



Fans for the Petrochemical Industry

The next generation of ventilation technology

Company Overview

A History of Continuous Innovation

- 1873** First centrifugal flow fan for mine ventilation
- 1950** First axial flow fan with blade adjustment for mine ventilation
- 1985** First fan for "wet" flue gas desulphurization
- 1997** First wind tunnel fan with CFRP-impeller
- 2007** Centrifugal fan with an impeller diameter of 5,3 m
- 2011** Fan for the quietest aero-acoustic wind tunnel
- 2015** Centrifugal fan with 12,3 MW required power
- 2016** First MVR Turbo Fan with ceramic hybrid bearing

Our Expertise & Global Reach

- ▶ Over 140 years of expertise in production of fans
- ▶ Present in 12 countries with business locations and 50 representatives across 40 countries
- ▶ Over 6000 fans installed worldwide
- ▶ Locations for product development and manufacturing in Germany, USA, China and South Africa
- ▶ Test stands in Germany, China and USA
- ▶ Use of the latest design tools such as FEM and CFD



Fans in petrochemical plants operating in tough conditions.

The petrochemical industry presents challenging operating conditions for fans such as high speed, high and changing temperatures, corrosive gases, wear and much more! It is in this tough field of application that TLT-Turbo fans can be applied to optimize your operations.

Single or dual driven centrifugal fans are typically used in the petrochemical industry. They can be found, for example, in heat and reformer sections, ammonia urea plants, heat recovery steam generators - and numerous additional applications.

The challenge for fans operating in petrochemical plants is the fact that the fan has to endure a long period between scheduled maintenance shutdowns. Therefore it is crucial that the fan is specifically engineered and optimized for the environment and for a longer operational lifespan between maintenance.

TLT-Turbo fans offer customers reliable performance that has been field-proven in installations worldwide. Our expert engineers work to continually innovate and improve our product offering. Our R&D department provides support for product improvements, while our project management and field service teams ensure guaranteed high process quality and hassle-free installation and commissioning.

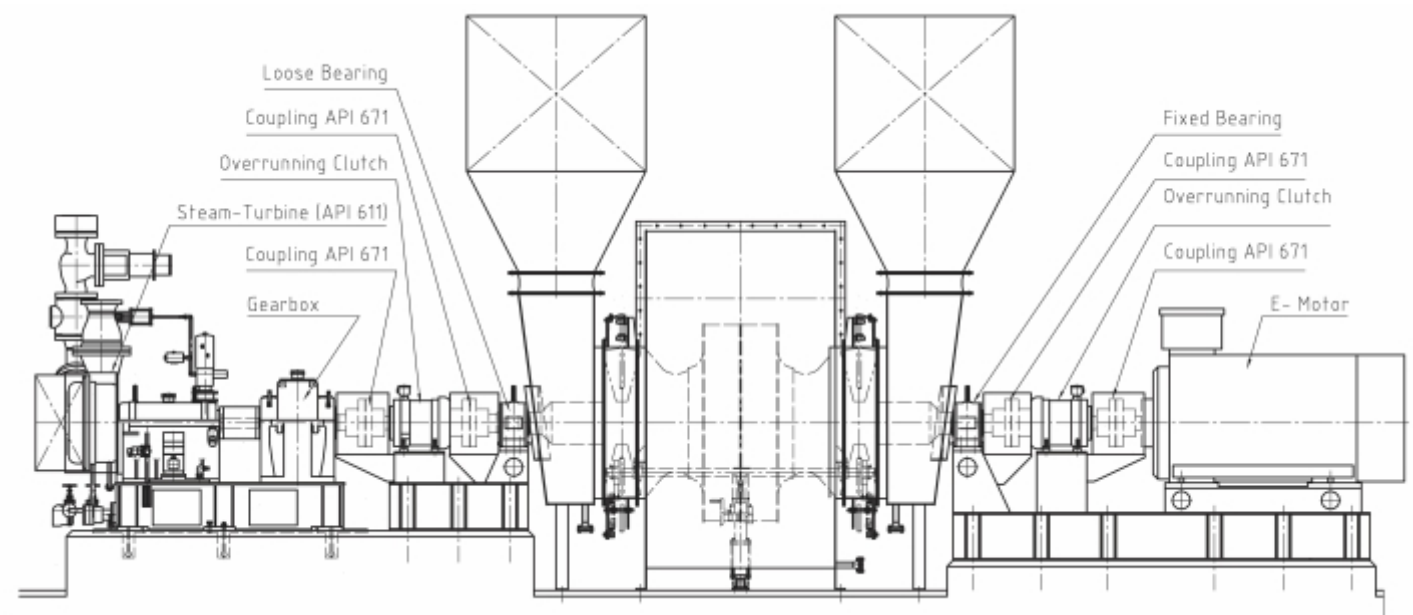
Fans For the Petrochemical Industry

- ▶ API standards 560 / 673
- ▶ Explosion proofed design possible
- ▶ Configuration as dual drive with motor and turbine possible.
- ▶ Stainless steel or wear protection possible
- ▶ All necessary accessories



Centrifugal fan with steam turbine for a petrochemical application

A Centrifugal Fan with Dual Drive



TLT-Turbo Fans For Heater & Reformer

- ▶ Combustion Air Fans
 - ▶ Recirculation Fans
 - ▶ Flue Gas Fans
- With all necessary accessories



Refinery



Petrochemical Plant

Fans for Heat Recovery Steam Generators.

- ▶ FD — Fan
 - ▶ ID — Fan
- With all necessary accessories



Heat recovery steam generator



Centrifugal Impeller made of stainless steel

TLT-Turbo Fans for Ammonia / Urea Plants

- ▶ Granulation Fan
 - ▶ First Cooler Fluidization Fan
 - ▶ Granulator Scrubber Exhaust Fan
 - ▶ Cooler Scrubber Exhaust Fan
 - ▶ Dedusting Fan
 - ▶ Final Cooler Fluidization Fan
 - ▶ Fumes Extraction Fan
 - ▶ Prilling Tower Fans (Axial)
- With all necessary accessories

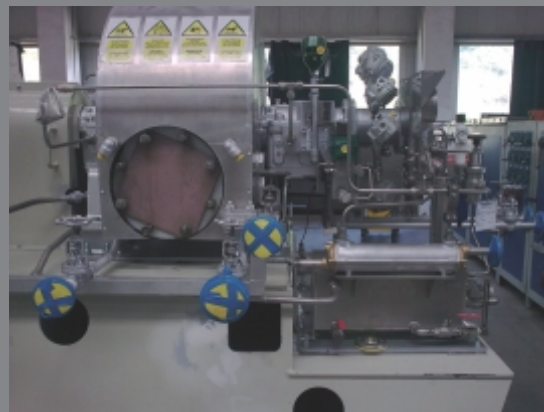


Ammonia / Urea fertilizer

Accessories



Example of a sleeve bearing seat

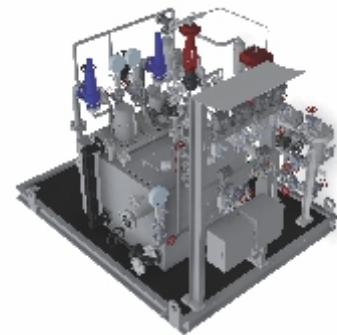


Steam Turbine as Fan drive

- ▶ Motors / Frequency Converters
- ▶ Turbines
- ▶ Dual Drive (Turbine and Motor)
- ▶ Oil Supply Units
- ▶ Overrunning Clutches
- ▶ Suction Towers / Silencers
- ▶ Filters
- ▶ Venturi Tubes
- ▶ Spacer Type Couplings
- ▶ Fan Instrumentation according customer requirements
- ▶ Inlet Guide Vane / Damper electrically or pneumatically controlled



Overrunning clutch



3D model oil supply unit



Vibration monitoring

Meeting the Highest Industry Quality Standards



Centrifugal fan with electric drive during workshop test



Centrifugal rotor on TLT-Turbo balancing machine



TLT-Turbo test field

TLT-Turbo Tests

- ▶ Mechanical Running Tests
- ▶ Performance Tests
- ▶ Ultrasonic Tests
- ▶ MT Testing
- ▶ Dye Penetration Testing
- ▶ Dynamic Balancing of Rotor
- ▶ CFD Simulations
- ▶ FEM Calculations

TLT-Turbo Certification

- ▶ DIN EN ISO 9001
- ▶ DIN EN ISO 14001
- ▶ BS OHSAS 18001
- ▶ SCCP (Petrochemical)



TLT-Turbo fans meet DIN, EN & ISO standards.

After Sales Service With 24 Hour Hotline



- ▶ General consulting for fan operation
- ▶ Plant Diagnostics and Optimization
- ▶ Trouble shooting
- ▶ Maintenance activities and audits on site
- ▶ Recommendations on spare parts inventory and storage
- ▶ Manufacturing and delivery of spare parts
- ▶ Installation and commissioning activities
- ▶ Aerodynamic design and determination of process data
- ▶ Oscillation measurement and frequency analysis
- ▶ Noise-protection engineering and associated measures
- ▶ Wear protection concepts
- ▶ Non-destructive materials testing

Germany . China . South Africa . USA . India
Australia . Austria . Chile . Hungary . Russia . South Korea



○ Business Location with Manufacturing
and Service Workshop

● Business Location

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TLT-Turbo Inc.
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TLT-Turbo Branch Korea, Seoul
TLT-Turbo Branch South America, Santiago de Chile
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TLT-Turbo Rep. Office Hungary, Budapest
TLT-Turbo Rep. Office Russia, Moscow



TLT-Turbo

a company of  **POWERCHINA**

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Website



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