



**FAN IMPELLERS**

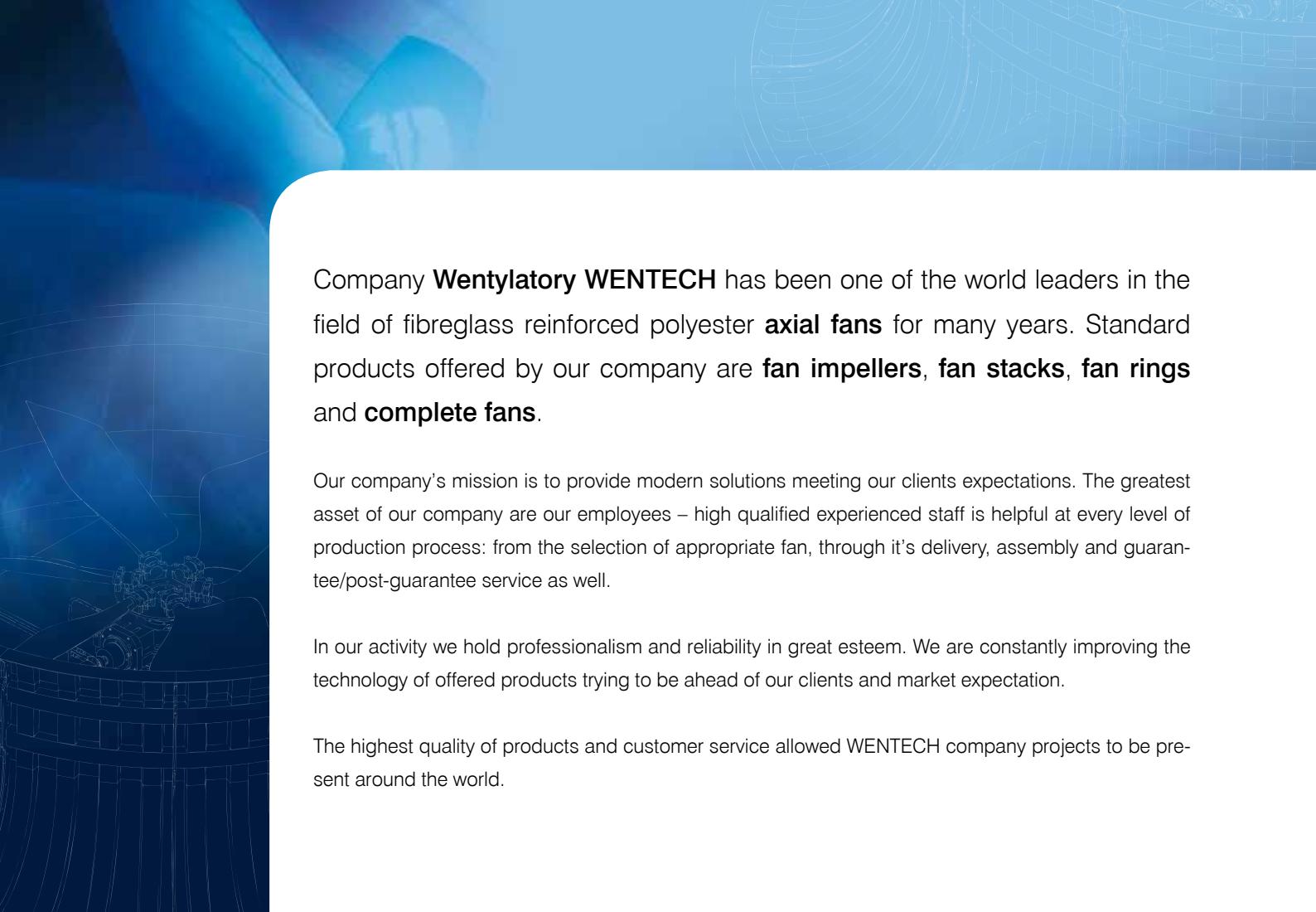
**FAN STACKS**

Company **Wentylatory WENTECH** has been one of the world leaders in the field of fibreglass reinforced polyester **axial fans** for many years. Standard products offered by our company are **fan impellers**, **fan stacks**, **fan rings** and **complete fans**.

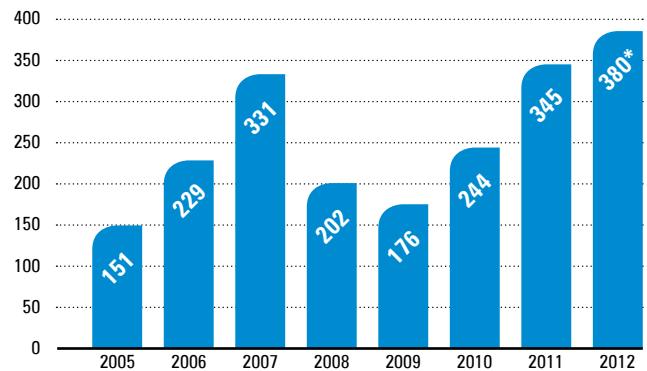
Our company's mission is to provide modern solutions meeting our clients expectations. The greatest asset of our company are our employees – high qualified experienced staff is helpful at every level of production process: from the selection of appropriate fan, through it's delivery, assembly and guarantee/post-guarantee service as well.

In our activity we hold professionalism and reliability in great esteem. We are constantly improving the technology of offered products trying to be ahead of our clients and market expectation.

The highest quality of products and customer service allowed WENTECH company projects to be present around the world.



The guarantee of effective realization of established aims is constantly being improved quality management system according to standard **PN-EN ISO 9001:2009**



Production level in tons of FRP per year.

\*estimated level

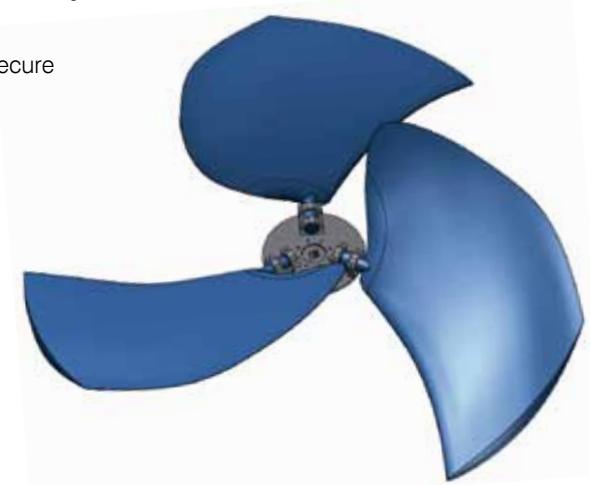
Average daily production is around 2 tons of laminate.

The biggest part of WENTECH production are **fan impellers**.

Designed for axial fans used in cooling towers and air-cooled condensers secure failure-free operation in the heaviest working conditions.

**Basic parameters of offered impellers:**

- Blades made of fiberglass reinforced polyester,
- Smooth surface protected by UV resistant gelcoat,
- Twisted blade shape,
- Protected blade leading edge,
- Standard operational temperature: - 40 do +65°C,
- Stepless regulation of blade angle during standstill (in the range from 4 to 28°).



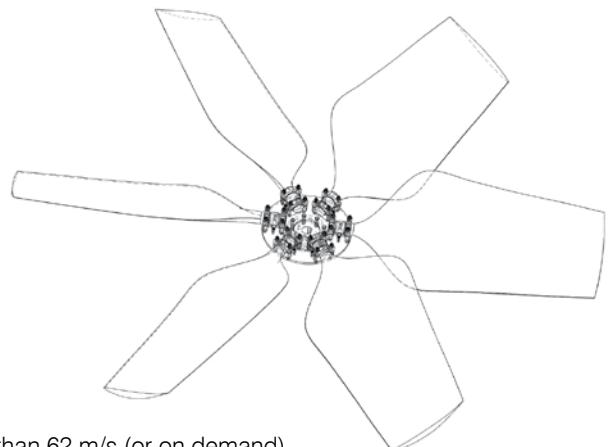
**WENTECH fan impellers' tags: WO 7920-5-(7)**

where:

**7920** – nominal diameter in mm or ft

**5** – number of blades

**(7)** – blade profile



**Special execution:**

**HT** – adapted for working in high temperatures: up to +120°C,

**KO** – acid and alkali resistant,

**R** – reinforced execution,

**SE** – with stainless steel edges protection – for the rotational speed greater than 62 m/s (or on demand)

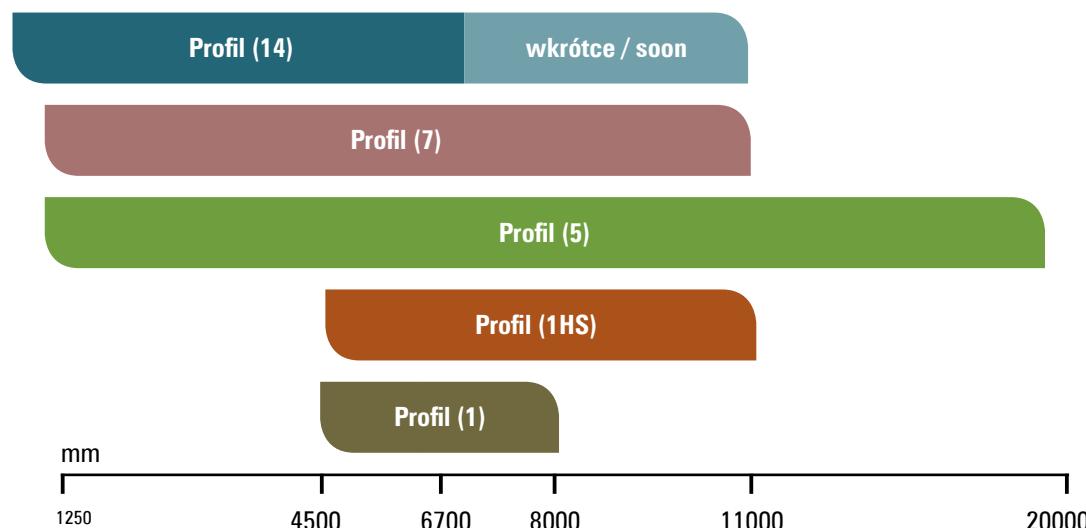
**SS** – elements of impeller's hub made of SS304 or SS316 stainless steel,

**SG** – self-extinguishing execution,

**AS/SG** – antistatic and self-extinguishing execution. For impellers operating in ATEX zone . For impellers we provide certificate of conformity according to ATEX standard for operating in zone II 2G, T1 – T6.

In case of special execution above mentioned tags are visible on the end of impellers name.

For example: **WO 5940-5-(7) AS/SG/SE**



The most important parts of axial fan are its **blades**.

Correct selection of the number of blades and their profile guarantees operational parameters meeting clients expectations. Currently WENTECH has 5 profiles in offer:

### Profile (1)

Narrow blade for operation with high rotational speed.

Used in projects where the key factor is a low price.

**Available diameters:** 4500 – 8000 mm (14 – 26 ft).

**Number of blades in impeller:** 3 to 8 pcs.

**Maximum tip peripheral speed:** 75 m/s.



### Profile (1HS)

Specially designed blade securing stable operation of impeller in difficult conditions of concrete and steel fan stacks.

High dynamic loads resistance.

**Available diameters:** 4500 – 20000 mm (14 – 66 ft).

**Number of blades in impeller:** 3 to 8 pcs.

**Maximum tip peripheral speed:** 80 m/s.

### Profile (5)

Blade's shape is slightly twisted. Therefore, its possible to reach higher airflow parameters of fan and especially higher pressure increment in comparison with the blade profile (1HS).

**Available diameters:** 1250 – 20000 mm (4 – 66 ft).

**Number of blades in impeller:** 3 to 8 pcs

**Maximum tip peripheral speed:** 75 m/s.



### Profile (7)

High efficient, silent blade with a twisted shape.

Allowes to reach high airflow parameters of fan being silent at the same time.

**Available diameters:** 1250 – 11000 mm (4 – 36 ft)

**Number of blades in impeller:** 3 to 8 pcs.

**Maximum tip peripheral speed:** 62,5 m/s.

### Profile (14)

High efficient, ultra silent blade designed for operation with low rotational speed.

Spatial shape allowes to reach high airflow parameters. Currently, its the only blade on the market that is compatible with the most strict low noise requirements.

**Available diameters:** 1250 – 6700 mm (4 – 22 ft).

Larger diameters are being tested – available from 2013r.

**Number of blades in impeller:** 3 to 6 pcs.

**Maximum tip peripheral speed:** 52 m/s.



## Execution standard:

### Colour

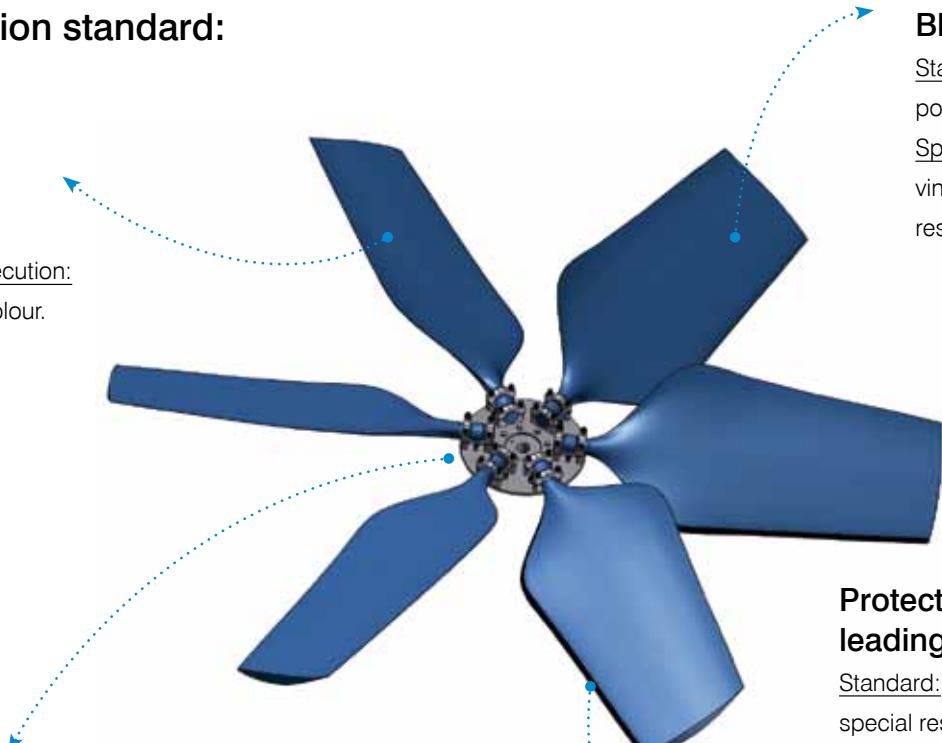
Standard:

RAL 5015

RAL 7035

Special execution:

Any RAL colour.



### Blade

Standard:

polyester resin.

Special execution:

vinylester or epoxide resin.

### Hub

### Clamping rings

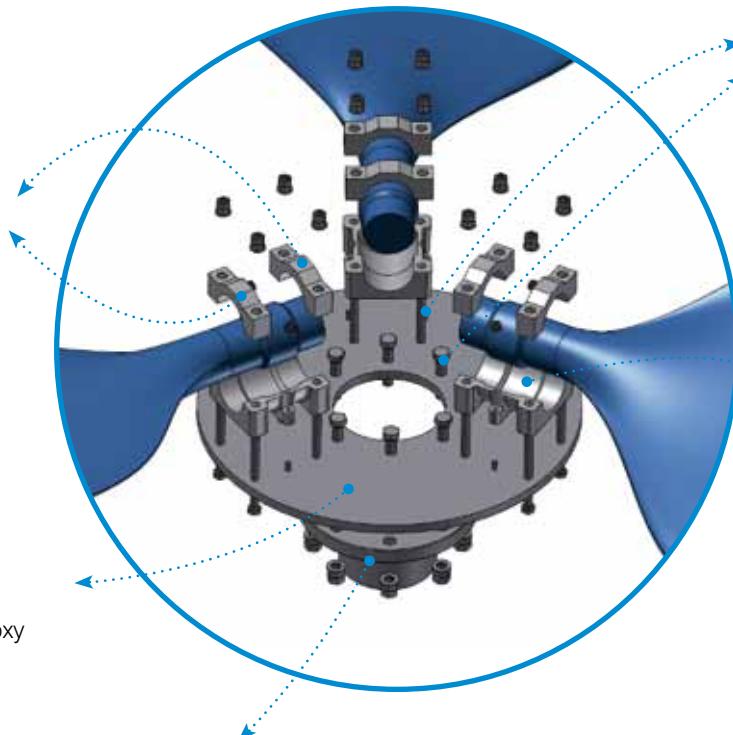
Standard:

hot galvanized steel

Special execution:

SS304 or SS316

stainless steel.



### Hub disk

Standard:

hot galvanized steel

Special execution:

steel protected with epoxy paint, SS304 or SS316

stainless steel.

stainless steel.

### Fasteners

Standard:

hot galvanized steel

Special execution:

SS304 or SS316

stainless steel.

### Coupling

Standard: cast iron, aluminum or steel protected with epoxy paint.

Special execution: SS304 or SS316 stainless steel..

### Blade support

Standard: aluminum

Special execution:

galvanized steel, cast iron,

SS304 or SS316

stainless steel.

# Fan casings

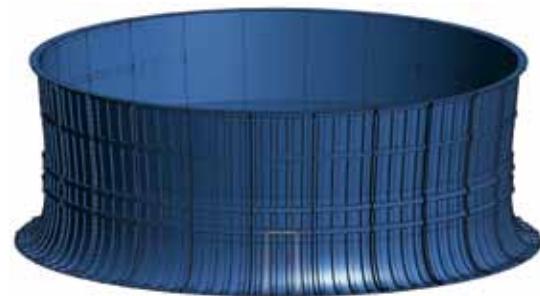
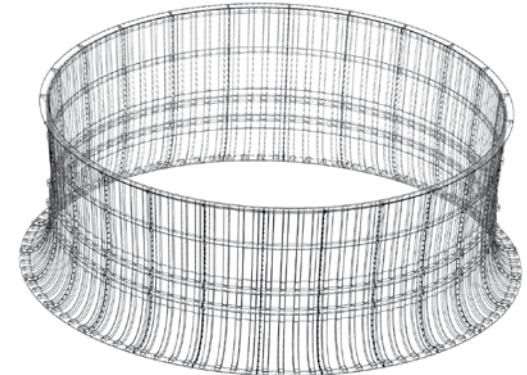
## Fan stacks

Fan stacks are another key products offered by WENTECH.

Fan stack's task is to optimally form the flow of the cooling air through the fan in order to achieve optimum airflow parameters and to secure the highest possible efficiency of the system.

### Basic parameters

- Fibreglass reinforced polyester execution,
- Double-coat design, internal and external surfaces are smooth, protected with UV-resistant gelcoat.
- Special ribs secures high stiffness and protects from vibrations.
- High execution standard facilitates central alignment of the impeller and setting the optimum blade tip clearance.
- Segmented design – easy transport and quick assembly on ground level or cooling tower's deck.
- Low weight – in comparison with steel fan stacks.
- Fasteners made of SS304 or SS316 stainless steel.
- Standard operational temperature: from -40 to +65°C.
- Standard colour: RAL 7035 or RAL 5015.
- Any RAL colour available on demand.

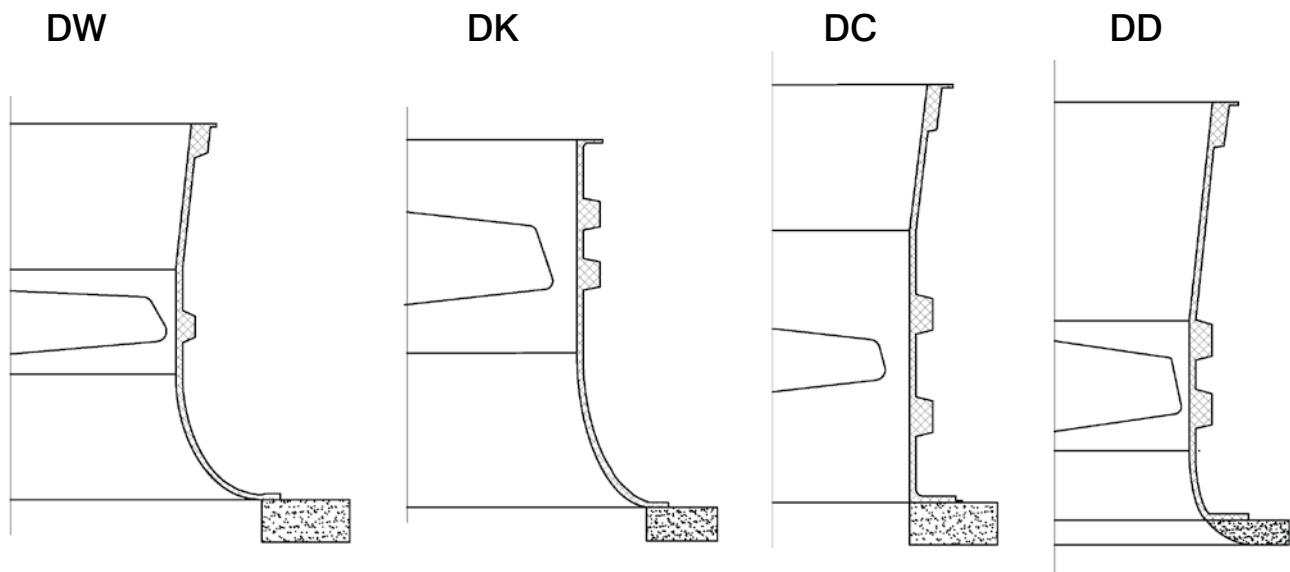


### Optional equipment:

- Access door,
- Porthole,
- Repair and touch-up kit,
- Stainless steel fasteners,
- Lifting eyes

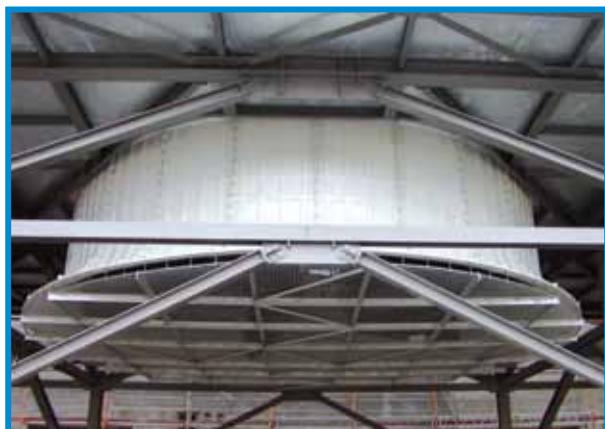


## Basic WENTECH fan stacks types:



### Fan rings

They have the same parameters as fan stacks, but are designed for operation in forced draft systems (air-cooled condensers). Basically, they can be delivered with protection gris attached to lower flange of inlet.



Design, shape and geometrical dimensions of new fan casings are optimized during design stage in order to secure the highest endurance parameters. The influence of impeller blades on fan ring's wall is analyzed. On that basis, appropriate technology is being developed – it prevents from the vibrations during the operation of fan.

For non-standard projects, WENTECH is able to design and produce fan casing with dimensions matching clients requirements.

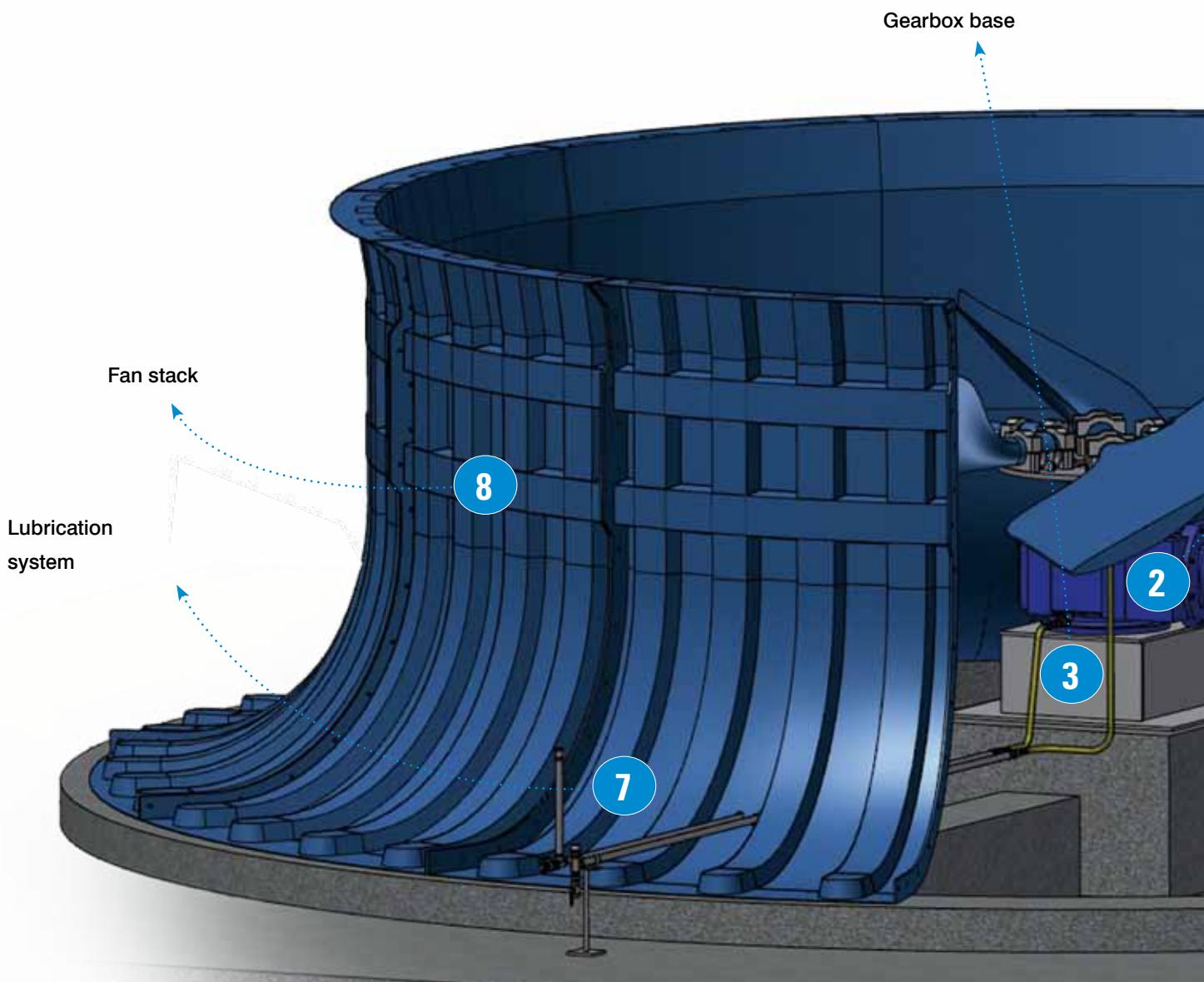


## Complete fans

Being a producer of basic parts of fans, WENTECH offers also complete sets of fans.

### Complete fan set purchase advantages:

- Optimum selection of all fan parts,
- Improved in all details design of whole system,
- Complete technical documentation,
- Complete delivery to the place of assembly,
- Quick assembly – many fan parts are pre-assembled,
- One guarantee for the whole fan,
- Many years of failure-free exploitation,
- Designed according to the standard EU Commission Regulation no. 237/2011 of 30 March 2011 in order to fulfill directive European Parliament and Council 2009/125/EC.



## Types of drive unit in fans:

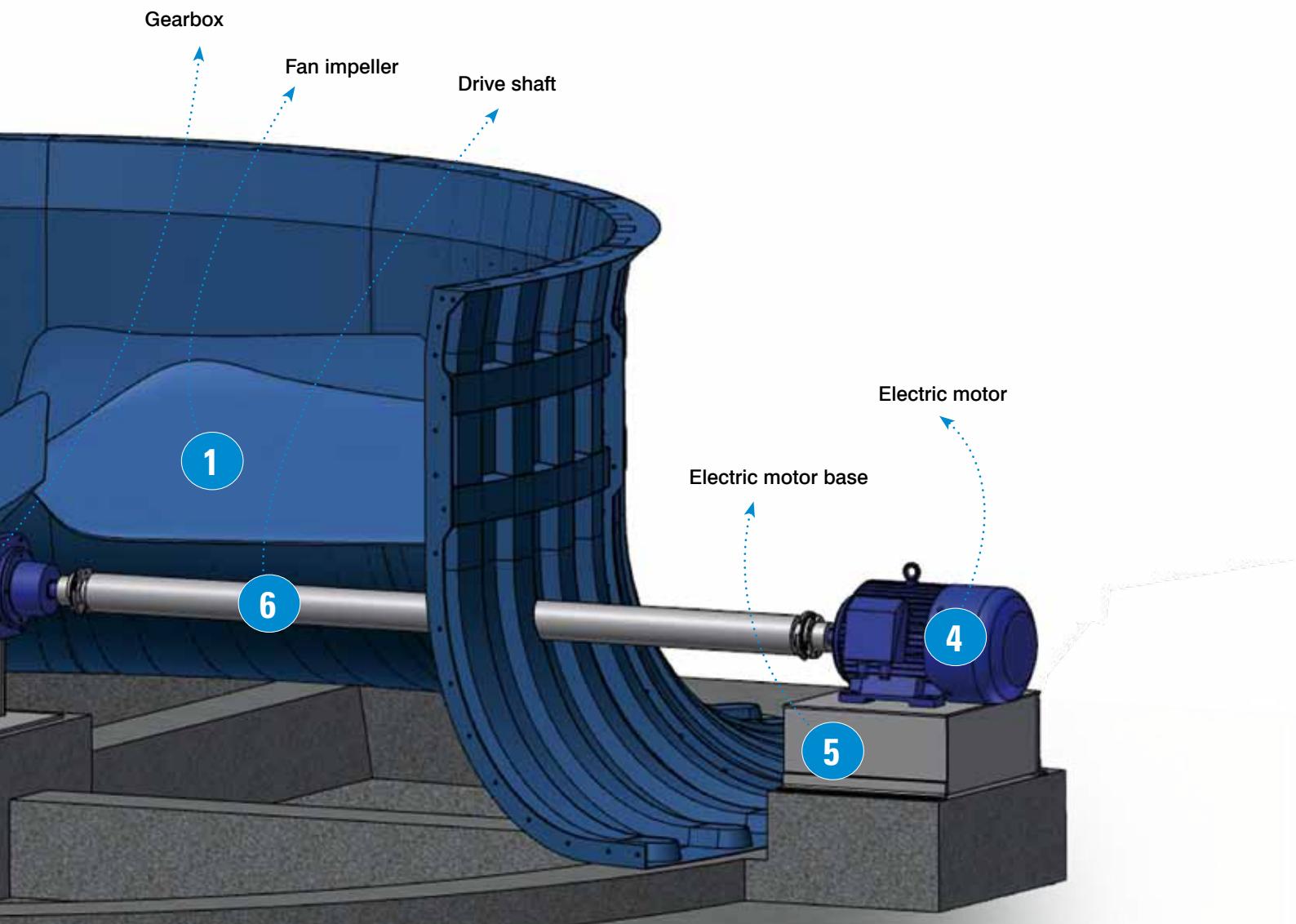
Direct – by the electric motor only.

Indirect – by the gearmotor, belt transmission or right angle gearbox.

## Fan control system

Using motors controlled by frequency converters allows to save huge amounts of energy. That solution enables user to steplessly control of fan rotations in order to maintain a stable temperature of water. Another advantage is soft start – it helps to keep fan mechanical parts in good condition. Additionally – it helps to lower the noise level at night.

Every WENTECH fan can be equipped with complete control system with frequency converters

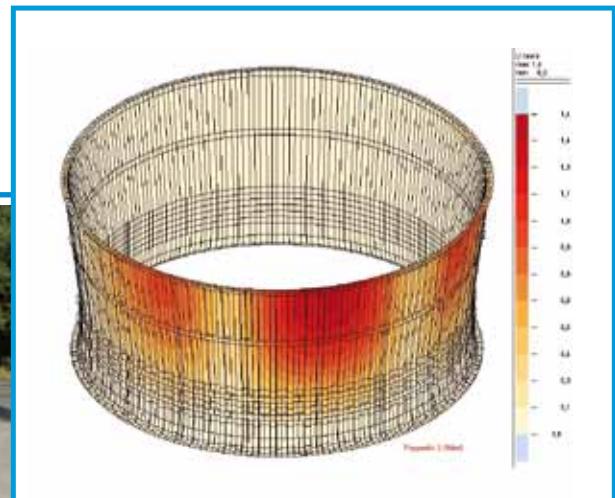
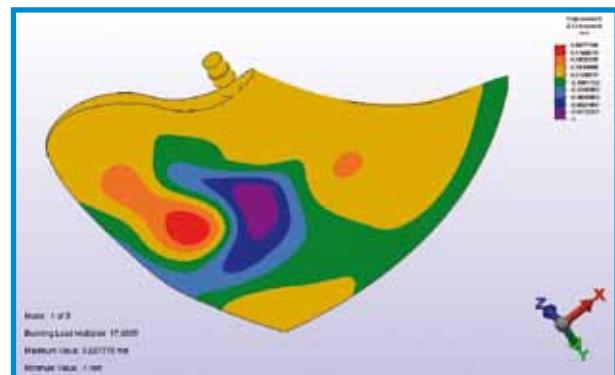
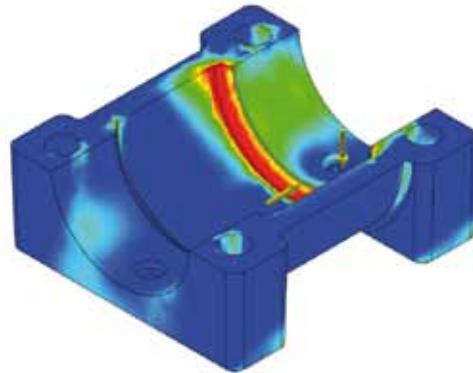


## Research and Development

Intensive technology development, higher and higher market requirements force to search for new improved solutions. WENTECH's Research and Development Department has been intensively exploring new possibilities of introducing new products and improving existing solutions for years. With the support of qualified staff and modern simulation instruments, during last four years two new blade profiles were introduced to the WENTECH offer, and two following are on advanced level of tests.

Design, research and test processes are supported by the newest software available. They are:

- SolidWorks Premium.
- SolidWorks Flow Simulation.
- Autodesk Inventor Professional.
- Wentech own software for fan stack loads analysis.



## Test stand

WENTECH company has several test stands for researching and testing of new blade profiles. Fan impeller diameters 800 and 1600 are being tested on test stands. Our test stands meet requirements of PN-77/M-43021, PN-EN25136 and PN-ISO5136 standards.

Total automatization of stand with a constant reserve of impellers allows to determine air-flow characteristics and sound power level for every blade angle.



Results of air-flow and acoustic measurements from test stands along with measurements in real conditions on objects were used when developing modern software for fan impellers selection - OPTISEL.

Fan impellers selection software is a basic tool used from the very beginning when designing a fan. After the entering of main parameters (like efficiency, static pressure, impeller diameter, rotational speed, arrangement) user obtains several suitable impeller types to choose from. User can choose the most suitable type – it depends on user's requirements. It can be the highest efficiency, lowest acoustic parameters or economical matters – the cheapest one.

**Wentylatory Wentech sp. z o. o.**  
**OPTISEL ver. 12.05.07**  
 41-407 Imielin, ul. Rzemieślnicza 6  
 E-mail: wentech@wentech.pl Telefon: +48 32 225 56 06, +48 32 318 34 33

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Wydajność	234	m <sup>3</sup> /s	↓
Ciśnienie statyczne	123	Pa	↓
Temperatura wlotowa	35	°C	↓
Gęstość powietrza	1.155	kg/m <sup>3</sup>	↓
<input type="checkbox"/> Oblicz gęstość powietrza			
Wilgotność powietrza	70	%	↓
Ciśnienie barometryczne	1013	hPa	↓
Wysokość nad poziomem morza	258	m	↓

Oblicz średnicę obudowy  Oblicz szczeliny  Oblicz średnicę wirnika

Średnica wirnika	Wybierz	4877	mm	↓
Szczelina nadłopatowa	0.50	%	↓	
Średnica obudowy	4926	mm	↓	

Prędkość obrótowa: 202  Prędkość obwodowa: 51.6

obr/min  m/s

Profil (1) maksymalna prędkość obwodowa 75 m/s  
 Profil (1HS) maksymalna prędkość obwodowa 80 m/s  
 Profil (5) maksymalna prędkość obwodowa 75 m/s  
 Profil (7) maksymalna prędkość obwodowa 63 m/s  
 Profil (14) maksymalna prędkość obwodowa 53 m/s

Please register  
 in Fan Impellers Selection  
 Software OPTISEL on:  
[www.optisel.wentech.pl](http://www.optisel.wentech.pl)

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Wydajność: 350 m <sup>3</sup> /s	Ciśnienie statyczne: 123 Pa	Gęstość czynnika: 1.155 kg/m <sup>3</sup>	Temperatura: 35 °C
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**Układ pracy 5a/cy**  
 Dyfuzor: Brak  
 Kształt wlotu: Elipsa H/D=0,15  
 Przeszkoda na wlotce: Brak  
 Przeszkoda na wylotce: Brak

Nazwa wirnika	Ud. impeleru [m <sup>3</sup> ]	Prędkość obrótowa [obr/min]	Prędkość obwodowa [m/s]	Skuteczność wlotowa [%]	Skuteczność wylotowa [%]	Zapas wydajności [%]	Zapas ciśnienia [%]	Numer arkusza [wsz]
W04877-5-(1)	20,5	270	68,9	34,0	88,1	9,0	18,8	138,2
W04877-6-(1)	21,0	270	68,9	32,1	83,1	10,2	21,5	134,3
W04877-7-(1)	18,5	270	68,9	32,4	83,9	10,3	42,4	131,1
W04877-8-(1)	20,2	270	68,9	31,5	86,9	4,5	8,7	136,4
W04877-9-(1)	17,8	270	68,9	31,0	81,9	21,3	44,7	137,4





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**REGIONAL PROGRAMME**  
NATIONAL COHESION STRATEGY



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