



ČZ a.s.

Engineering tradition since 1919

- High level of Efficiency
- Own Design and R&D
- Flexible & Dynamic solutions



Your turbocharger specialist for commercial diesel engines

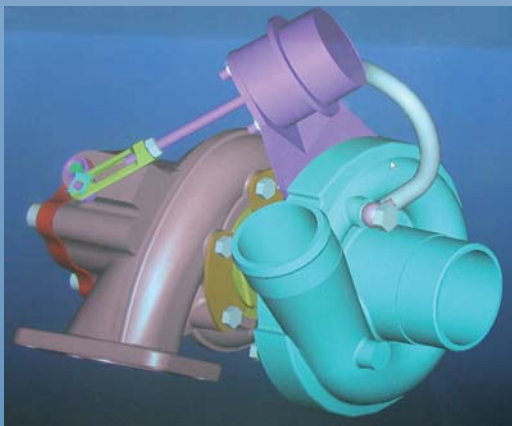
ČZ a.s. is a multi-branch company with a tradition of more than 80 years of engineering production. More than 80 percent of its production is for the automotive industry.

Production of turbochargers was started based on license of company KKK in 1982. Subject of this license were K27 and K36 type turbochargers. In 1986 all obligations following from this license were closed. Further development and mainly complement of types with the unified family C1 in 1993 was carried out with own development of Turbo division.

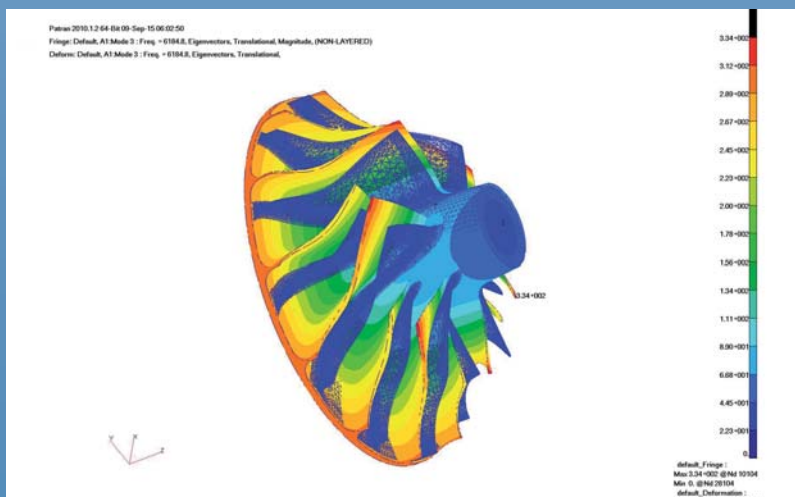
At present ČZ a.s. Turbo division is producing series turbochargers of three unified families - C1, C2, C3 for diesel engines with power output 25 – 400 kW. Through continuous further development we extend the product range of new TC family C0 for all fuel engines with power up to 50 kW.



DEVELOPMENT



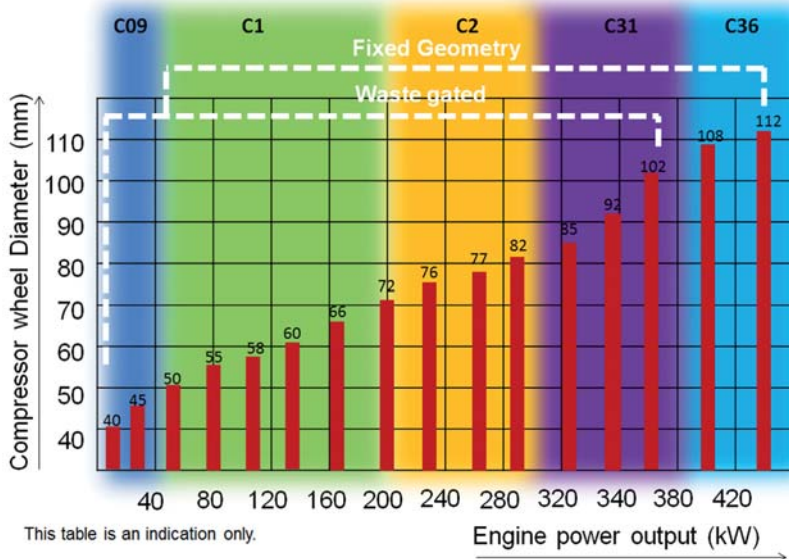
- ▶ Modern development methods, simulation & calculation in house
- ▶ Close cooperation with customers within adjusting turbochargers to engines (dimension and thermal dynamics)
- ▶ Prototyping compressor & turbine wheels by 5-axis machining in house
- ▶ Cooperation with Czech leading scientific institutions.



- ▶ Development of turbochargers ensures required emission limits
- ▶ Validation & Verification process

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PRODUCT RANGE



Turbochargers for commercial diesel engines - agriculture, construction and forestry equipment, utility vehicles, light & heavy duty trucks, generators (diesel & natural gas), leisure applications (all fuels).

- ▶ With or without waste gate
- ▶ Water-cooled bearing housing
- ▶ Water-cooled turbine housing
- ▶ Fixed turbine geometry
- ▶ Variable turbine geometry
- ▶ Two stages solutions
- ▶ Pneumatic & Electronic Actuator
- ▶ Turbine housing - Ductile iron, SiMo, Stainless steel

TURBOCHARGING IN CONNECTION WITH EMISSION STANDARDS:

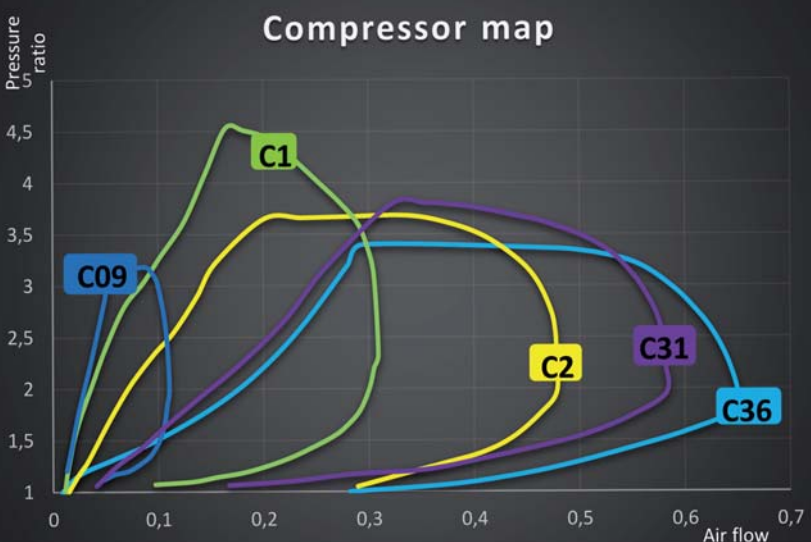
- ▶ Tier 0 – Final Tier 4

WE ALSO FOCUS ON:

- ▶ Finished parts for turbochargers and radial supercharger producers
- ▶ Turbocharger testing (Long cycle fatigue testing)

ANNUAL PRODUCTION CAPACITY:

- ▶ 350.000 pcs



OUR CUSTOMERS

- ▶ Leading Engine manufacturers (John Deere, AGCO Power, Generac, KAMAZ, Tümosan, Zetor,...)
- ▶ We export more than 90% of production
- ▶ Our customers touching six continents, more than 10 foreign countries



Your turbocharger specialist for commercial diesel engines

PRODUCTION

- ▶ modern & latest technologies
- ▶ key parts made "in house"
- ▶ product made and designed by CZ in Czech Republic
- ▶ constant improvement - KAIZEN



TEST ROOM

ENGINE-LESS TESTING BENCHES FOR TESTING OF TURBOCHARGERS

- ▶ Compressor & Turbine characteristics
- ▶ Sealing and Oil leakage simulations
- ▶ Temperature analyses & Temperature shocks
- ▶ Oil flow
- ▶ Vibration
- ▶ Containment test
- ▶ Problem simulation occurred at customer



TURBOCHARGER TEST STAND FOR LONG CYCLE FATIGUE TESTING

- ▶ Natural gas burner (400kW)
- ▶ Mass flow 0,5 kg/s
- ▶ Max temperature 900°C
- ▶ Thermo shock unit
- ▶ Programmable cycle
- ▶ Two turbos per test
- ▶ Comply with CZ turbocharger range



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