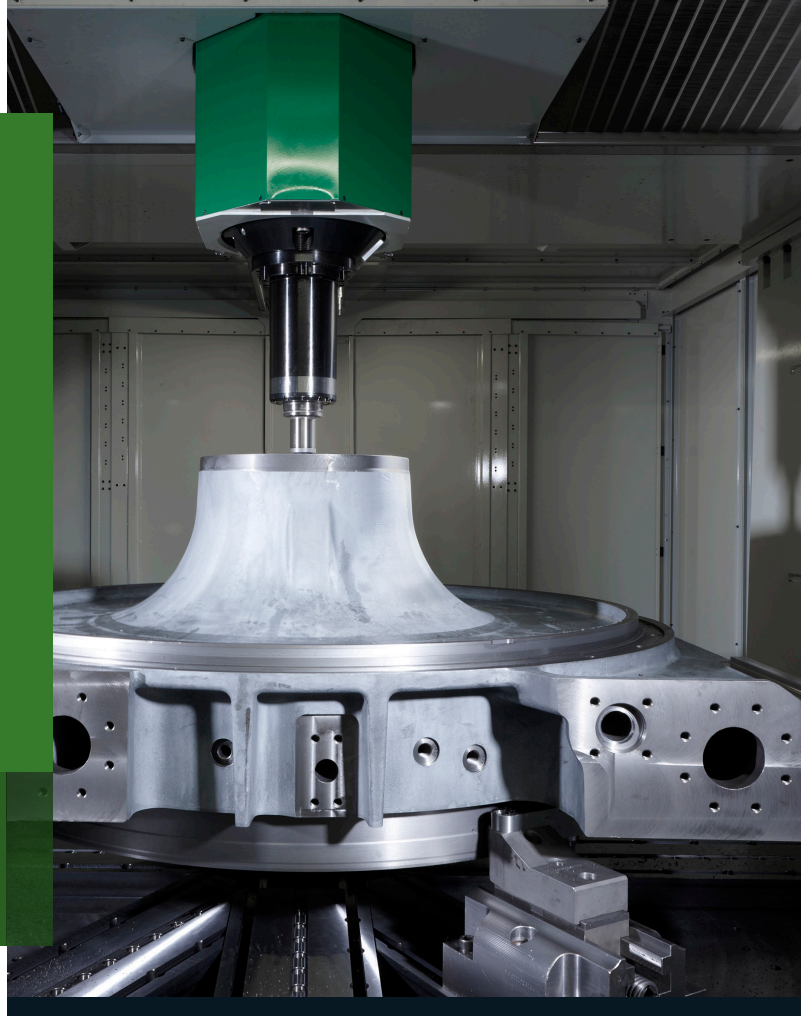
UNISIGN **EXPERIENCE**

@WORK



General industry | case study

Application
Machining of industrial components for turbochargers

Material
Cast iron

Customer
ABB Turbocharging, Switzerland

Machine type
Unicom 7000

Benefits
- Powerful turning and milling
- High flexibility and accuracy
- Quick pallet changing times

Old NC programs operate 1:1 on new CNC machine

About our customer

ABB is a pioneering technology leader with a comprehensive offering for various industries. With a history of innovation spanning more than 130 years, ABB is today a leader in industries with four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation.
ABB operates in more than 100 countries with about 147.000 employees.
ABB Turbocharging is at the helm of the global industry in the manufacture and maintenance of turbochargers for 500kW to 80+ MW diesel and gas engines. Their innovative leading-edge technology enables ABB customers to increase their performance; producing lower emissions and improving fuel consumption even in the toughest environments. Approximately 200.000 ABB turbochargers are in operation across the globe on ships, power stations, gen-sets, diesel locomotives and large, off-highway vehicles.

Since 1999 ABB Turbocharging is operating Unisign CNC machines for milling, turning and drilling of turbo parts.

Continuous improvement of machinery

Last year ABB Turbocharging had to decide about replacement of the aging CNC machines: retrofit or a new machine.
Andreas Richter, Head of Supply & Production Network, Product Group

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Medium & Low Speed & Rail Turbochargers describes their challenge:

"In 1999 we installed a Unisign Uniturn 6 C system which was still a 'prototype' at the time.

The system consisted of two machines connected to a conveyor which in those days was considered 'state of the art' with 32 pallet spaces. 20 years later, a concept had to be developed to replace the aging machines with an effective system or to undergo a major retrofit. The basic condition was that all ~ 1000 NC programs of the active parts portfolio can continue to be used on a new machine."

Innovative solution: new Unicom 7000

"Our primary machining processes have been optimized for the component-specific conditions in the past 20 years. The focus in this project was on the robustness of these processes as well as on reliable and fast ramp-up. Due to the very positive experiences of the past years, it was only natural that we considered Unisign in our selection process.
Unisign presented an innovative solution based on a Unicom 7000, with these challenging framework conditions. In combination with a Fastems pallet loading system, the existing portfolio can be managed even more efficient taking into account optimized secondary processes. Based on this, we preferred purchasing a new machine over a retrofit.
The project brought some technical challenges, which makes it all the more important to emphasize that the old NC programs operate 1:1 on the new machine. In a further stage, we're optimizing the portfolio to make best use and drive efficiency with the opportunities the new machine provides."

Ready to operate

Andreas Richter concludes: "With the Unisign Unicom 7000, we have an extremely efficient system in connection with the Fastems pallet loading system. It is tailored to our parts portfolio and is ready to operate without a long ramp up period. A successful project in which we have proven that very complex systems can be replaced smoothly with the right partner."

Generic specifications Unicom 7000

Work area
X-axis, cross travel: 2.675 | 3.450 | 5.000 mm
Y-axis, table trave: 2.300 | 2.500 | 4.000 mm
Z-axis, height travel: 1.600 mm
Vertical clearance: 2.000 | 2.300 mm
Pallet sizes: ⌀ 1.250 - 4.000 mm
Swing circle: ⌀ 2.000 - 4.500 mm

Main and horizontal spindle
Power: (S6-40%) 42 kW | (S1-100%) 37 kW
Spindle speed: 16.000 min^{-1}
Spindle torque: 1.600 Nm

Carousel turning station
Power: 70 | 95 kW
Maximum torque: 70.000 Nm
Maximum speed: 125 - 450 min^{-1}
(depending on pallet size)

Tool storage
Tool taper: Capto C8 / HSK100A
Number of tool pockets: # 78 - 200
Tool change time: 10 s

Axis drive and feed system
Rapid / Feed rate X-, Z-axis: 40.000 mm/min
Y-axis: 30.000 mm/min

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