Future in the making

MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level.

Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 13,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.

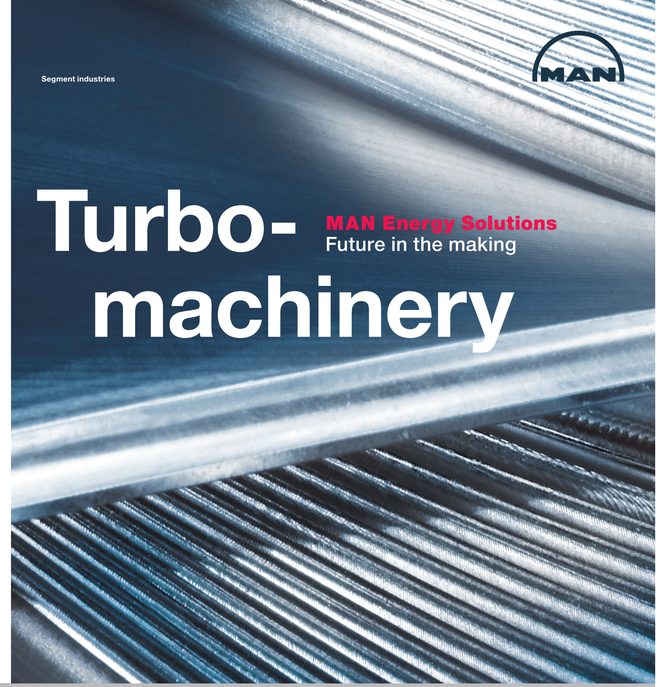
The roots of our company stretch back a long way, to the industrial revolution in Germany in 1758. That is when the furnaces of the legendary St. Antony Ironworks were fired up for the first time, which went on to become a driving force behind Germany's powerful coal and steel industry. That day in 1758 was the start of a journey of innovation that went on to include major milestones of industrial history.

Therefore continuous innovation remains the foundation of our endeavors to transform the energy infrastructure into an efficient, decarbonized, and high digitalized ecosystem of heat pumps, thermal energy storage, carbon capture and utilization solutions as well as hydrogen economy equipment. For more than 250 years we have made it our mission to continuously evolve and, it's how we help our customers succeed and prosper.

Turbomachinery products

None of our customers are the same, and many of them have very specific needs. Our solutions reflect that. Our comprehensive product range includes compressors, expanders and steam turbines which will integrate seamlessly into most industrial applications. For large scale, demanding applications, the segment industries provides custom, fully integrated train solutions that are unsurpassed in performance, efficiency and reliability.

We are creating sustainable solutions for our customers by incorporating our high quality products in systems decarbonizing the energy supply while delivering world class service and digital support worldwide. For the next 250 years and beyond.



Product range and product centres

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Products and applications

Products	Axial	Radial (vertical/horizontal split)	MOPICO® technology	HOFIM™ technology	Isotherm	Gear type	TURBAIR® vacuum blowers	Process-gas screw	Expanders	Steam turbines
										
Markets Upstream		Gas Lift, -Injection, -Export, -Gathering, -Treatment, -Processing, CO_2-Injection, Liquid Petroleum Gas, Natural Gas Liquids, Flash Gas		Gas Export, -Lift, -Gathering, -Reinjection, -Processing, Flash Gas, Subsea, Wet Gas, Wellhead Gas		CO_2-Injection, CCUS		Gas Export, -Gathering, -Treatment, -Processing, Flash Gas		
Midstream	Liquefied Natural Gas, CO_2	Gas Transport, Gas Storage, Fuel Gas, Liquefied Natural Gas Boil Off, Tank Vapour	Gas Storage, Gas Transport	Gas Storage, Gas Transport, Liquefied Natural Gas		Gas Transport, Liquefied Natural Gas		Fuel Gas	Liquefied Natural Gas	Gas Transport
Downstream	Desulfurization, Olefin Recovery, Fluid Catalytic Cracking, Propane Dehydrogenation, Nitric Acid, Maleic Acid, Others	Hydrogen Production, Hydrogen Recovery, Hydrogen Cracking, Desulfurization, Olefin Recovery, Fluid Catalytic Cracking, Propane Dehydrogenation, Methanol, Ethylene, Chlorine, Gas-to-Liquids, Coal-to-Liquids, Ammonia, Urea, Nitric Acid	Hydrocarbon Processes, Helium, Nitrogen	Hydrocarbon Processes, Helium, Nitrogen	Nitric Acid, Ammonia	Methanol, Chlorine, Hydrogen Processing, Propane Dehydrogenation, Ammonia, Urea, Nitric Acid, Gas-to-Liquids, Coal-to-Liquids, CO_2, Terephthalic Acid, Refrigeration, Vapor, Others		Hydrogen Production, Hydrogen Cracking, Hydrogen Mixtures, Styrene Monomer, Butadiene, Linear Alkyl Benzene (LAB), High Density Poly Ethylene (HDPE), Propylene, Vapor Recompression, Flare Gas	Fluid Catalytic Cracking, Terephthalic Acid, Nitric Acid	Gas-to-Liquids, Coal-to-Liquids, Hydrogen Processing, Hydrogen Production, Hydrogen Recovery, Hydrogen Cracking, Desulfurization, Fluid Catalytic Cracking, Propane Dehydrogenation, Methanol, Olefins, Terephthalic Acid, Chlorine, Ammonia, Urea, Nitric Acid, Ethylene, Others
Industrial gases	Air Separation (incl. Gas-to-Liquids, Coal-to-Liquids), Blast Furnace, Others	Air Separation (incl. Gas-to-Liquids, Coal-to-Liquids), Oxygen, Paper			Air Separation, Blast Furnace, Oxygen	Air Separation (incl. Gas-to-Liquids, Coal-to-Liquids), Blast Furnace, Paper	Board, Pulp & Paper, Tissue	Coke Oven Gas, Blast Furnace, Direct Reduction, Soda Ash	Blast Furnace Top Gas Recovery Turbine	Air Separation, Blast Furnace Blowers, Others
Power generation	Fuel Gas, Boil Off, Tank Vapour, Others	Integrated Gasification Combined Cycle (IGCC)				IGCC, Fuel Gas		Fuel Gas	Power Recovery	Industrial Power Generation incl. Waste-to-Energy, Biomass, Concentrated Solar Power, Pulp & Paper, Combined Cycle, Waste Heat Recovery Systems (WHRS), Others
Decarbonization solutions	Carbon Capture & Utilization and Storage (CCUS), Energy Storage	CCUS, Energy Storage, Hydrogen Compression, Heat Pump	Heat Pump, Hydrogen Compression	Heat Pump, Energy Storage, Hydrogen Compression	CCUS, Energy Storage	CCUS, Energy Storage, Hydrogen Compression, Heat Pump, Steam Compression, CCHR (Carbon Capture Heat Recovery)		Hydrogen Compression	CCUS, Heat Pump, Energy Storage	
Performance data and features	– Suction flow rates up to 1.5 million m^3/h – Max. discharge pressure: 25 bar	**Horizontal split design** – Suction flow rates up to 710,000 m^3/h – Max. discharge pressure: 80 bar **Barrel-type design** – Suction flow rates up to 330,000 m^3/h – Min. suction flow rates: 100 m^3/h – Max. discharge pressure: 1,000 bar	– Gas transmission up to 18 MW – Outlet pressure up to 130 bar – Suction flow rates up to 40,000 m^3/h – Hermetically sealed compact compressor with integrated high-speed electrical motor and active magnetic bearings	– Gas compression up to 18 MW – Outlet pressure up to 300 bar – Suction flow rates up to 30,000 m^3/h – Hermetically sealed compact compressors with integrated high-speed electrical motor and active magnetic bearings	– Flow rates up to 760,000 m^3/h – Max. discharge pressure: 21 bar	– Suction flow rates up to 600,000 m^3/h – Max. discharge pressure: 250 bar	– Suction flow rates up to 200,000 m^3/h – Vacuum levels up to 75 kPa	– Suction flow rates up to 100,000 m^3/h – Max. discharge pressure: 50 bar	– Single- and multi-stage design – Axial- and radial flow design – Inline and integrally geared – Medium: air, tail gas, top gas, offgas, CO_2, and other gases – Power output up to 180 MW – Inlet temperature up to 760 °C – Inlet pressure up to 140 bar	– Generator and mechanical drive – Live steam up to 140 bar and 540 °C – Power output up to 180 MW