%

Construction Forecast



- OEM Forecasts
- Elevated interest rates
- Contraction in residential construction

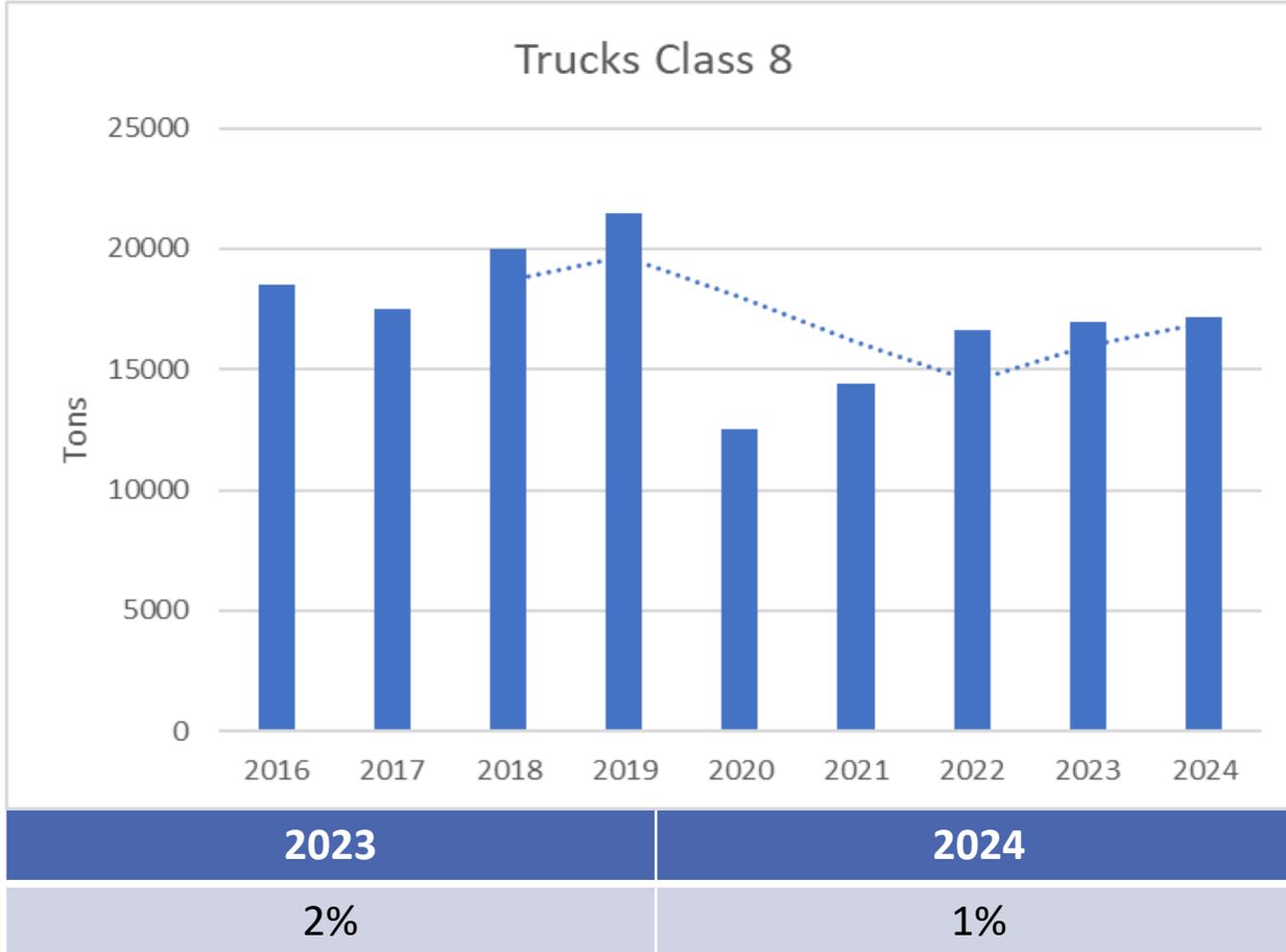
ITR – US Construction machinery new orders - '23: 1%, '24: -14%

Customer Market Sales Forecast

% change from prior year

Construction	2021	2022	2023	2024
Equipment (sales)	16.9%	15.7%	14%	1.8%
SFSA Forecast (tonnage)	15%	5%	0%	5%

Truck Forecast



Class 8 Production Forecast

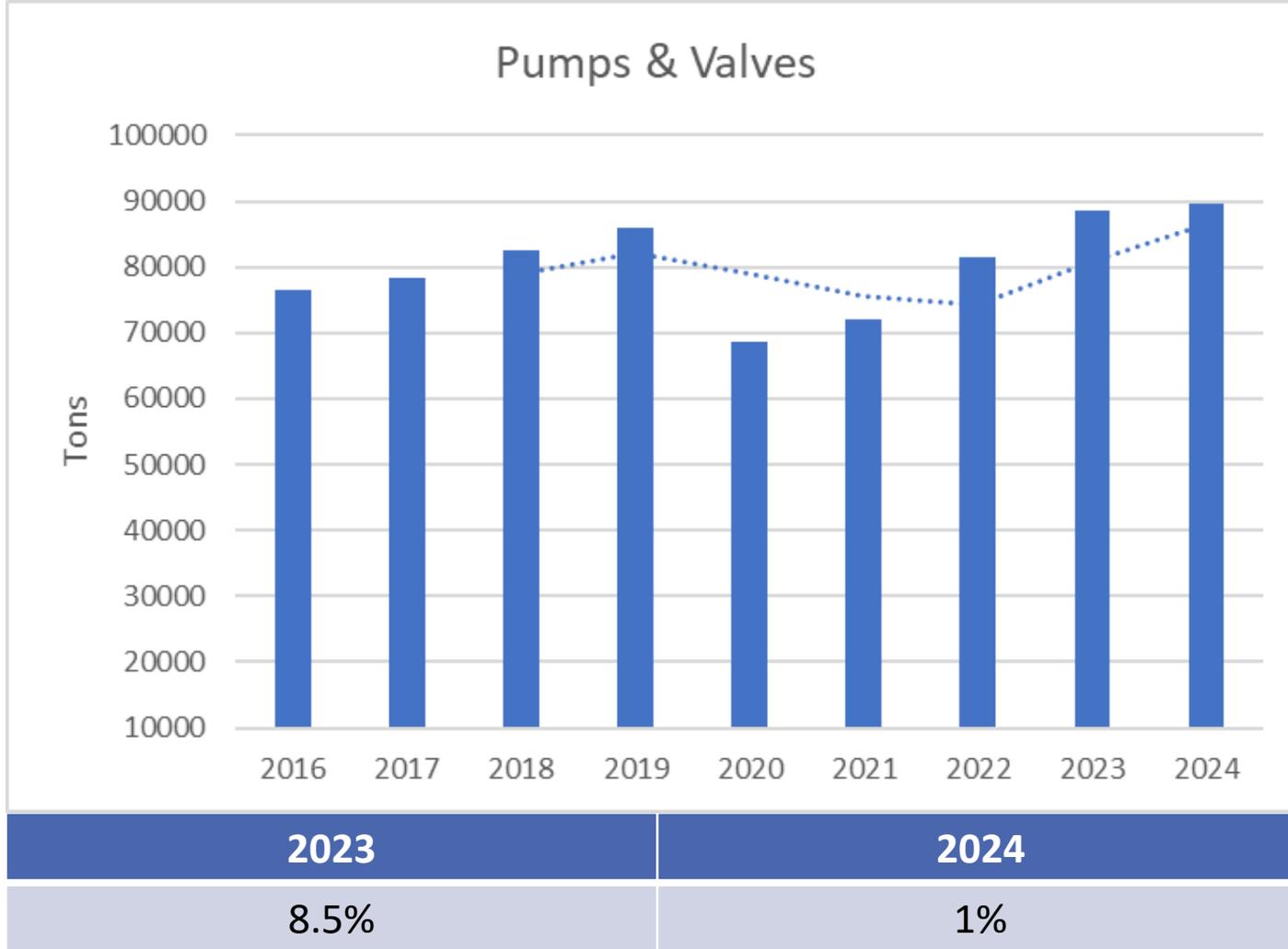
- '22 – 309,615 (actual)
- '23 – 315,000 (projection)
- '24 – 318,000 (forecast)

Customer Market Sales Forecast

% change from prior year

Trucks	2021	2022	2023	2024
Manufacturers (sales)	21.6%	23.1%	11.2%	-2.2%
SFSA Forecast (tonnage)	30%	15%	2%	1%

Pump and Valve Forecast



Projected 2023 vs. 2022 Tonnage

- Pumps – 9%
- Valves – 8%

2024 Forecast

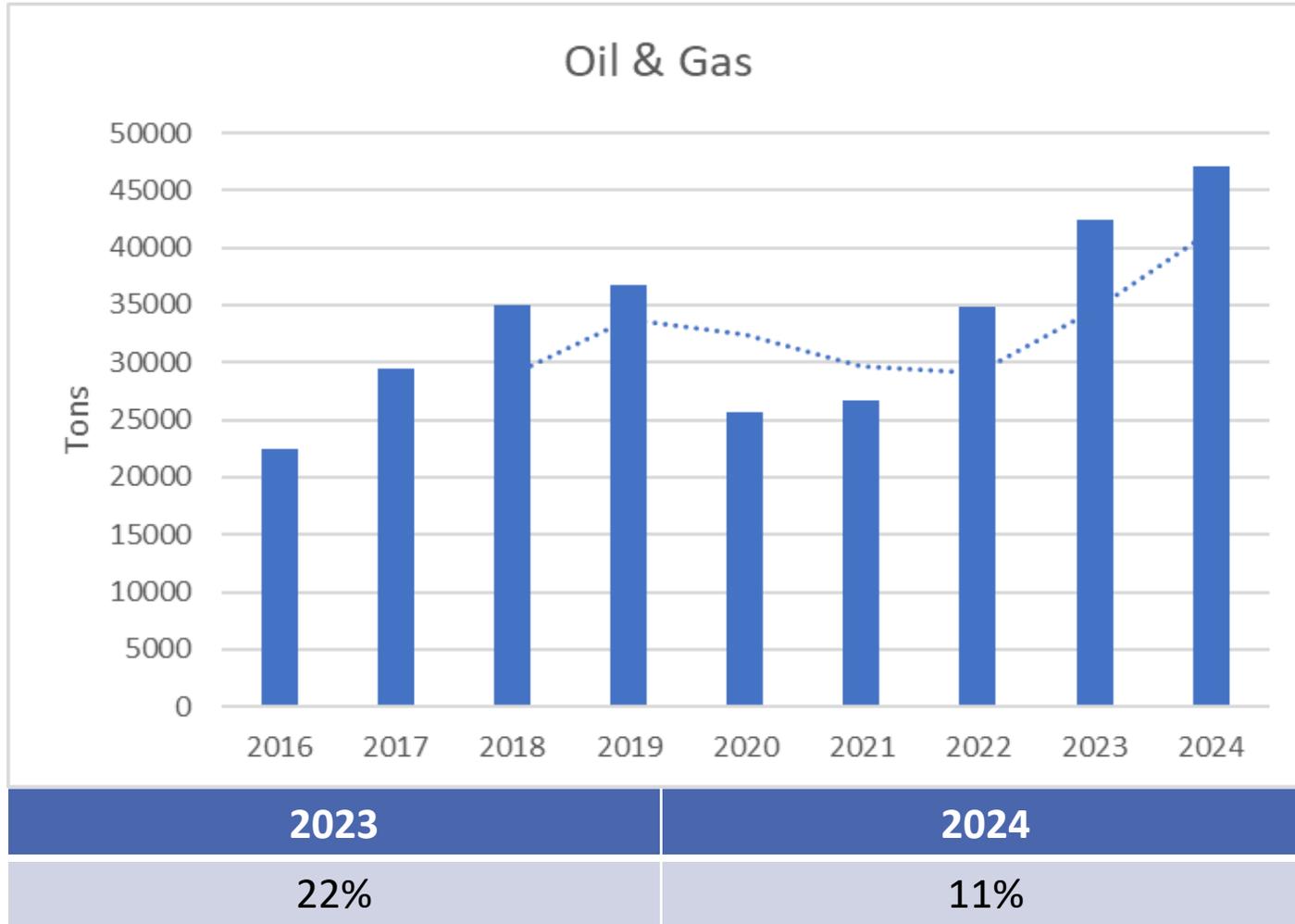
- Pumps – 2%
- Valves – 1%

Customer Market Sales Forecast

% change from prior year

Pumps and Valves	2021	2022	2023	2024
Manufacturers (sales)	8.3%	11.5%	9%	5.4%
SFSA Forecast (tonnage)	5%	13%	8.5%	1%

Oil Field Forecast



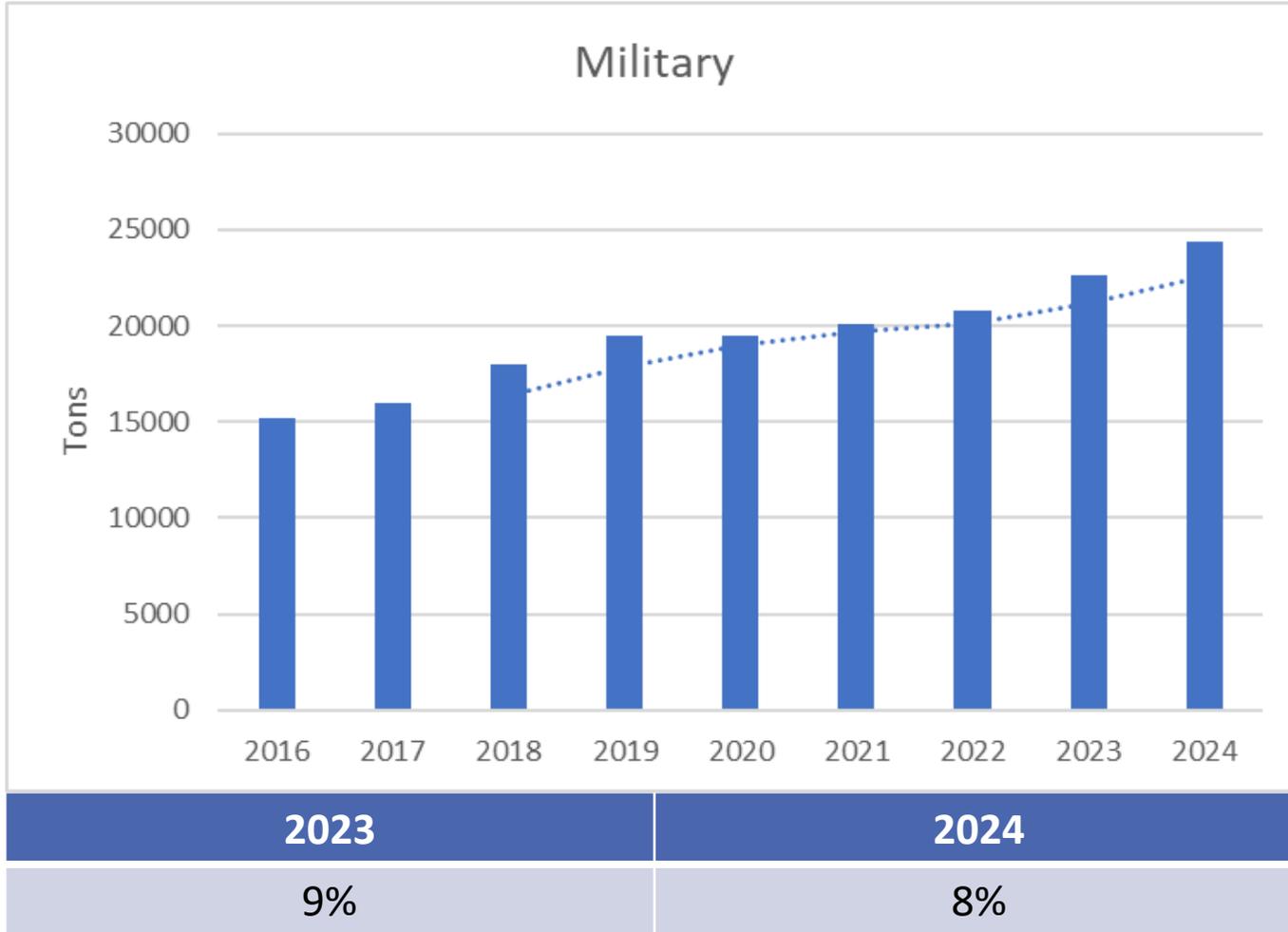
- 2024 – slowing demand due to macroeconomic downturn
- ITR – O&G Production – '23: 6.3%, '24: -0.8%

Customer Market Sales Forecast

% change from prior year

Oil Field	2021	2022	2023	2024
Manufacturers (sales)	-11%	20.8%	15.8%	8.3%
SFSA Forecast (tonnage)	7%	30%	22%	11%

Military Forecast



	Ground Systems	Maritime Systems
FY23	\$12.7B	\$19.3B
FY24	\$12.5B	\$20.9B

- ITR – US Defense Capital Goods New Orders – '23: 9%, '24: -1%

Customer Market Sales Forecast

% change from prior year

Military	2021	2022	2023	2024
Ground Systems (sales)	2.1%	3.9%	7.8%	5.6%
Naval Systems (sales)	1.6%	6.5%	5.3%	4.8%
SFSA Forecast (tonnage)	10%	3%	9%	8%

Industrial Equipment Forecast

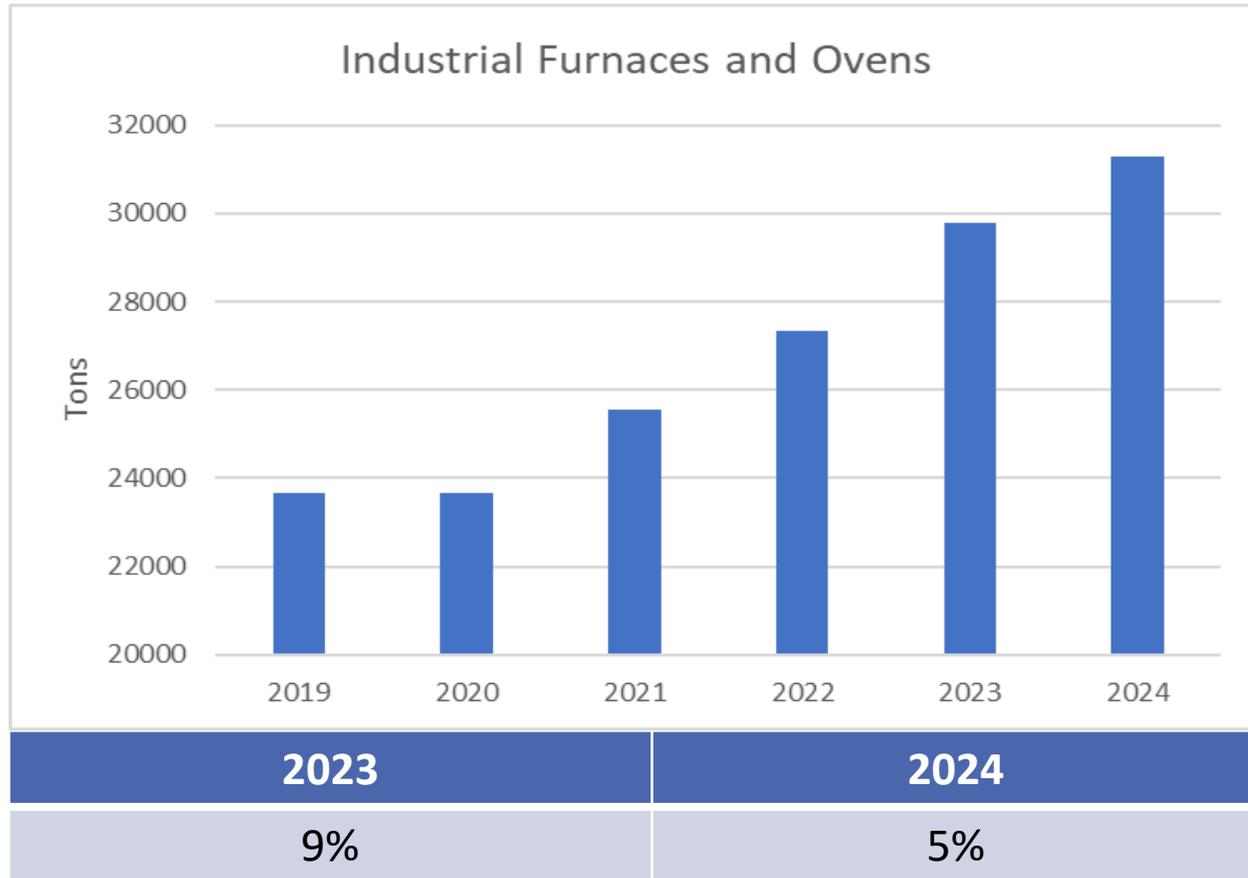


Industrial equipment parts - pulp & paper, food, shotblast - plates, wheels, sprockets, flanges

ITR Forecast – US Machinery New Orders

- '23: 0.2%
- '24: -3%
- High interest rates, tightening credit
- Need for automation may bolster demand

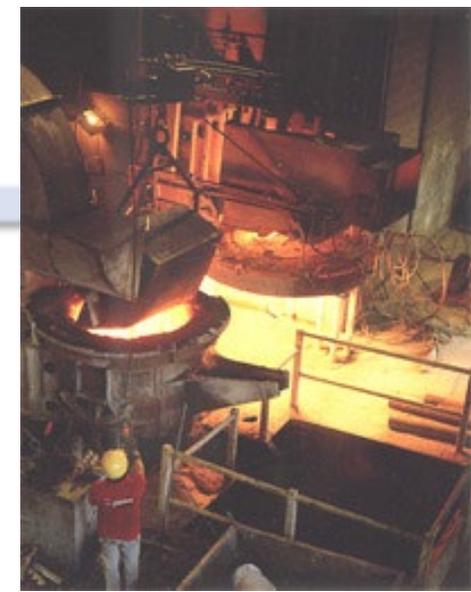
Industrial Furnace and Oven Mfg. Forecast



Industrial Process Ovens, Induction Heating, and Kilns - furnace, heat treat, steel mill components - rollers, links, baskets

- Reshoring from Asia
- Customer Projections

Other Markets Forecast



Markets included:

- Tooling
- Agriculture
- Cement
- Engine/Turbine
- Municipal

Forecast Summary

