



fanTR

TECHNOLOGY RESOURCES

IN THE AIR,
BY YOUR SIDE,
WE ALWAYS
INNOVATE

**VENTILATION
FOR COOLING
SYSTEMS**



ABOUT FANTR

With a strong entrepreneurial spirit and progressive vision, Composite was created in 1989 by a renowned team of young Brazilian engineers. Combining a wide range of skills in electronics, infrastructure, aerodynamics, composite materials and innovative industrial processes, this group of talented professionals quickly drove Composite to become a strategic partner for many industries. Composite's primary industries were aviation, aerospace, petrochemical, and the growing segment of renewable energies – specifically wind energy.



The blending of extensive knowledge and key relationships ultimately led to the development of groundbreaking products.

In 1995, the Founders decided to separate their fields of knowledge, and create different companies focusing on their respective industries. Among the new companies formed was Tecsis – Technology in Advanced Systems, focused on developing blades and other parts for wind power turbines and industrial ventilation systems.

Tecsis had two different business units. The DEE (Wind Energy Division) and the DVI (Industrial Ventilation Division).

The Tecsis-DVI (Industrial Ventilation Division) focused on servicing cooling systems, working with major companies, such as Petrobras, Grupo Votorantim and Vale do Rio Doce.

New products were created for new industrial segments, including ventilation systems for mining tunnels, highways, subways, hydroelectric power plants. Also fans for high corrosive environments, Air Cooled Condensers, Air Coolers, Cooling Towers, and wind tunnel systems. Products were made mainly of FRP (Fiber Reinforced Plastic), kevlar and carbon fiber.

In 2013, FanTR was created – an independent company from DVI conceived to develop high-tech products on a global scale. All intellectual, material and human assets were transferred to FanTR, including a new and state-of-the-art facility, in June of that same year.



Some of the most important product developments included wind turbine blades, cooling tower fans, aircraft fuselage elements, rocket engines for satellite launches, storage tanks for acid fluids, and toll traffic control system software. That was also when Composite developed its fundamental business traits of, fostering relationships with overseas companies, multinational corporations and institutes of international relevance. Despite being a Brazilian company, Composite's operations, knowledge and relationships expanded across the globe.



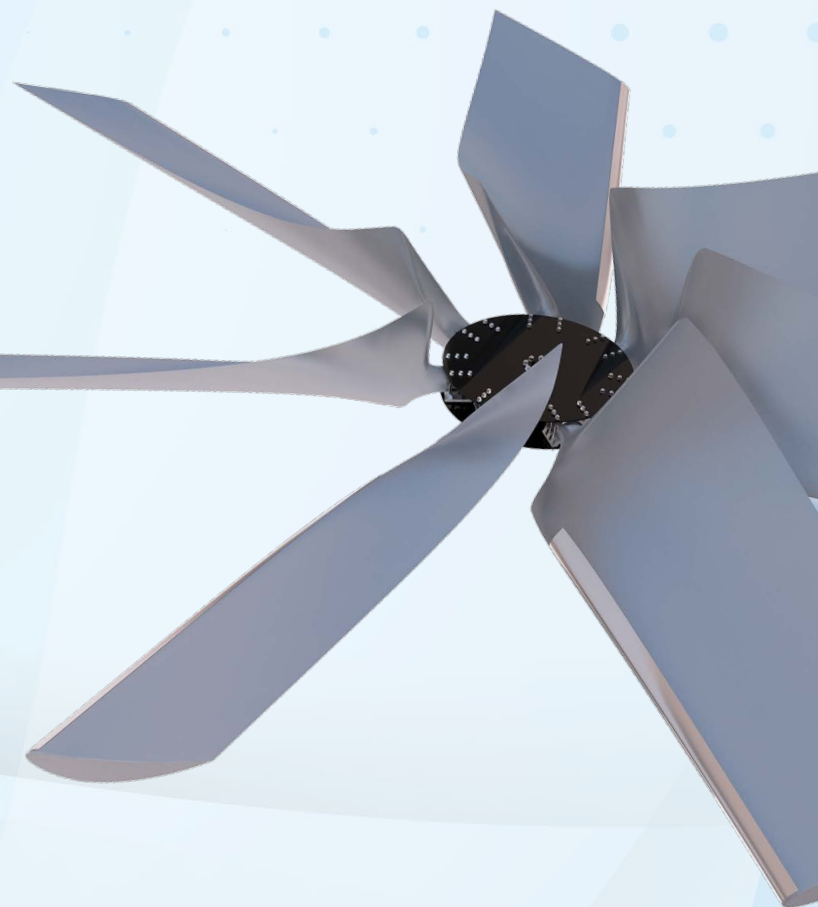
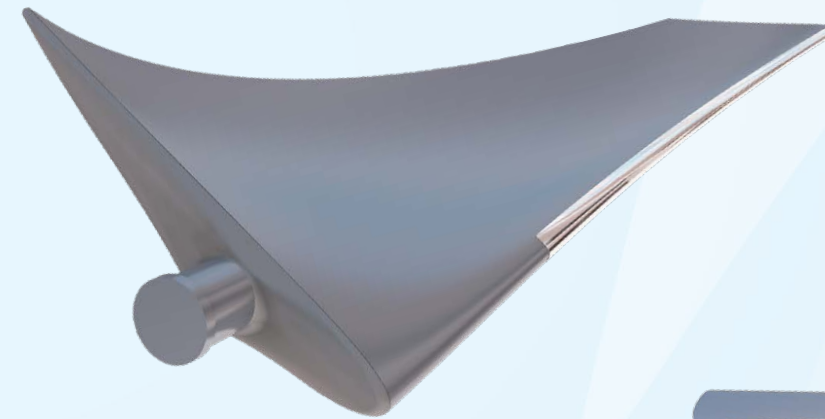


WHAT WE DO

FanTR designs and manufactures axial fans for underground ventilation systems, cooling towers, air coolers, and air cooled condensers. We offer a complete line of products serving the following markets: mining, construction, road tunnels, subway, refineries, pulp and paper, petrochemical plants, thermoelectric plants, etc.

In addition, we have a specialized team of engineers able to develop products and systems tailored to any ventilation application.

All of our products are designed and built to meet the strictest international quality and development standards.





CORE BELIEFS

Complete customer service



Mastery of vibration and sound control technology



Extensive knowledge of aerodynamics



Mastery of the manufacturing process of composite materials

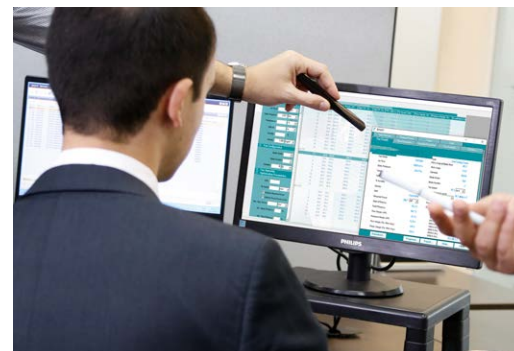


With over than 30 years of experience, our professionals are experts in their respective areas of the industry



TEST STATION

We have multiple test stations available for our product development, including a station which can accommodate fans up to 36 feet in diameter for cooling application tests. These various stations allow FanTR to certify the efficiency and sound levels of our products. In addition, this allows us to validate the structural and fatigue life cycle of our fans, based on the most important international standards.



SOFTWARE FOR DESIGNING

We use the most cutting edge software available in the market for fan design. Including FEA (Finite Element Analysis) from Ansys (Engineering Simulation Software), and CFD (Computational Fluid Dynamics).

UNDERGROUND VENTILATION



No. 1 in the Brazilian underground mining ventilation market segment.



Responsible for ventilation systems across all major hydroelectric plant projects in South America.



Customized service, working closely together with our clients.

VENTILATION FOR COOLING SYSTEMS



We are recognized as one of the leading companies in the world when it comes to knowledge and reliability, according to the top OEMs in the cooling ventilation market.




Global Coverage: more than 80% of our products are exported to all regions of the world.



Exceptional customer service. We closely monitor our product and client satisfaction throughout our products life cycle.

GLOBAL REACH





VENTILATION FOR COOLING SYSTEMS

Our axial fans were designed and developed by FanTR's technical staff, employing aerospace technology and software to analyze the aerodynamics and operation of each fan model.

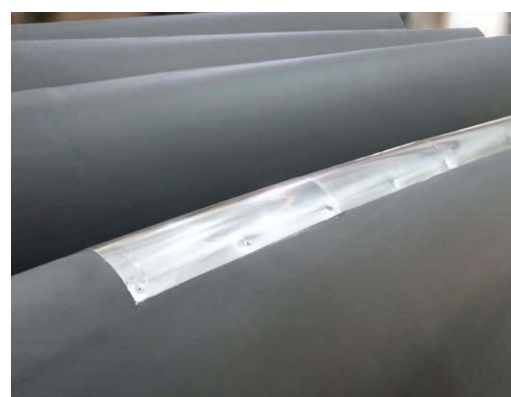
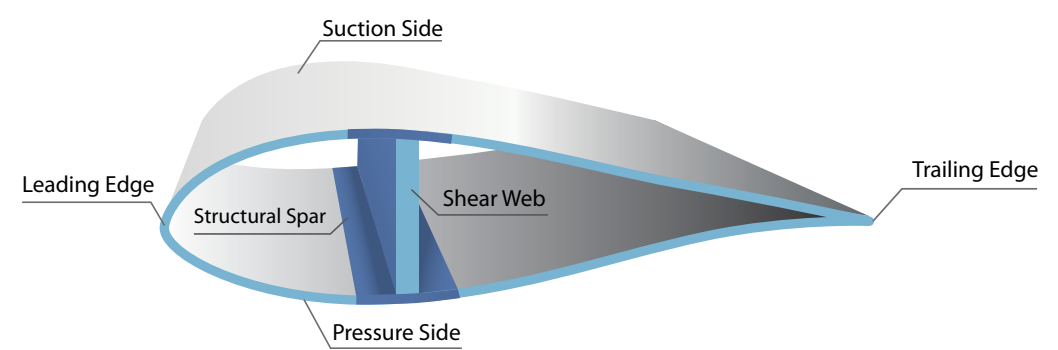
Products are validated in our exclusive test hub, which has several test stations. This allows us to gauge and refine results to ensure our fans deliver unmatched performance in the market.



COMPOSITE

Fans made of fiberglass, aramid or carbon fiber offer superior efficiency and a unique design in the market. These materials offer excellent mechanical properties with the lightest weight possible, freely moldable with no geometric restrictions. This allows us to manufacture aerodynamic profiles with large blade cords and torsions, as per specific simulation programs, which ultimately ensures the outstanding efficiency and performance of our fans.

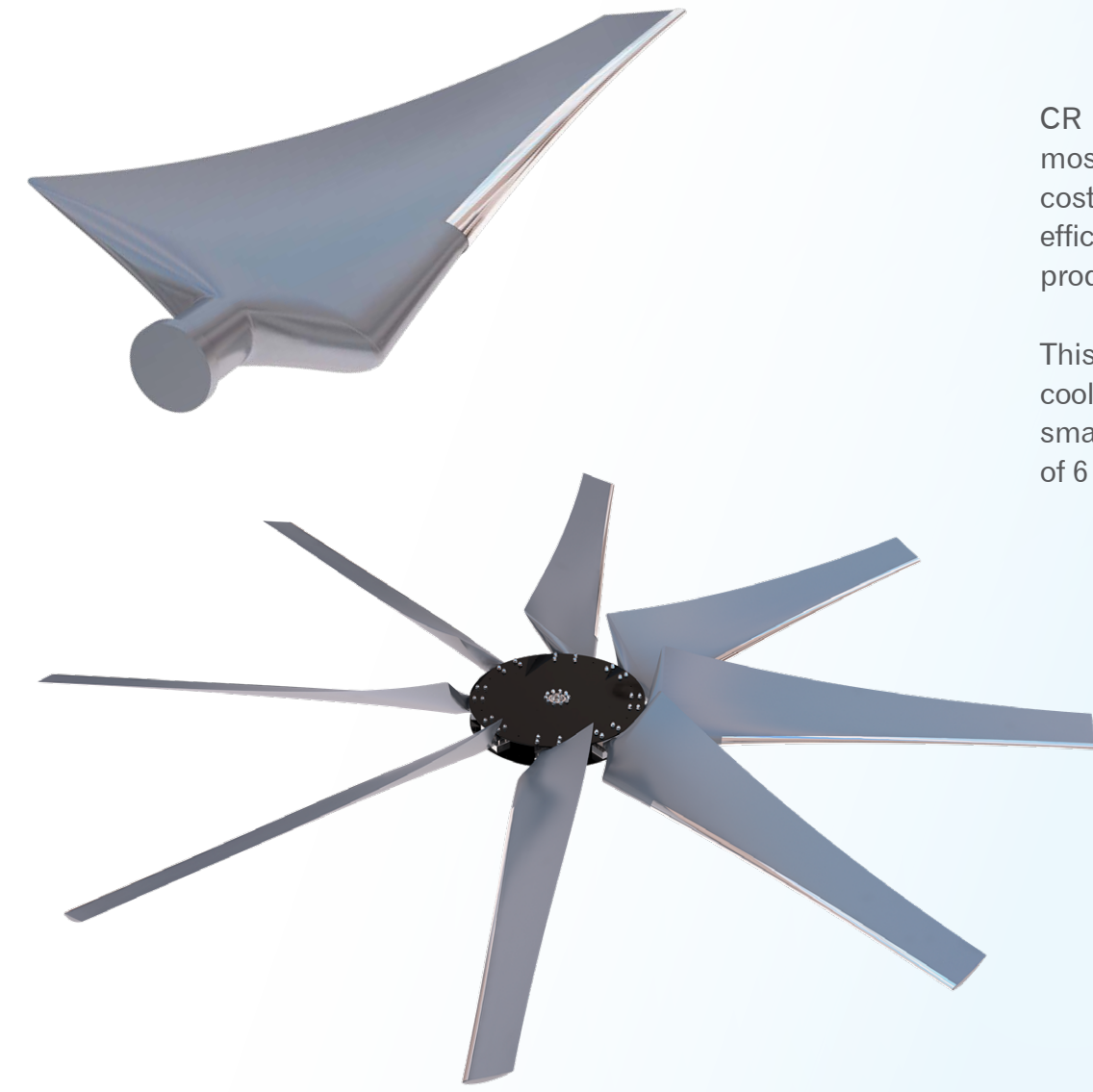
At our full-scale test station, we can compare the efficiency and sound emission of all available models, including comparing them to competing models. This allows us to validate our design and reinforce the superior features of our equipment.



CR FAN Composite Rotor

CR fans meet the requirements of most cooling operations with a great cost-to-effectively. They are also more efficient than aluminum manufactured products.

This vastly versatile fan can be used in cooling towers or air coolers, including small towers (minimum fan diameter of 6 feet).



DIAMETER	NUMBER OF BLADES	WIDE DIAMETER RANGE	FLOW RATE	MARKET	LEADING EDGE PROTECTION
6ft. (1,829 mm) - 36ft. (10,979 mm)	from 4 to 12	Wide Diameter Range	318 ft ³ /s (9 m ³ /s) - 49,441 ft ³ /s (1,400 m ³ /s)	Aircooler, Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel

NCR FAN New Composite Rotor

The NCR fan is the perfect combination between efficiency, resistance and weight.

With the most competitive prices in the market, the NCR fan is our sales leader. It is the ideal solution for applications without stringent sound restrictions.

This fan can be used in all applications: cooling towers, air coolers and air cooled condensers.

Note: for air cooled condensers, the hub design is reinforced to withstand the atypical loads of this particular application.



DIAMETER

14ft. (4,267 mm) -
42ft. (12,802 mm)



NUMBER OF BLADES

from 5 to 11



HIGH EFFICIENCY

High
Efficiency



FLOW RATE

1766 ft³/s (50 m³/s) -
67,098 ft³/s (1,900 m³/s)



MARKET

Aircooler, Cooling Tower
& Air Cooled Condenser



LEADING EDGE
PROTECTION

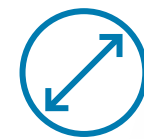
Polyurethane (PU),
316 Stainless Steel

TEP FAN Technical Extended Performance

The TEP fan has a slightly longer chord than the NCR, reducing the number of blades used under the same operations conditions. This also means that TEP can be used in some operations where NCR is not adequate, in addition to being used at lower speeds.

It can be used in all applications, but it is most commonly used in cooling towers and air cooled condensers.

Note: Similarly to the NCR, the hub design for air cooled condensers is reinforced to withstand the atypical loads of this particular application.



DIAMETER

12ft. (3,658 mm) -
36ft. (10,973 mm)



NUMBER OF BLADES

from 5 to 11



HIGH EFFICIENCY

High
Efficiency



FLOW RATE

1236 ft³/s (35 m³/s) -
49,441 ft³/s (1,400 m³/s)



MARKET

Cooling Tower &
Air Cooled Condenser



LEADING EDGE
PROTECTION

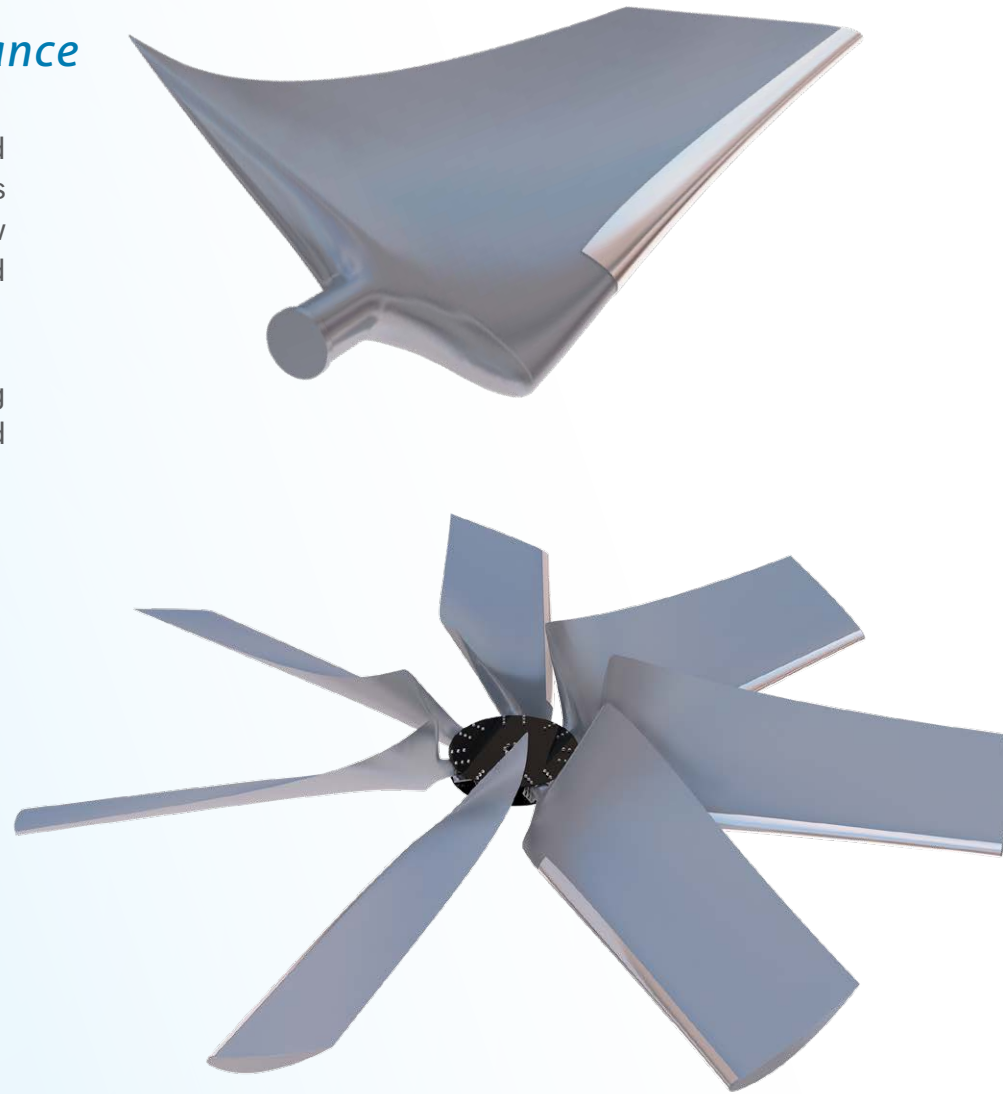
Polyurethane (PU),
316 Stainless Steel

VENTILADOR STEP

low Sound Technology with Extended Performance

The STEP Fan has the longest chord in our fan line, enabling its use across a variety of operating points at low speeds and with extremely low sound levels.

This fan can only be applied in cooling towers, air coolers and air cooled condensers.



DIAMETER

24ft. (7,315 mm) -
38ft. (11,582 mm)



NUMBER OF BLADES

from 5 to 10



LOW SOUND

Low Sound



FLOW RATE

4,944 ft³/s (140 m³/s) -
56,503 ft³/s (1,600 m³/s)



MARKET

Cooling Tower &
Air Cooled Condenser



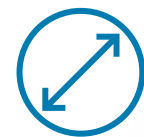
LEADING EDGE
PROTECTION

Polyurethane (PU),
316 Stainless Steel

SLSF FAN

Super Low Sound Fan

The SLSF Fan offers a unique design, enabling its use across a variety of operating points at low speeds and with extremely low sound levels. It is used primarily in cooling towers.



DIAMETER

63in. (1,600 mm) -
156in. (3,962 mm)



NUMBER OF BLADES

from 3 to 5



LOW SOUND

Super Low Sound



FLOW RATE

247 ft³/s (7 m³/s) -
6,357 ft³/s (180 m³/s)



MARKET

Aircooler & Cooling
Tower



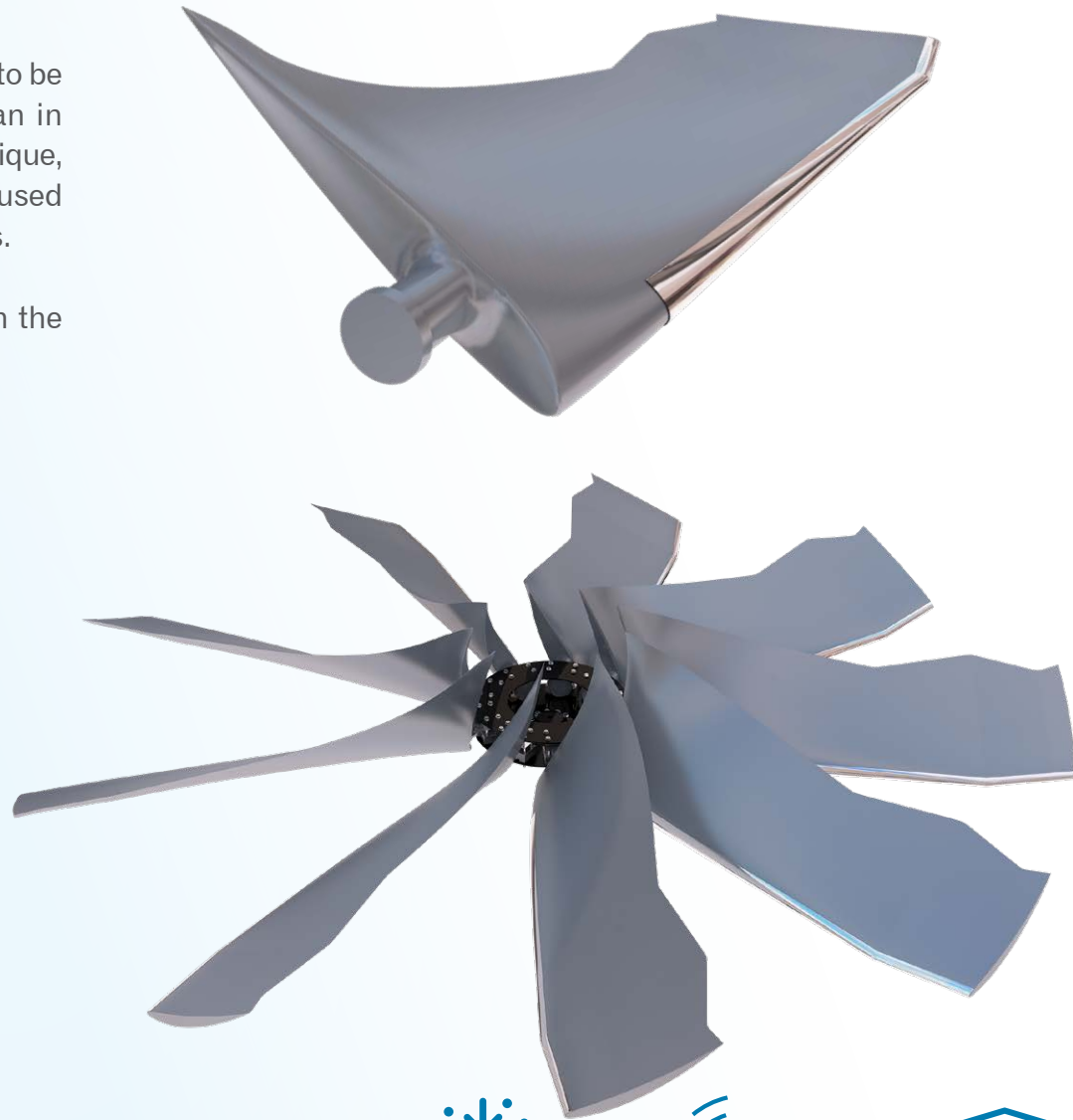
LEADING EDGE
PROTECTION

Polyurethane (PU),
316 Stainless Steel

FLN FAN FanTR Low Sound

The FLN Fan has already proven to be a great alternative to the CR Fan in low-sound applications. With a unique, patented design, this fan can be used in cooling towers and air coolers.

The same FLN design is used in the blades of our mining fans.



DIAMETER

up to 20ft.
(6,096 mm)



NUMBER OF BLADES

from 5 to 11



LOW SOUND

Low Sound



FLOW RATE

tbd



MARKET

Aircooler, Cooling Tower
& Air Cooled Condenser



LEADING EDGE
PROTECTION

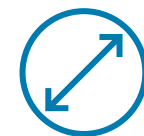
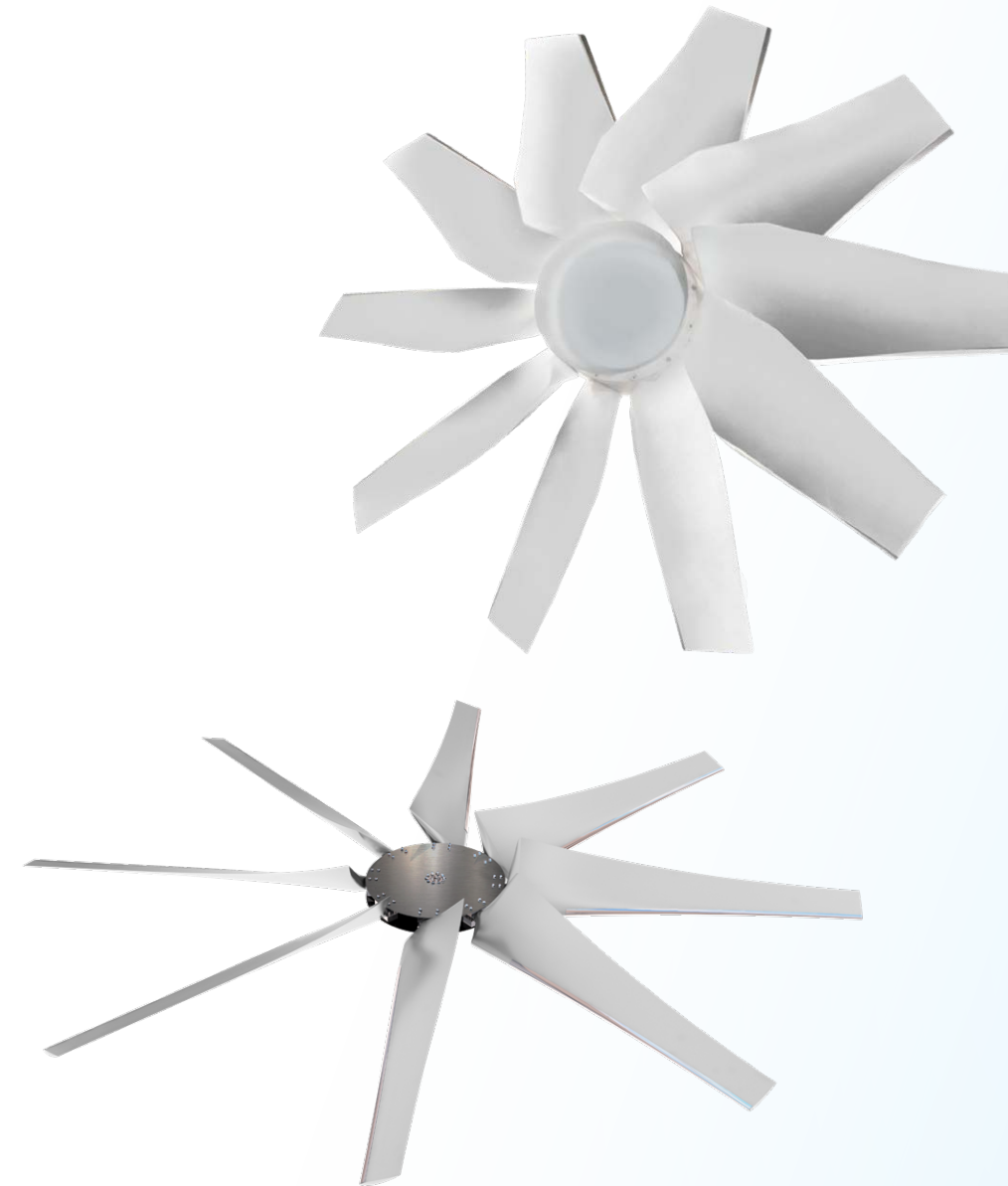
Polyurethane (PU),
316 Stainless Steel

HA FAN Corrosion Resistant

We developed the HA (High Acid Content) version to cover applications in cooling towers exposed to a highly corrosive condition.

To withstand such an harsh environment, our HA fans are 100% coated with composite material. The construction basic design for this fan is also one of our patented solutions. Other materials can also be applied (teflon, 316L, duplex, 904L and monel), depending on the composition of the corrosive environment.

Applicable to the CR and TEP models, with a diameter of up to 18 feet.



DIAMETER

10ft (3,048 mm) -
18ft. (5,486 mm)



NUMBER OF BLADES

from 4 to 11



HIGH CORROSION
RESISTANCE

High
Corrosion
Resistance



FLOW RATE

918 ft³/s (26 m³/s) -
12,360 ft³/s (350 m³/s)



MARKET

Cooling Tower



LEADING EDGE
PROTECTION

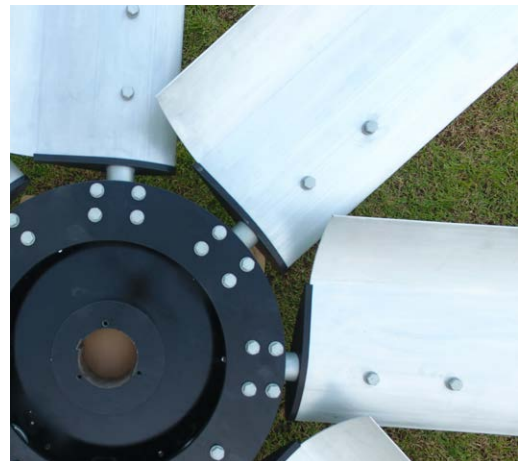
316L Stainless Steel,
904L Stainless Steel,



ALUMINUM

The use of aluminum in smaller cooling tower fans makes this model very attractive, especially due to its low cost and good performance.







Strength, local inventory, speedy delivery and after-sales support are the unique features that allow this model to stand out in global marketplace.



FAS360 FanTR Aluminum Standard

It is a lightweight fan with excellent strength and durability. It supports different application environments and is manufactured on a large scale, making them available with short lead time.



 DIAMETER	 NUMBER OF BLADES	 LOW COST	 FLOW RATE	 MARKET	 LEADING EDGE PROTECTION
60in. (1,524 mm) - 140in. (3,556 mm)	from 3 to 8	Low Cost	212 ft ³ /s (6 m ³ /s) - 5,297 ft ³ /s (150 m ³ /s)	Aircooler & Cooling Tower	Not applicable

FAS490 FanTR Aluminum low Sound

Using the same development philosophy as the TEP composite fan, the FAS490 has a longer chord than the standard aluminum version, which allows the fan to work at lower speeds, providing lower sound.



DIAMETER

132in. (3,353 mm) -
156in. (3,962 mm)



NUMBER OF BLADES

from 3 to 8



LOW SOUND

Low Sound



FLOW RATE

1,059 ft³/s (30 m³/s) -
6,357 ft³/s (180 m³/s)



MARKET

Aircooler &
Cooling Tower



LEADING EDGE
PROTECTION

Not applicable

TECHNICAL SPECIFICATIONS COMPARATIVE TABLE BETWEEN MODELS

	Diameter	Number of blades	Main features	Flow rate	Market	Leading edge protection
COMPOSITE MATERIAL						
SLSF	63in. (1,600 mm) - 156in. (3,962 mm)	from 3 to 5	Super Low Sound	247 ft ³ /s (7 m ³ /s) - 6,357 ft ³ /s (180 m ³ /s)	Aircooler & Cooling Tower	Polyurethane (PU), 316 Stainless Steel
CR	6ft. (1,829 mm) - 36ft. (10,979 mm)	from 4 to 12	Wide Diameter Range	318 ft ³ /s (9 m ³ /s) - 49,441 ft ³ /s (1,400 m ³ /s)	Aircooler, Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel
NCR	14ft. (4,267 mm) - 42ft. (12,802 mm)	from 5 to 11	High Efficiency	1766 ft ³ /s (50 m ³ /s) - 67,098 ft ³ /s (1,900 m ³ /s)	Aircooler, Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel
TEP	12ft. (3,658 mm) - 36ft. (10,973 mm)	from 5 to 11	High Efficiency	1236 ft ³ /s (35 m ³ /s) - 49,441 ft ³ /s (1,400 m ³ /s)	Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel
STEP	24ft. (7,315 mm) - 38ft. (11,582 mm)	from 5 to 10	Low Sound	4,944 ft ³ /s (140 m ³ /s) - 56,503 ft ³ /s (1,600 m ³ /s)	Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel
FLN	up to 20ft. (6,096 mm)	from 5 to 11	Low Sound	tbd	Aircooler, Cooling Tower & Air Cooled Condenser	Polyurethane (PU), 316 Stainless Steel
Line HA	10ft (3,048 mm) - 18ft. (5,486 mm)	from 4 to 11	High Corrosion Resistance	918 ft ³ /s (26 m ³ /s) - 12,360 ft ³ /s (350 m ³ /s)	Cooling Tower	316L Stainless Steel, 904L Stainless Steel
ALUMINUM						
FAS360	60in. (1,524 mm) - 140in. (3,556 mm)	from 3 to 8	Low cost	212 ft ³ /s (6 m ³ /s) - 5,297 ft ³ /s (150 m ³ /s)	Aircooler & Cooling Tower	Not applicable
FAS490	132in. (3,353 mm) - 156in. (3,962 mm)	from 3 to 8	Low Sound	1,059 ft ³ /s (30 m ³ /s) - 6,357 ft ³ /s (180 m ³ /s)	Aircooler & Cooling Tower	Not applicable

*Orientative information. For specific cases, please contact our Commercial Team.

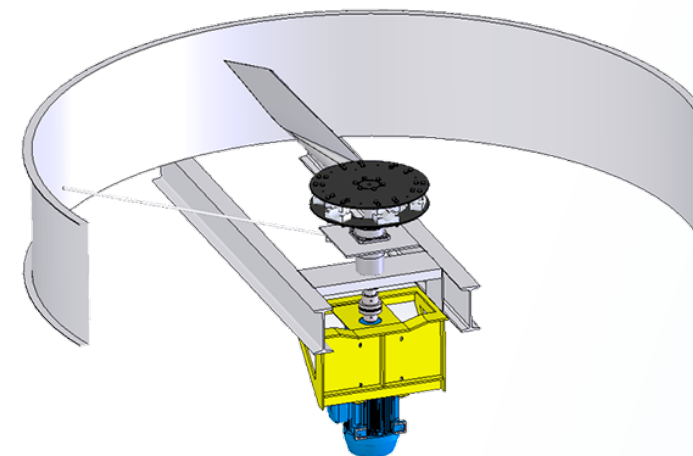
** Flow rates presented for the typical static pressure range up to 35mmWG



VENTILATION SYSTEMS

In addition to fans, we also offer complete ventilation systems, including motors, reducers, couplings, support base, protective screen and inlet nozzle.

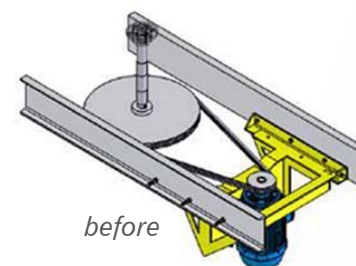
We carry out structural calculations with finite elements and guarantee not only performance, but also durability and fatigue lifespan of all system elements. This analysis also includes verifying the fluid passing through the equipment (contaminated air) and local temperature variations (systems installed below -45 °C).



DIRECT DRIVE SYSTEM For Air Coolers

The Direct Drive system offers the most efficient alternative to the belt and pulley system commonly used in air coolers. Despite being cheaper, the belt and pulley system carry a higher maintenance requirement, ultimately leading to higher equipment downtime.

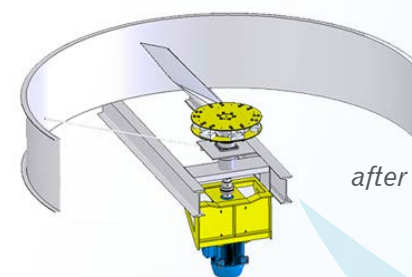
Our engineers developed a solution to replace this system with a direct drive system, in which the belt and pulley are removed and the engine is coupled directly to the fan. This enhances the system's performance and reduces maintenance.



before

- Elastic coupling
- Modification of the structure and support of the air cooler
- Motoreducer or variable frequency drive

CR is the most commonly used fan model for this application.



after

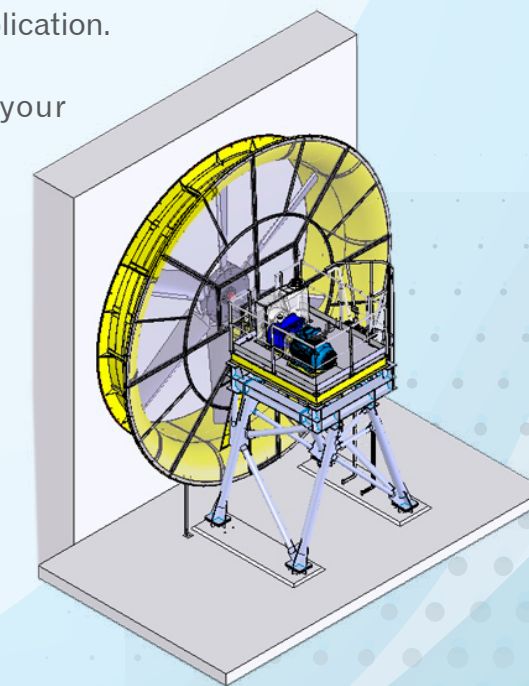
SYSTEMS FOR HIGHLY Corrosive Environments

Our engineering and development teams can conceive, calculate and design not only fans, but complete ventilation systems, including:

- Sealing rings
- Support base
- Inlet nozzle
- Protective fairing
- Coupling shaft
- Mechanical emergency brake
- Frequency inverter
- Elastic gasket
- Motor
- Reducer
- External lubrication system
- Protective screen
- Vibra-switch

These systems use HA fans and all other components are also designed for the specific high-corrosion conditions of this application.

Contact us to get your project started.



Find out more about other markets in which we operate:

UNDERGROUND VENTILATION

FanTR offers ventilation systems and equipment for air renewal in underground or confined environments. The most common applications include large underground mines and road and subway tunnel construction works.

As the Brazilian leader in this segment, we spearhead the ventilation projects of all major works and mines in Brazil.

TUNNELS



Permanent axial jet fans for high temperature

Commonly known as jet fans, they are permanently installed in road tunnels, subways and underground areas where people circulate.

Fans and systems for tunnel drilling and opening operations

Following the same line of mining fan designs, this equipment is much stronger and designed for extreme operating conditions, which are very common in construction sites.



MINING



Primary fans

The primary fans provide a constant air flow into the main galleries of the mines, bringing in fresh air. Primary fans can be provided separately or as part of a system.

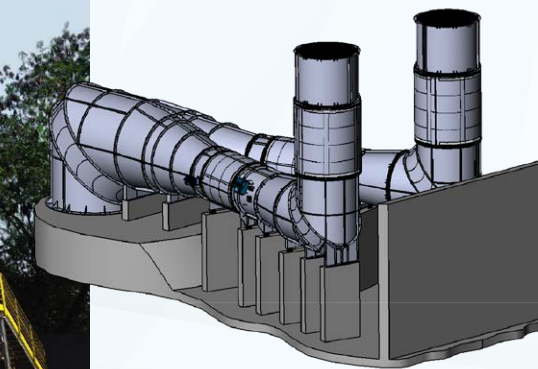
Secondary fans

Designed based on actual mine conditions, our fans are much stronger and durable, even in the most adverse conditions.



Ventilation system designs

When the ventilation system is provided, it is necessary to adapt the system to topographic conditions, space limitations and other specific characteristics of the operating site. FanTR makes this adjustment and also ensures that the system will always have the best efficiency.

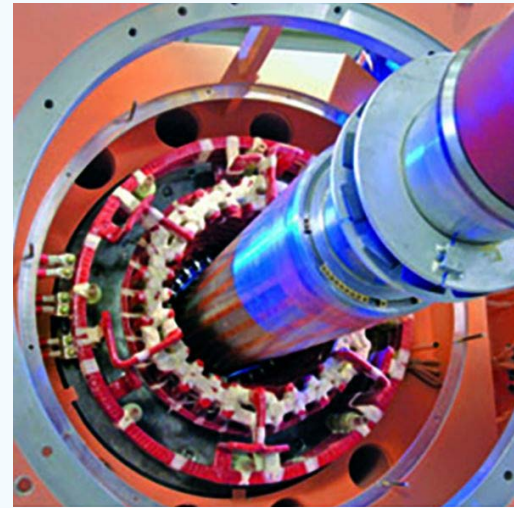
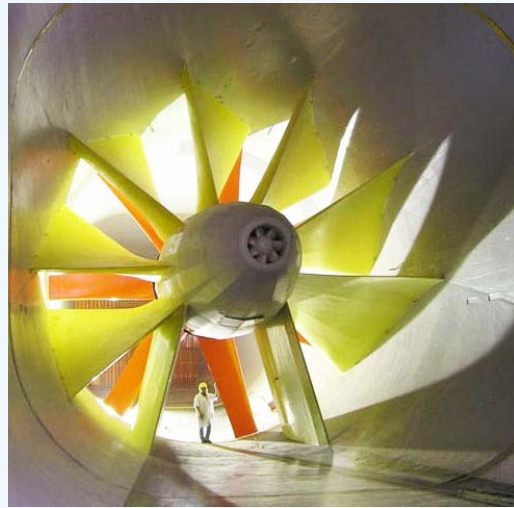


Find out more about other markets in which we operate:

SPECIAL PROJECTS

From wind turbine housings to Helibras's helicopter ventilation duct systems, our engineering teams have focused on developing high-performance and high resistance ventilation solutions.

Contact our team if you need to develop any composite or ventilation products or parts.



WIND TUNNEL

We have already delivered wind tunnels to the Instituto Tecnológico de Aeronáutica (Aeronautical Institute of Technology – ITA); modernization of the wind tunnel of the Instituto de Aeronáutica e Espaço (Institute of Aeronautics and Space – IAE), and, more recently, the wind tunnel to calibrate anemometers of the Senai Innovation Institute, in Natal, Rio Grande do Norte.

AIR EXCHANGE FANS FOR INDUSTRIAL AREAS

With experience providing fans for the textile and aluminum processing industry, our regular cooling tower fans can also be used for industrial ventilation applications. We can guarantee superior performance in this segment delivering gains in efficiency and lower power consumption.

LARGE ELECTRIC MOTORS

We have an exclusivity agreement with Siemens to supply special blade designs also made of aramid and carbon fiber. We are the only manufacturer certified to meet the loads covered in this application, using this type of material.

SERVICES

FanTR, in addition to developing and manufacturing fans for various types of ventilation systems, also performs services related to ventilation, always valuing the quality of service to its customers.



FANTR SERVICES

Performance measurements on cooling towers and axial ventilation systems

Support in ventilation system design for mining companies

Tunnel ventilation system design

Installation and assembly supervision

Equipment Refurbishment and repowering

Static and dynamic balancing and vibration analysis

Monitoring of ventilation system preventive maintenance



FANTR • TECHNOLOGY RESOURCES

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