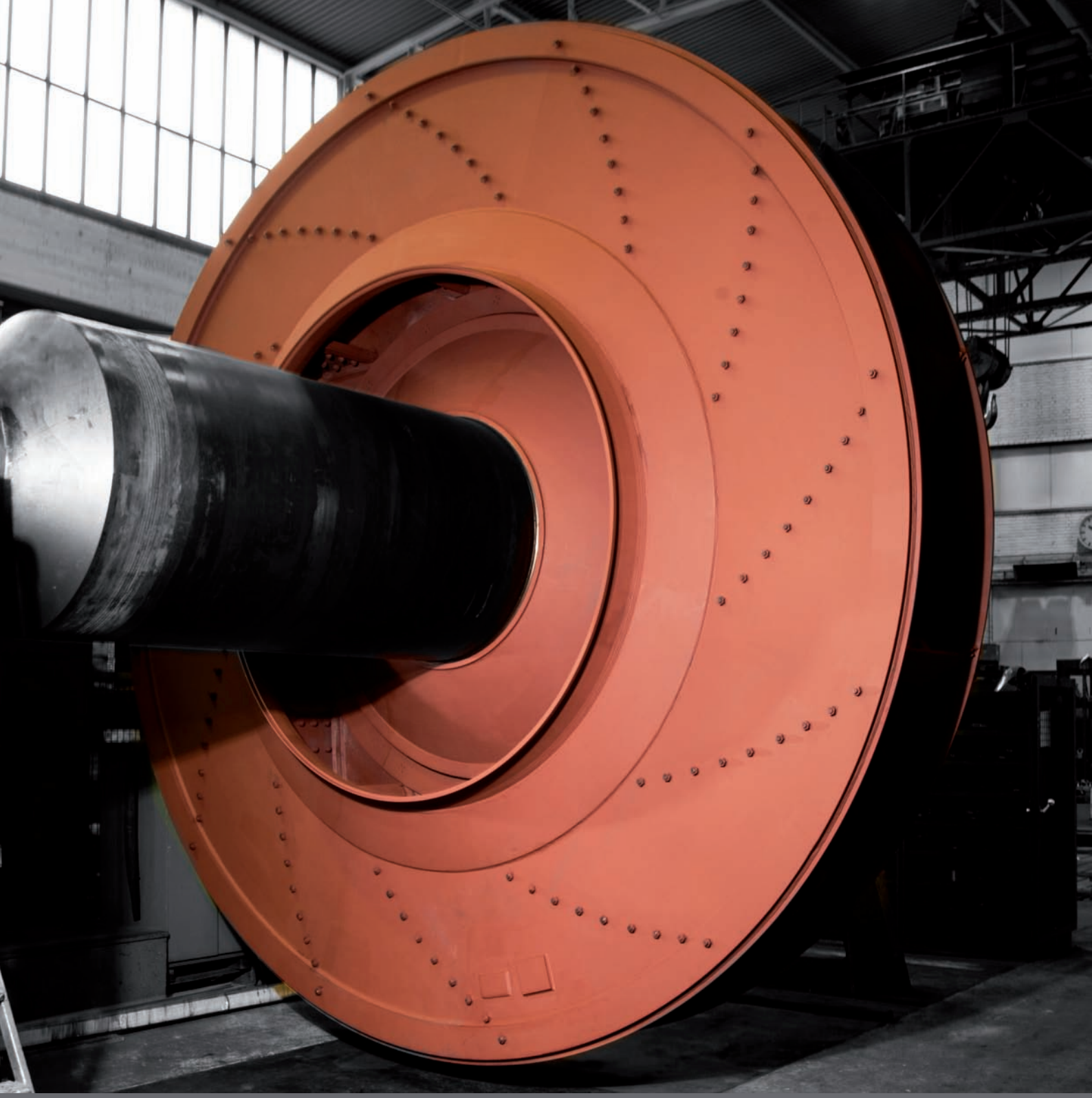


Fans in Cement Plants

a company of POWERCHINA

TLT-Turbo

Company overview.

TLT-Turbo is one of the world's leading manufacturers of technology-driven industrial fans and ventilation systems.

Nuh Çimento Sanayi A.Ş.

- TLT-Turbo offers service for any axial and centrifugal flow fans.
- TLT-Turbo together with its affiliates will be a local partner in the fast growing emerging markets for all applications.
- TLT-Turbo has many references in all applications in some of the highest profile projects around the world. TLT-Turbo is present in 9 countries with sales offices and with 50 representatives in 40 countries.
- Our four factories located in North America, South Africa, Europe and China together with our professionals from development, design engineering, installation, sales and administration, can offer you the best solution for conveniently and quickly service and rebuild your fans.
- Today TLT-Turbo builds axial and centrifugal flow fans for almost any application.
  The capability of TLT-Turbo is evident in the matured product range, which has stood the test under very difficult, and sometimes extreme conditions on the international markets.

Fans in Cement Plants.

Typical fan arrangement of Fans in Cement Plants.

Raw Mill Fan

Typical Data

volume flow:	80-350 m³/s
temperature:	90-100 °C
mech. design temperature:	250 °C
pressure increase:	7,000–10,000 Pa
shaft power:	up to 4,500 kW

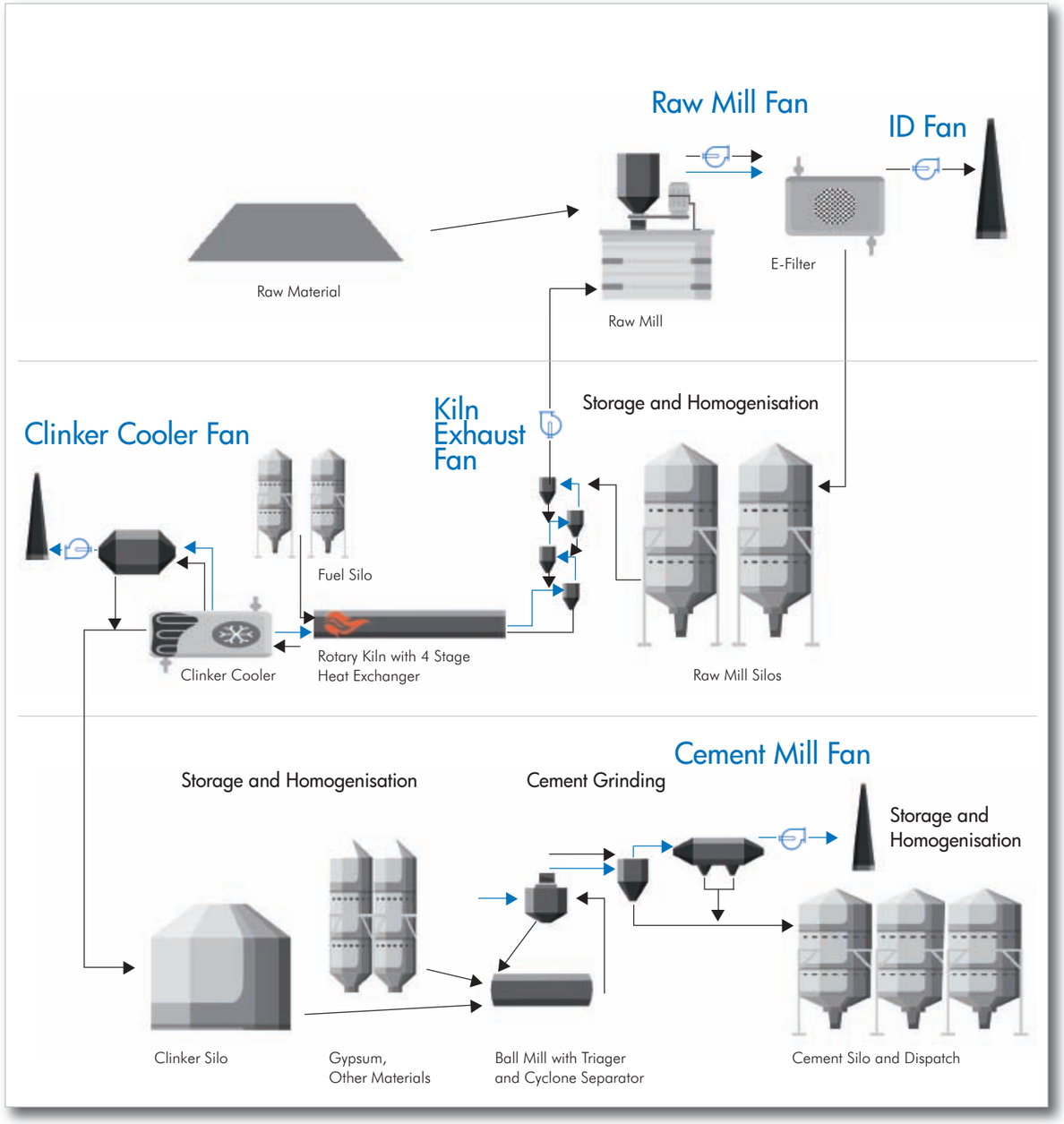
Special Features

- Dust loaded with 30-50 g/m³ (wearing)
- Operation behind cyclone
- Impeller and main disc are equipped with wear protection (compound wear plates)
- Spiral of casing with additional wear protection made from S355J2+N (S690QL)
- Fan control: in the majority of cases with damper flaps on the suction boxes

Fans in cement plants are typically centrifugal fan types (single or double flow). The blade design can be either a profiled shape or with single thickness plate blades. In most times, variable speed systems are used.

Also in difficult and extreme operational conditions TLT-fans secure trouble-free operation to our customers.

Production scheme of a cement plant. (typical)



We help you to select, plan and calculate the suitable fans, components and systems.

Because of our experience we realize the optimal solution for every case of application.

Fans in Cement Plants.

Typical fan arrangement of Fans in Cement Plants.

Raw Mill Baghouse Fan

Typical Data

volume flow:	100-450 m^3/s
temperature:	ca. 150 °C
mech. design temperature:	200 °C
pressure increase:	2,500 – 3,500 Pa

Special Features

- Often with aerofoiled blades
- Fan control: in the majority of cases the speed control is performed by frequency converters

Kiln Exhaust Fan

Typical Data

volume flow:	70-180 m^3/s
temperature:	280-430 °C
mech. design temperature:	400 °C 500 °C (for a short time in event of fault)
pressure increase:	7,000 – 10,000 Pa (exception: 13,000 Pa)

Special Features

- Dust loaded with 30 g/m^3 (strong build-up)
- Use of a special blade shape to extend the operation period between maintenances
- Use of an air blower unit (compressed air onto the blades) against caking
- Fan control: speed control by frequency converter
- At high volume flows two fans are running at the same time

Clinker Cooler Fan

Typical Data

volume flow:	100-350 m^3/s
temperature:	200-430 °C
mech. design temperature:	400 °C
pressure increase:	2,000 – 3,500 Pa

Special Features

- Operation behind filter (therefore in general no wearing)
- Increased number of damages in case of filter failure or outages (therefore not equipped with profiled blades)
- Wear protection (as Raw Mill Fan)
- Fan control: speed control by frequency converter
- Sometimes the speed is conditioned by high amounts of volume flow and low pressure at the same time

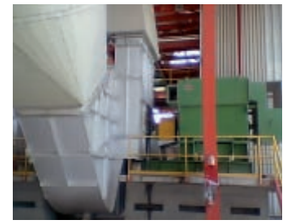
Coal Mill Fan

Typical Data

volume flow:	20-60 m^3/s
temperature:	ca. 100 °C
mech. design temperature:	150 °C
pressure increase:	ca. 8,000 Pa
shaft power:	to 900 kW

Special Features

- Often applications in dust loaded air (risk of explosive pressure shocks)
- Therefore casing and suction boxes are designed with a pressure shock resistance of 1.4 bar (casing and suction boxes may deform but not break)
- Fan control: in the majority of cases with damper flaps on the suction boxes

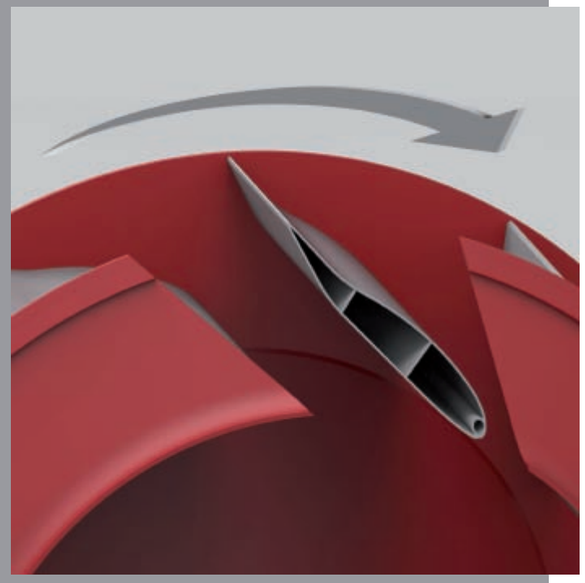


Typical forms of blades.

Impeller backward curved, high pressure increase at high efficiency.

inlet angle: 35°- 45°

outlet angle: from 40°- 45°



Impeller with airfoiled blades for Raw Mill Baghouse Fans

inlet angle: 20°

outlet anlge: 50°

Caking:

TLT´s measures to reduce caking:

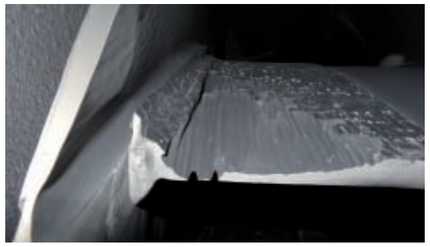
- Use of backward curved steel plate blades with a smaller bending
- Use of a blow-off device for cleaning the blade duct

Effect: Longer period of uninterrupted run

Wear – What are favorable influences:

- The reduction of the rotational speed
- The smaller relative speed of dust particles to fan blades
- The increase of material hardness
- The shape of the blades

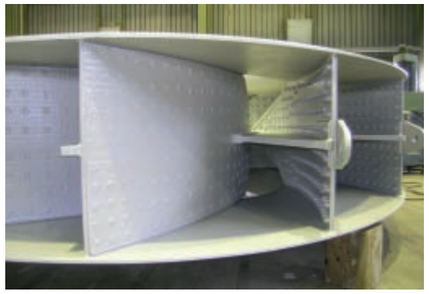
Wear – Where does it come from - What are TLT´s measures?
Wear due to dust



TLT´s measures to reduce wear due to dust:

- Use of optimal backward curved steel plate blades
- Installation of wear protection (composite hard-faced plates) with a hardness of about 61 to 63 HRC
- TLT-longlife-thin layer tungsten carbide protection (HVOF - TLT H101)

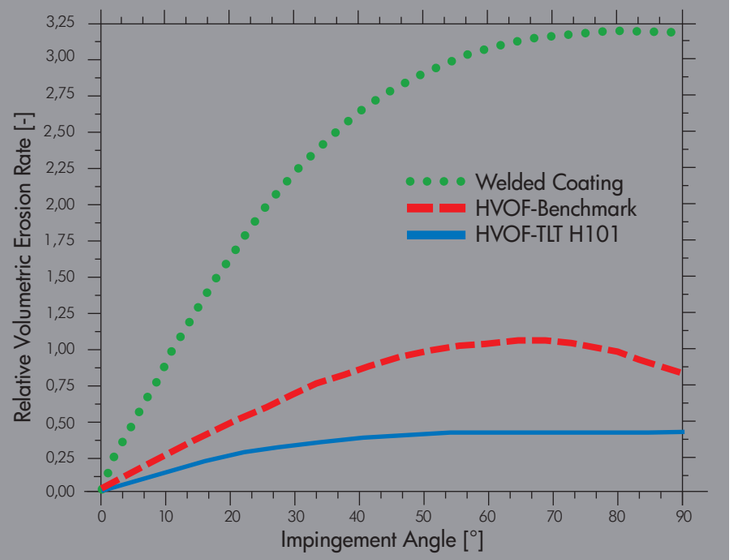
Wear protecting measures made by TLT:

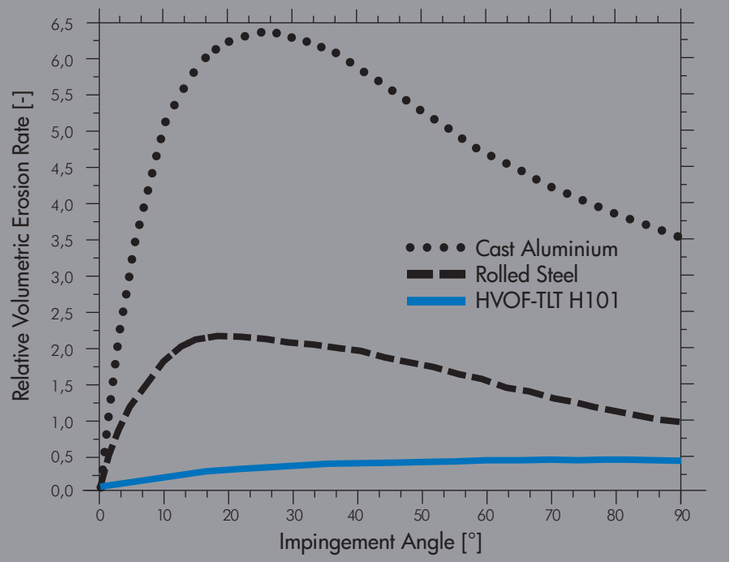


We are able to considerably extend the life time of your impeller, due to the inidividual, customer tailored wear protection.

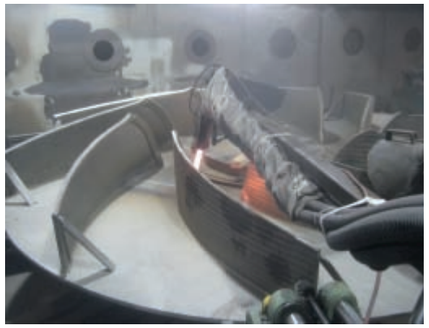
In cooperation with our customers, new, innovative solutions for abrasive-resistant surface coating will constantly being optimized.

Result of particle flow erosions tests by TLT-Turbo.





Erosion rate of TLT-Turbo's HVOF tungsten carbide coating H101 (HVOF-TLT H101), compared to typical fan materials as a function of abrasive particle jet flow impingement angle.



Spraying procedure HVOF-TLT H 101.

Installation and commissioning.

Our specialists:

- Erection of the fan
- Commissioning of the fan
- Train your staff members in correct handling

Increase in production.

Do you want to increase your production?
Do you have new legal restriction to fulfill?

- We help to increase the performance of your centrifugal impellers
- We help to improve the output of your equipment
- We will supply new powerful impellers to you

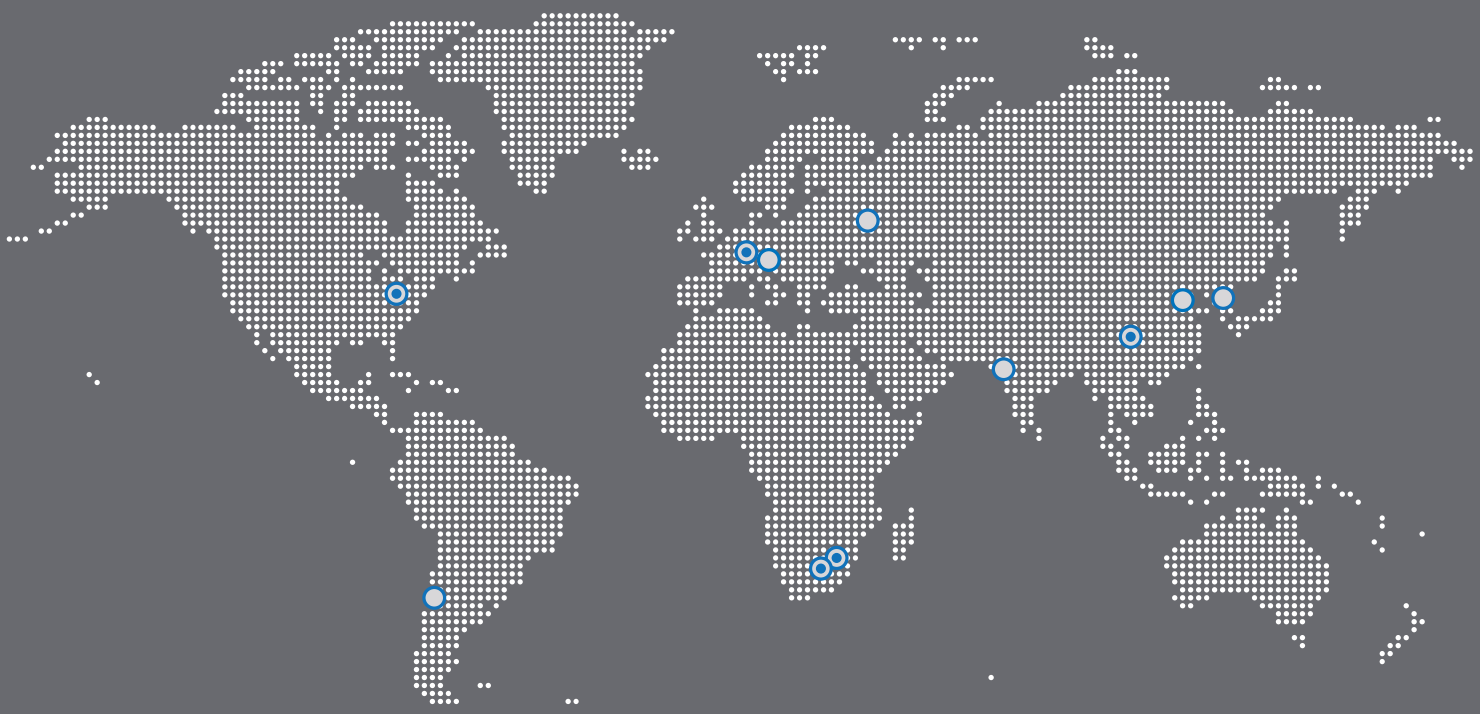
We delivered more than 850 fans in cement plants worldwide.

First-class engineering, tradition and success in ventilation technology as well as a global service-network:

These are the relevant facts for the good reputation of the fans and systems from TLT-Turbo worldwide.

A Passion for Solutions.

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



Business Location w/ Manufacturing and Service Workshop

TLT-Turbo GmbH . Germany
TLT-Turbo (Sichuan) Co., Ltd. . China
TLT-Turbo Africa . South Africa
TLT-Turbo Inc. . USA

Business Location

TLT-Turbo Rep. Office . Austria
TLT-Turbo South America SpA . Chile
TLT-Turbo Rep. Office . China
TLT-Turbo Rep. Office . Hungary
TLT-Turbo India (Pvt.) Ltd. . India
TLT-Turbo Rep. Office . Russia
TLT-Turbo Korea . South Korea

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66482 Zweibrücken/Germany
Phone: +49 6332 808-0

TLT-Turbo

a company of POWERCHINA

Website

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