



**fanTR**

TECHNOLOGY RESOURCES

IN THE AIR,  
BY YOUR SIDE  
WE ALWAYS  
INNOVATE





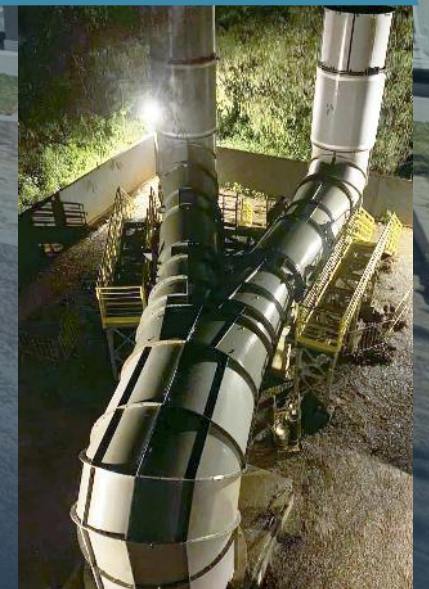
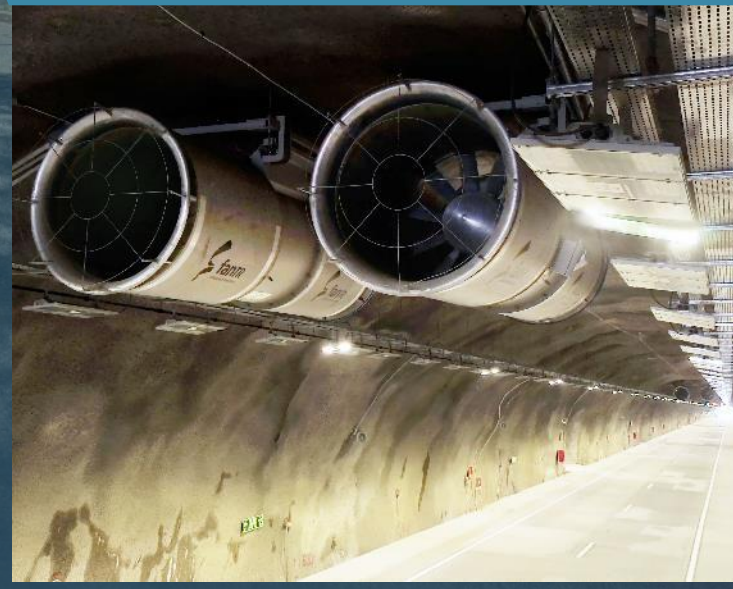


A company that develops and manufactures complete **ventilation systems and axial fans for underground ventilation and cooling applications**

## Fans for Cooling Towers / ACC



## Fans for Tunnels and Mining







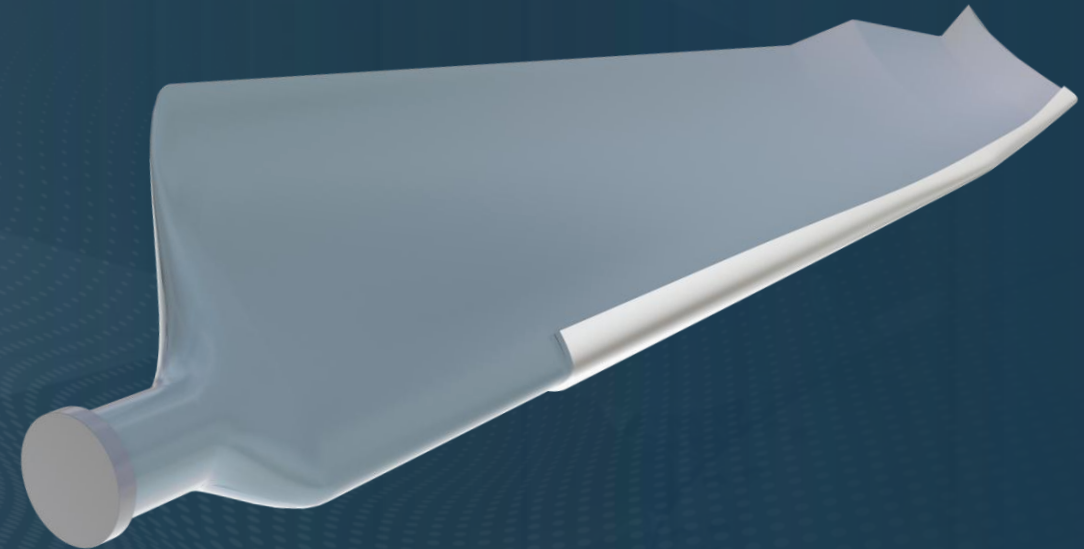


NEW COOLING FAN BLADE

NEW PRODUCT LAUNCH

# X-FLOW

- ⚡ A groundbreaking innovation  
unique aerodynamic design
- ⚡ Enhancing competitiveness - lower operational cost
- ⚡ 100% interchangeable hub  
with all FanTR fans models



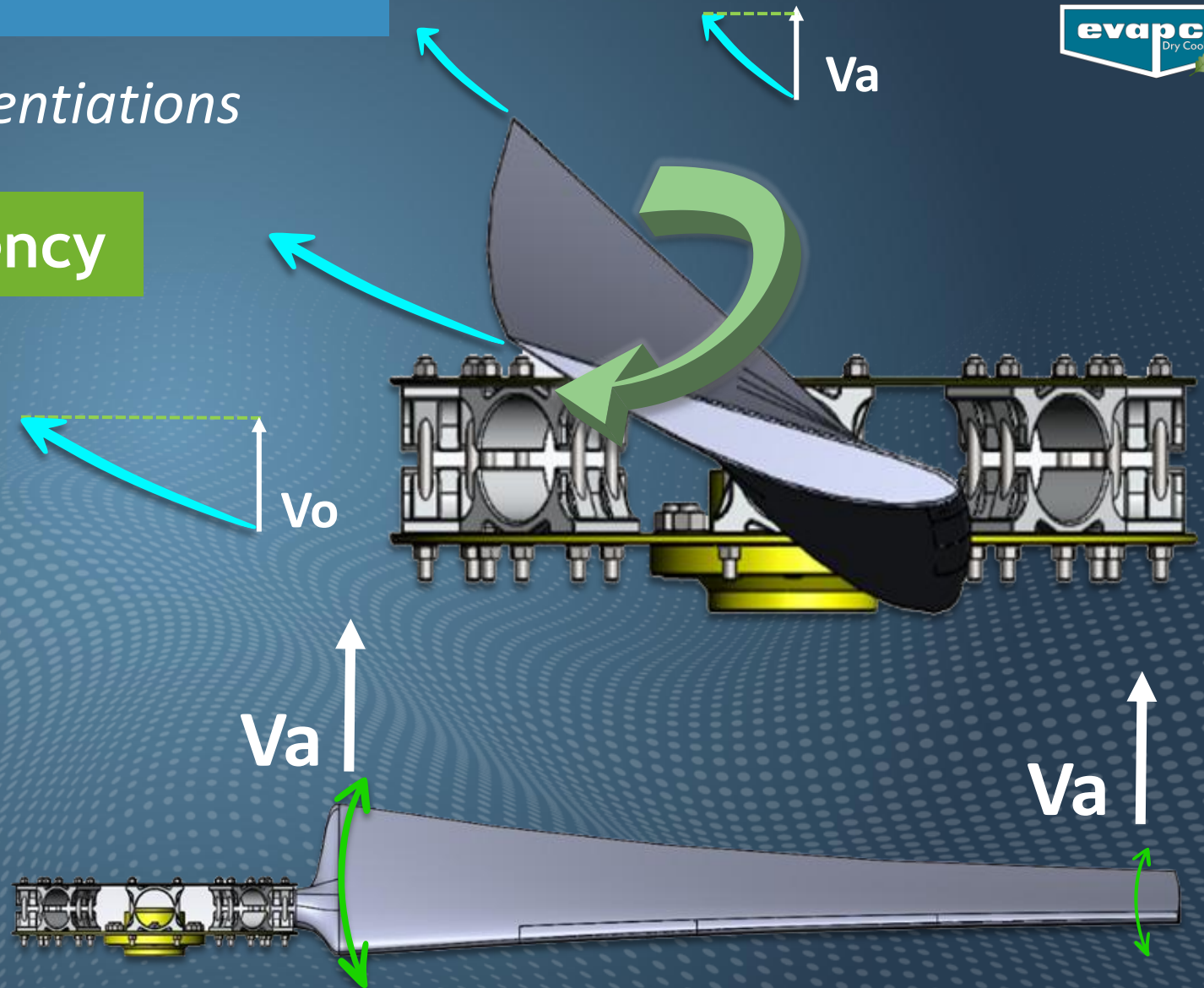
**X = eXtreme**  
extremely high efficiency

# AN IMPORTANT CONCEPT

*FanTR aerodynamic design differentiations*

**Constant  $V_a$  = Better efficiency**

- ✦ Blade twist
- ✦ Gradual chord length

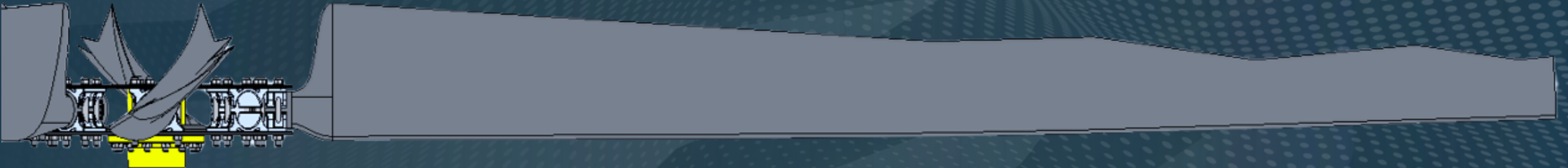
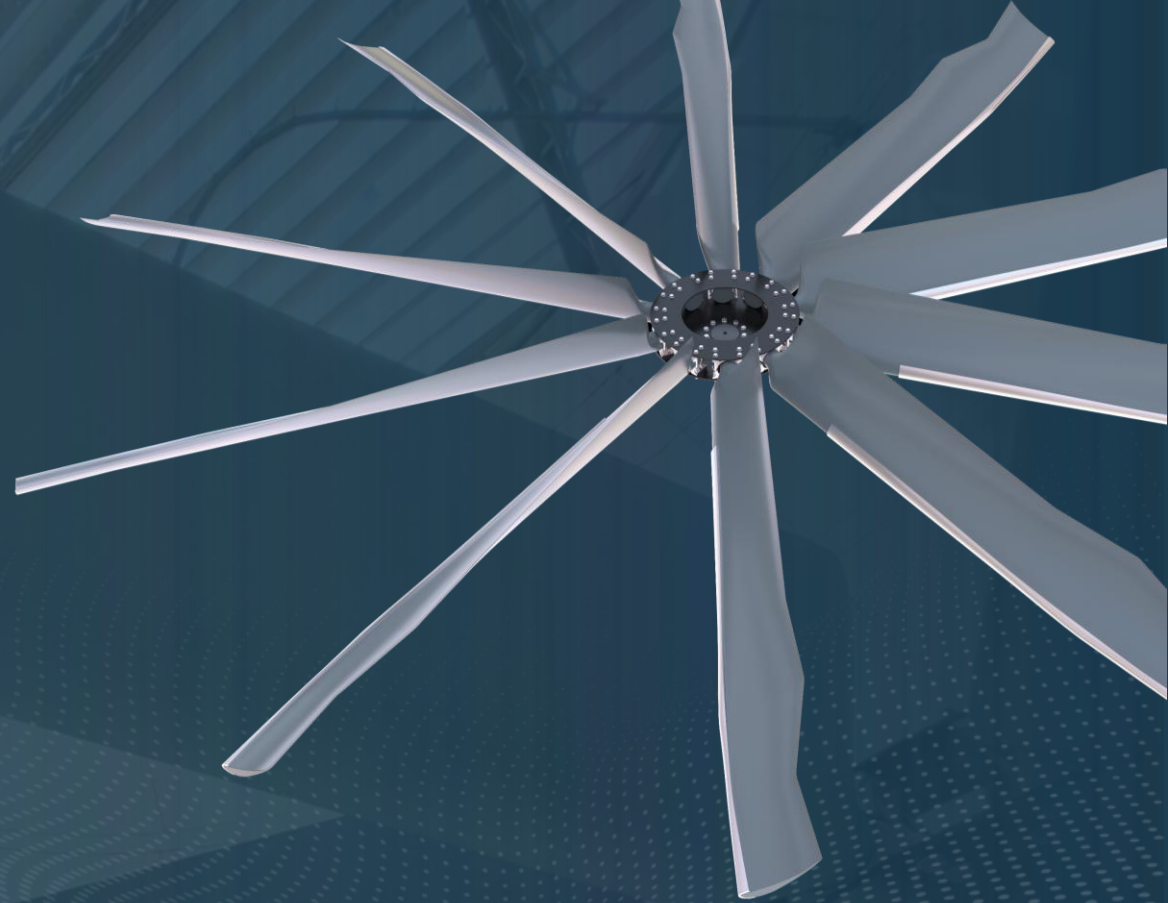




# NEW COOLING FAN BLADE

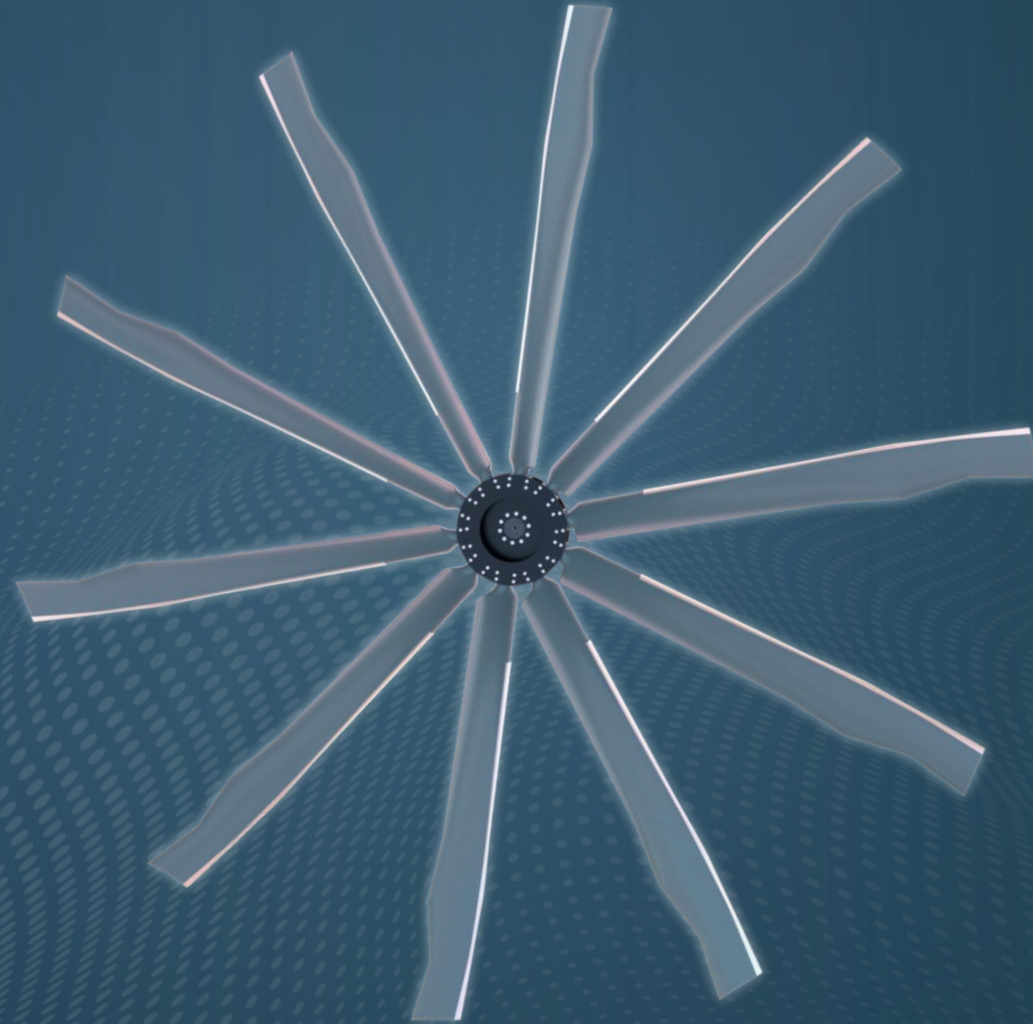
## X-FLow

- ⚡ **Higher lift per size**  
You choose - Energy saving or higher air flow
- ⚡ **Aeroelastic concept load**  
Lower vibration
- ⚡ **One-shot Vacuum infusion**  
Highly durable manufacturing process



# HIGHER LIFT PER SIZE

Airflow  $\approx$  Lift



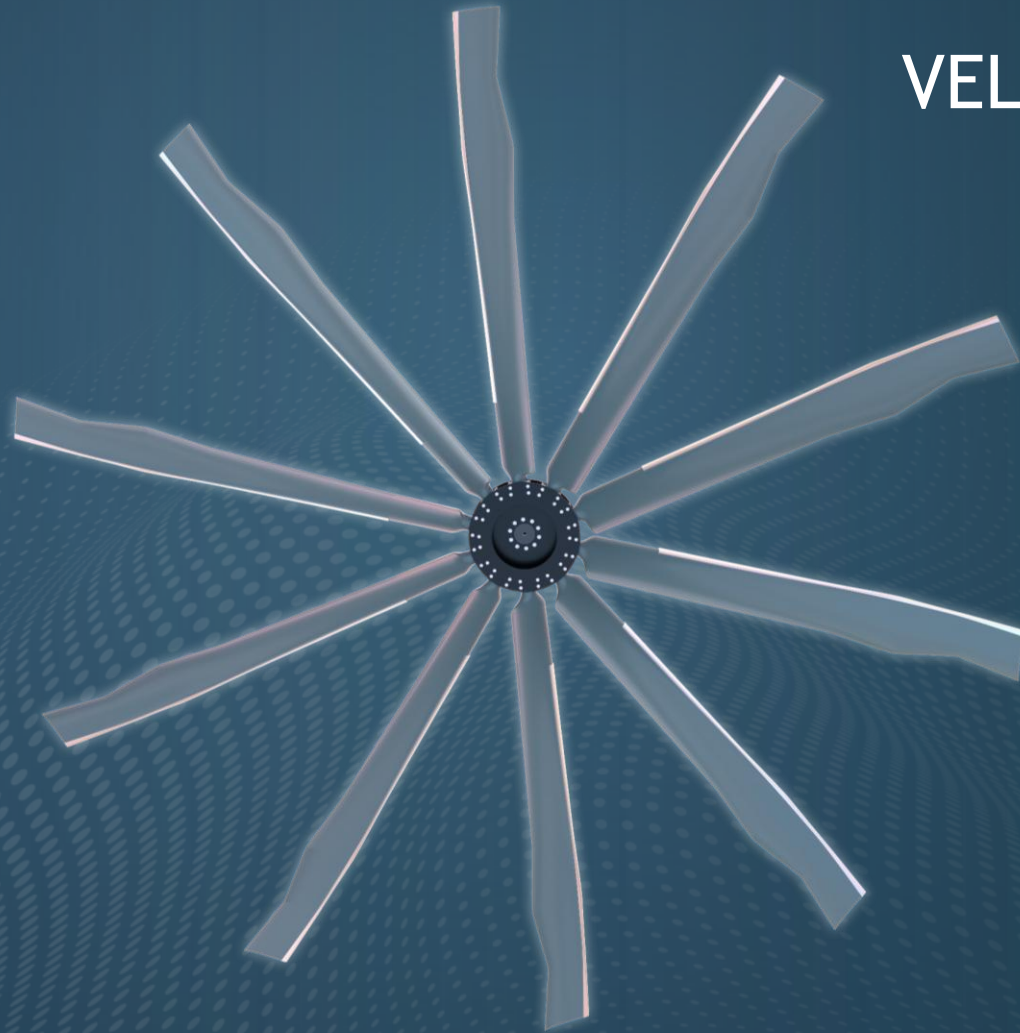


# HIGHER LIFT PER SIZE

Airflow  $\approx$  Lift



VELOCITY





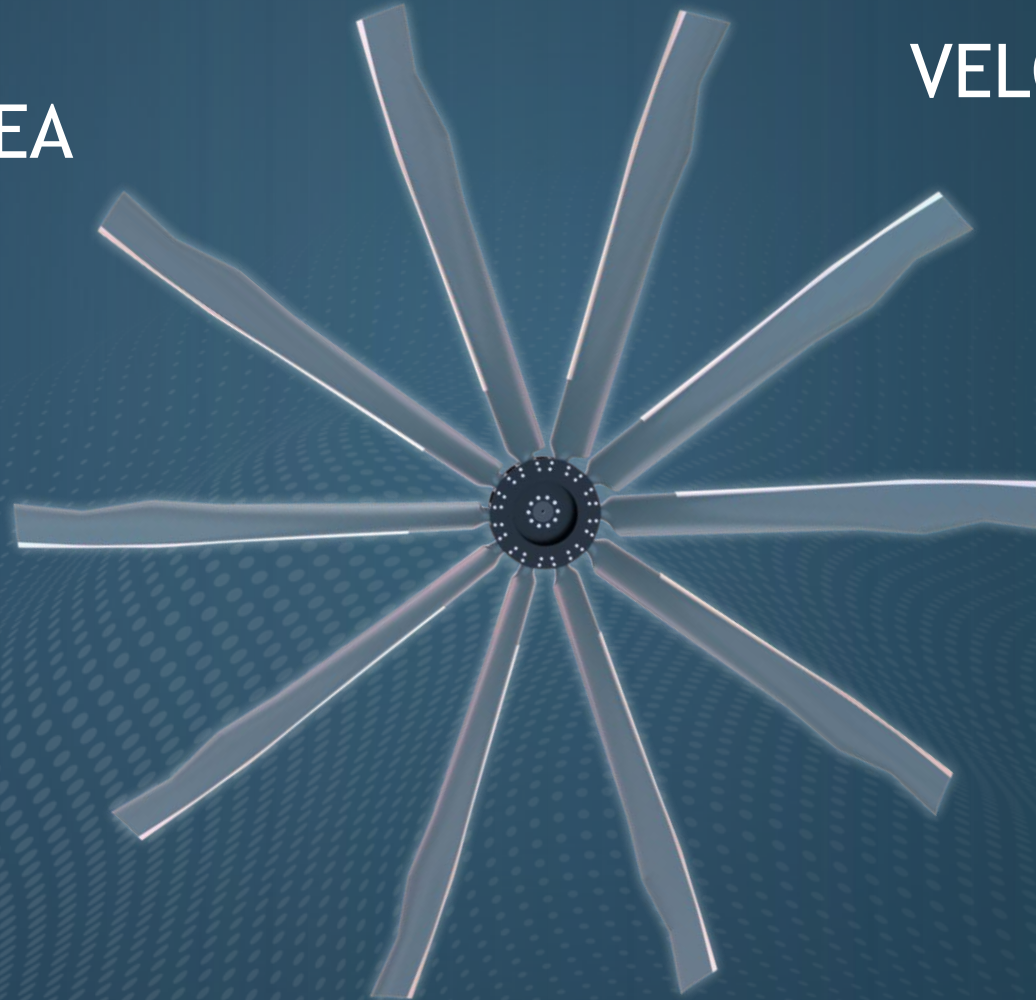
# HIGHER LIFT PER SIZE

Airflow  $\approx$  Lift



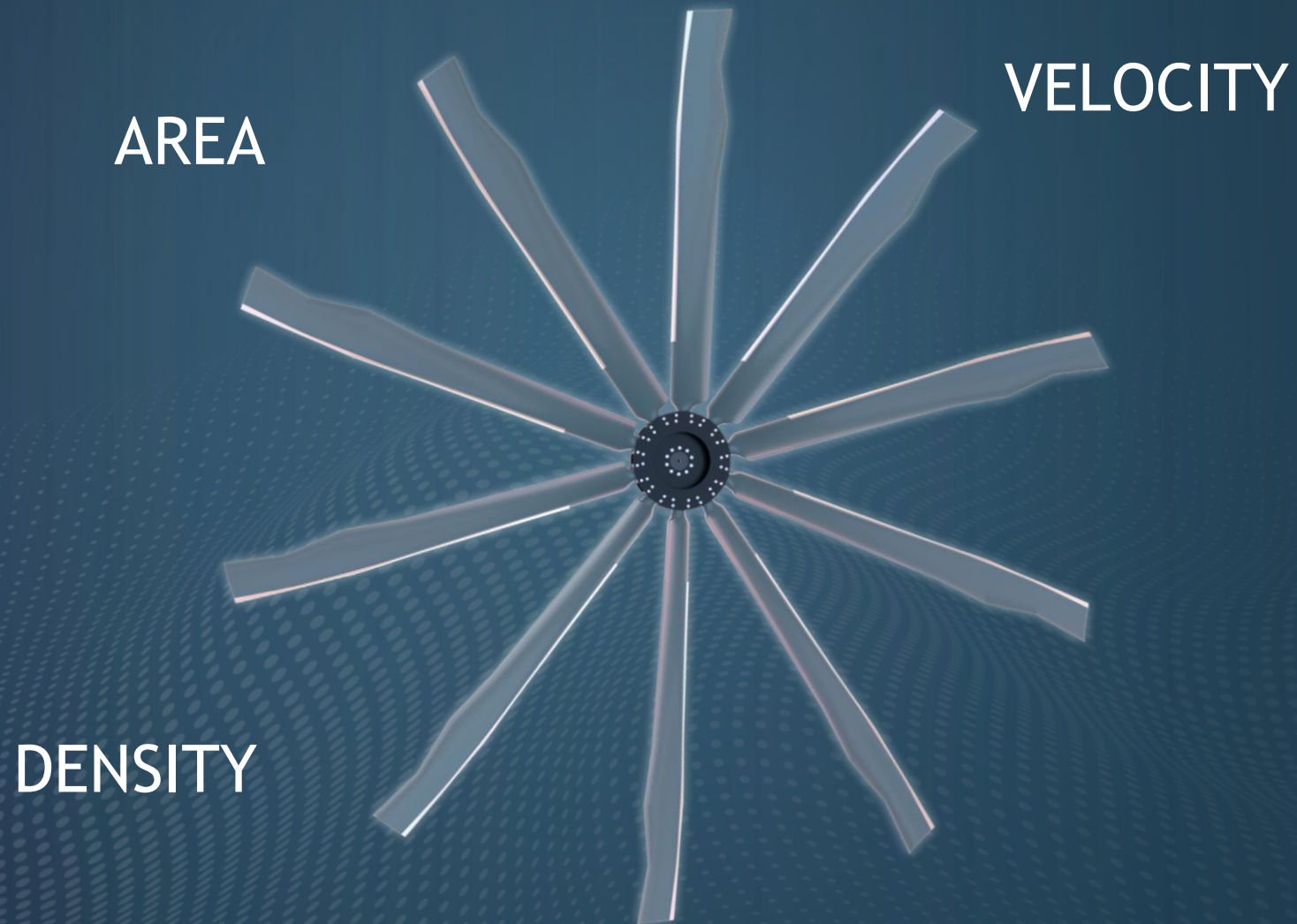
AREA

VELOCITY



# HIGHER LIFT PER SIZE

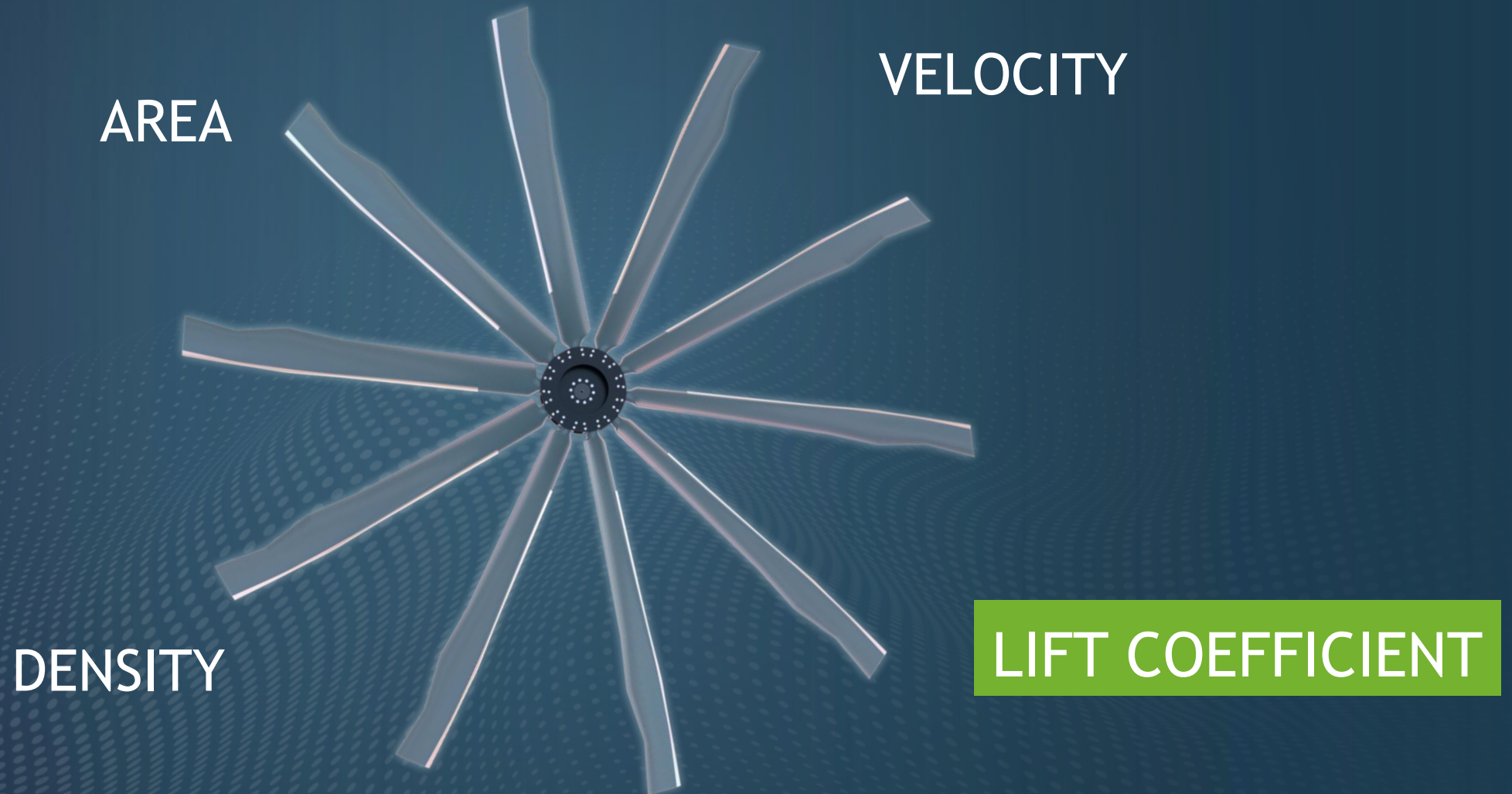
Airflow  $\approx$  Lift





# HIGHER LIFT PER SIZE

Airflow  $\approx$  Lift

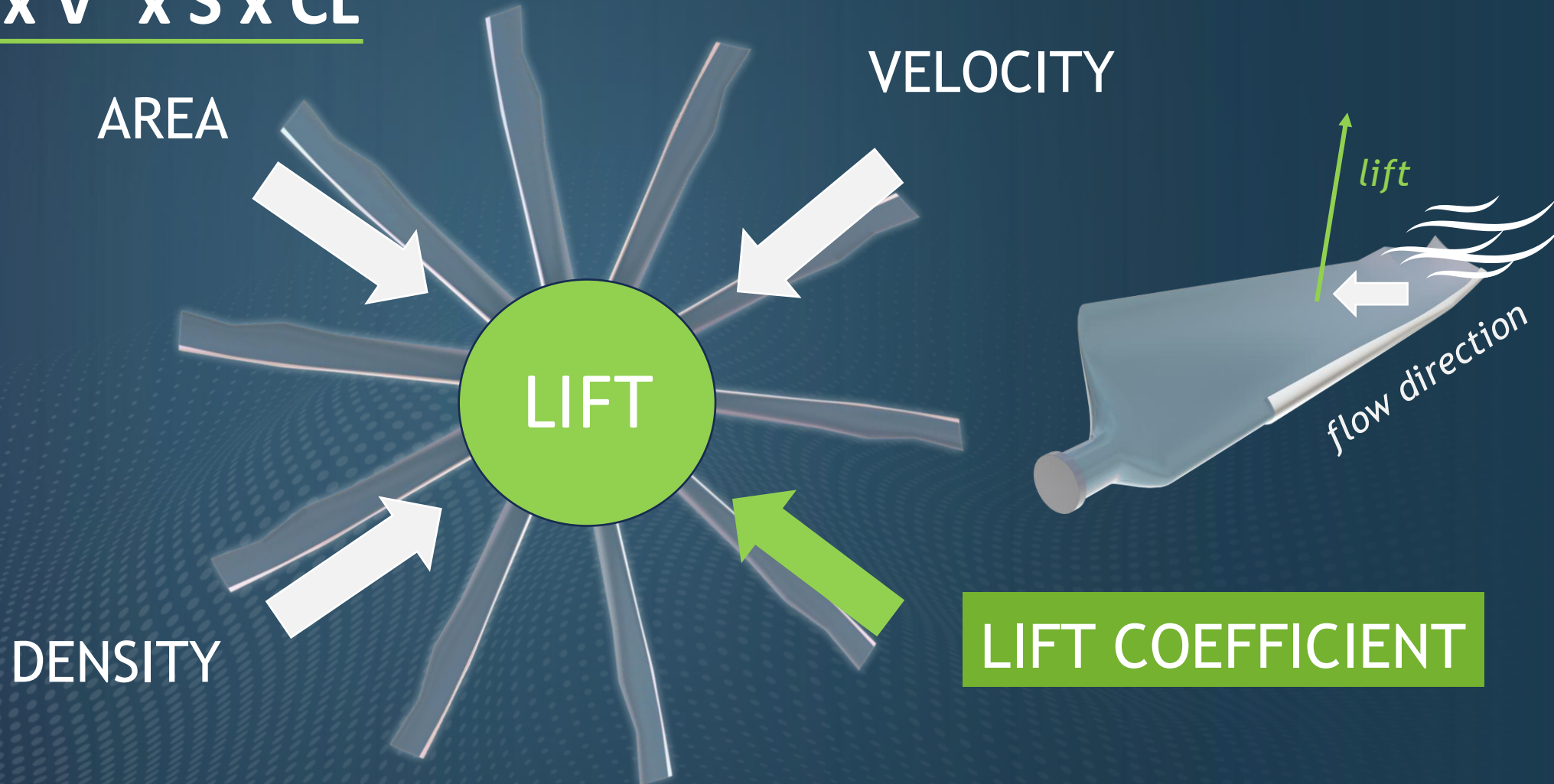


# HIGHER LIFT PER SIZE

Airflow  $\approx$  Lift

$$L = \frac{1}{2} \text{RHO} \times V^2 \times S \times CL$$

- $L$  = lift
- $\text{RHO}$  = density
- $V$  = velocity
- $S$  = area
- $CL$  = lift coef.

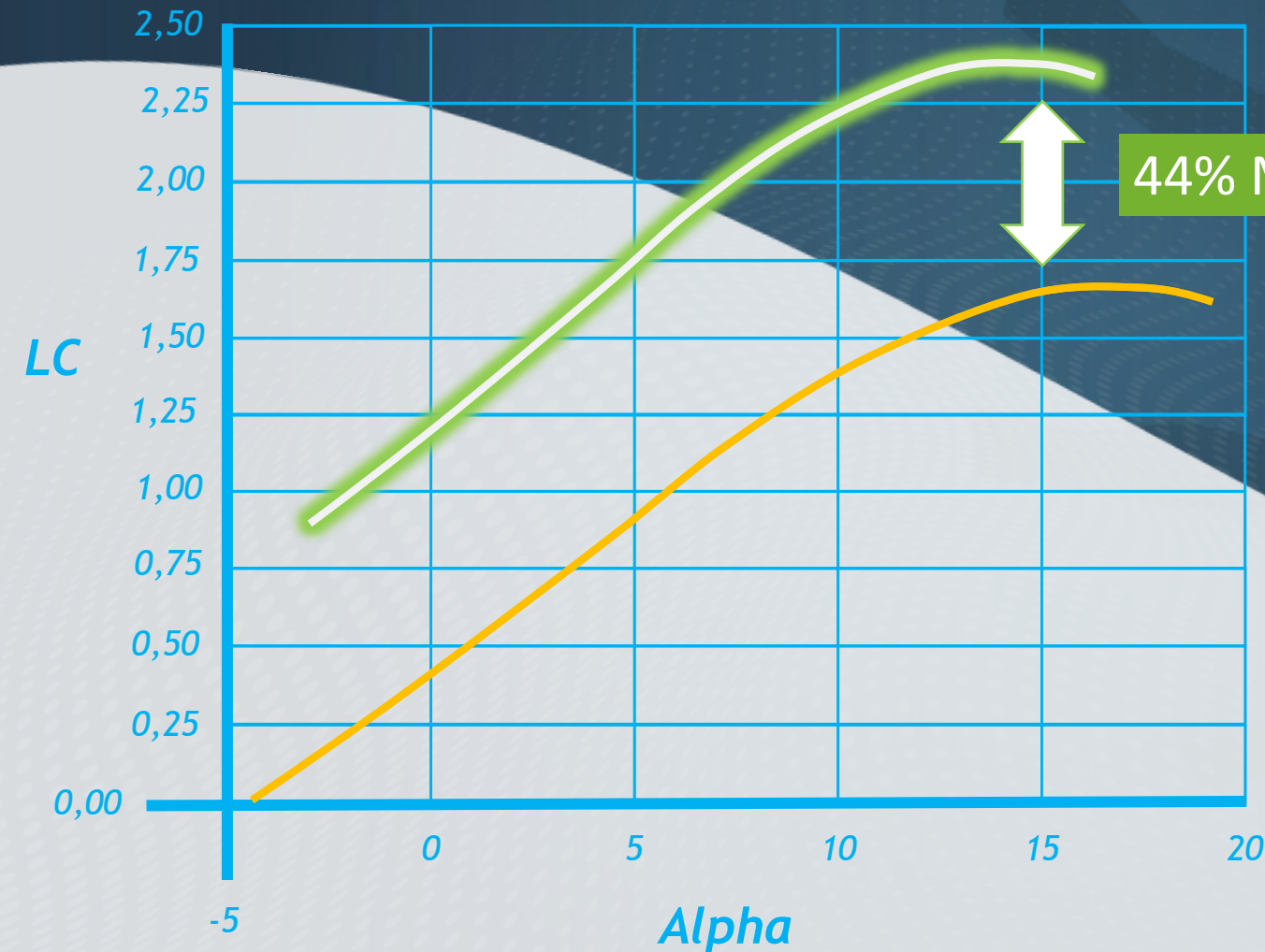




# HIGHER LIFT PER SIZE

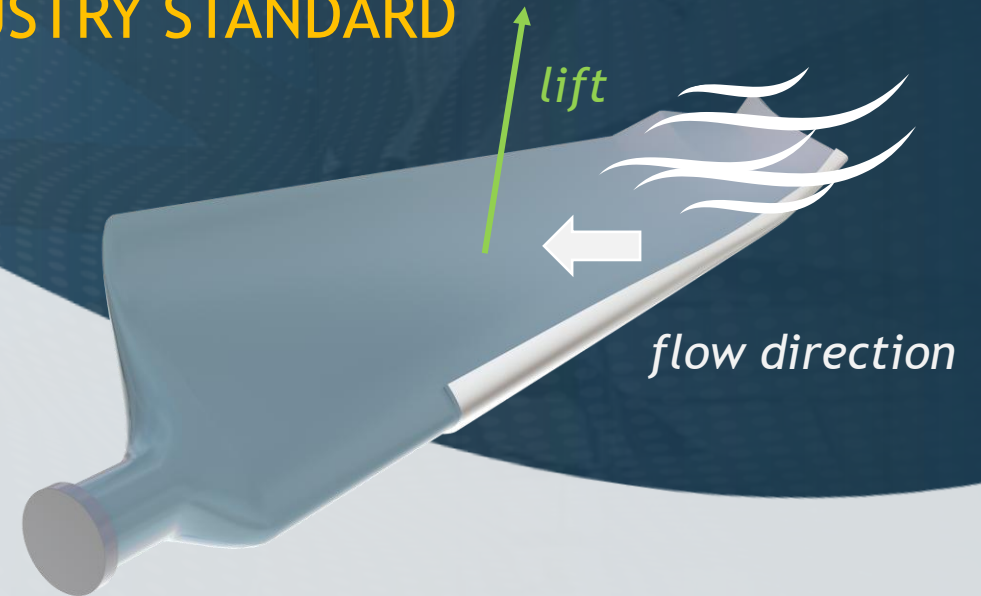
*Lift Coefficient*

# X-FLOW



44% MORE LIFT

INDUSTRY STANDARD



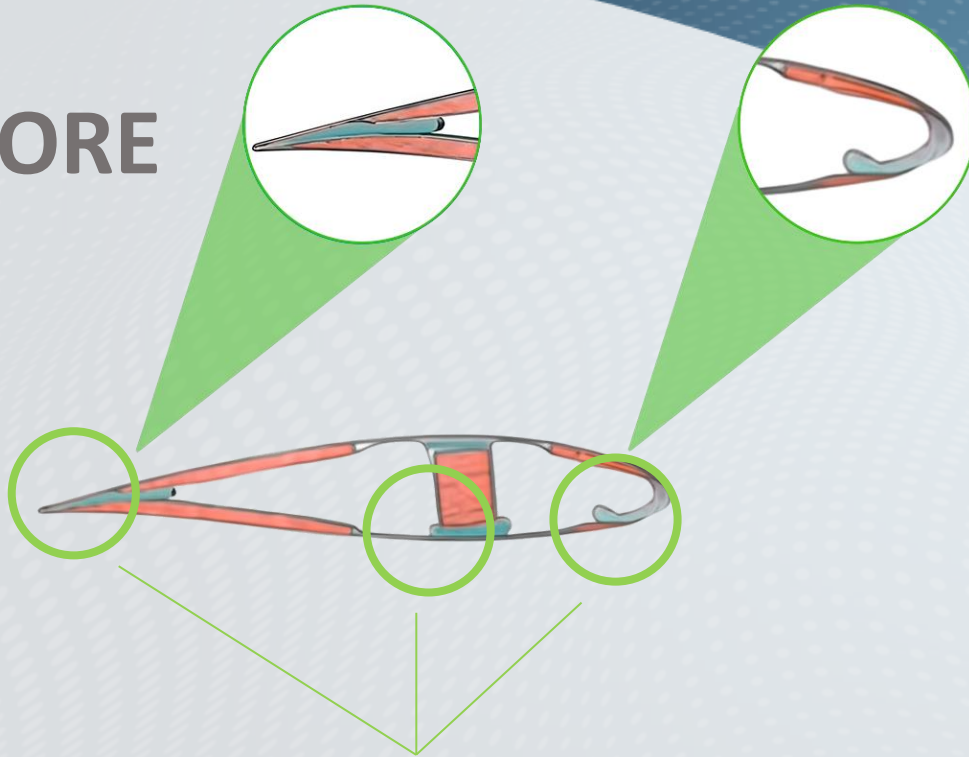
# DURABILITY

## MANUFACTURING PROCESS

### PATENT PENDING

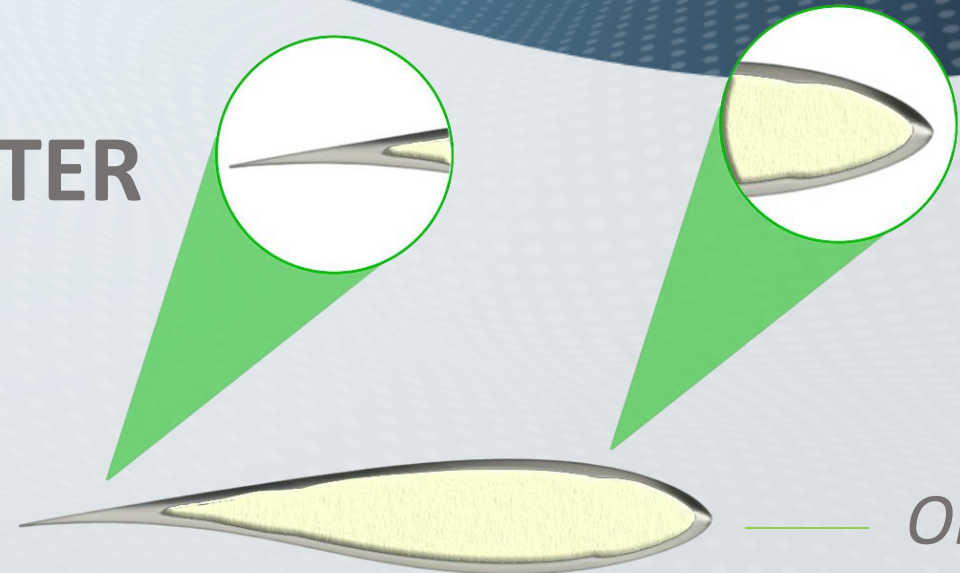
- ✓ One-Shot Vacuum Infusion System
- ✓ No adhesives or bonded parts – Monolithic construction
- ✓ Automated mold process with control system
- ✓ Multiple sensor parameters recorded for each blade – "Blade DNA"

BEFORE



*Bonding areas*

AFTER

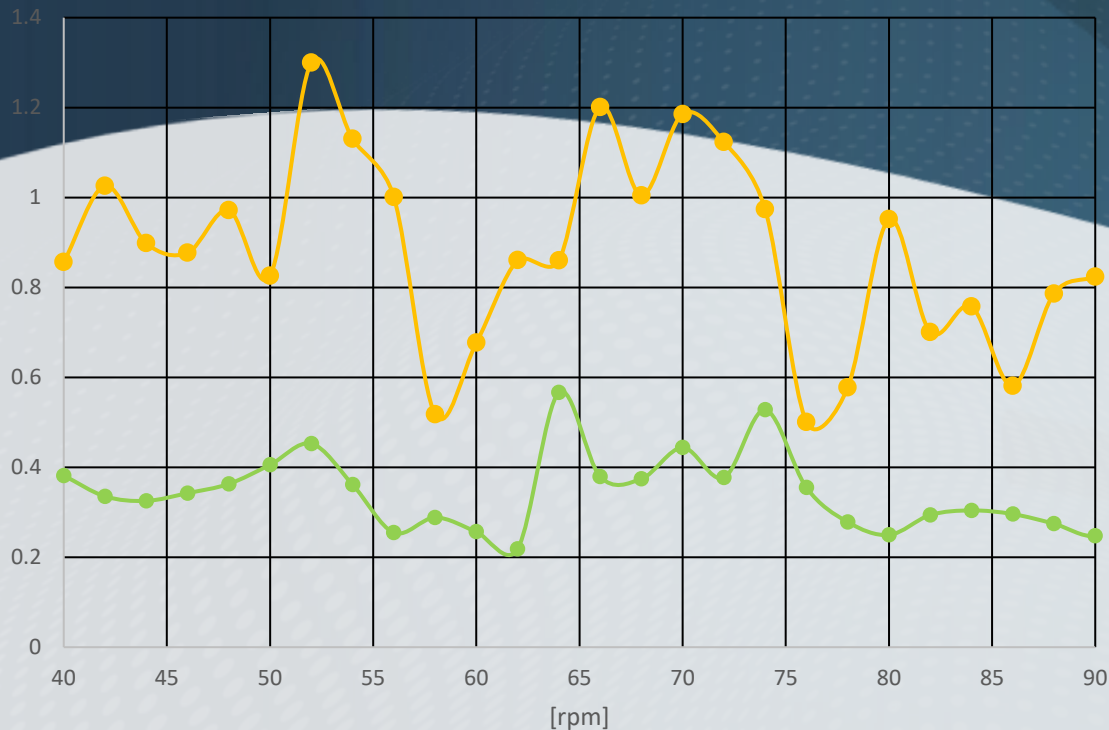


*One piece*



# Aeroelastic concept load

## Lower Vibration



**Amplitude response: 3x lower**

**PATENT PENDING**

*Coupling between the aerodynamic and structural design*

**X-FLOW**

- ✓ Less stress on gearbox and structure
- ✓ Less influenced by cross wind
- ✓ Less maintenance and longer life





36 ft

50 ft

Proven through full-scale testing

**EFFICIENCY & SOUND  
LEVEL TESTING**



# Retrofit- Engineering Requirements

⚡ Technical Comparison

⚡ Coupling Flange

⚡ Vibration Analysis

⚡ Installation



# Technical Comparison



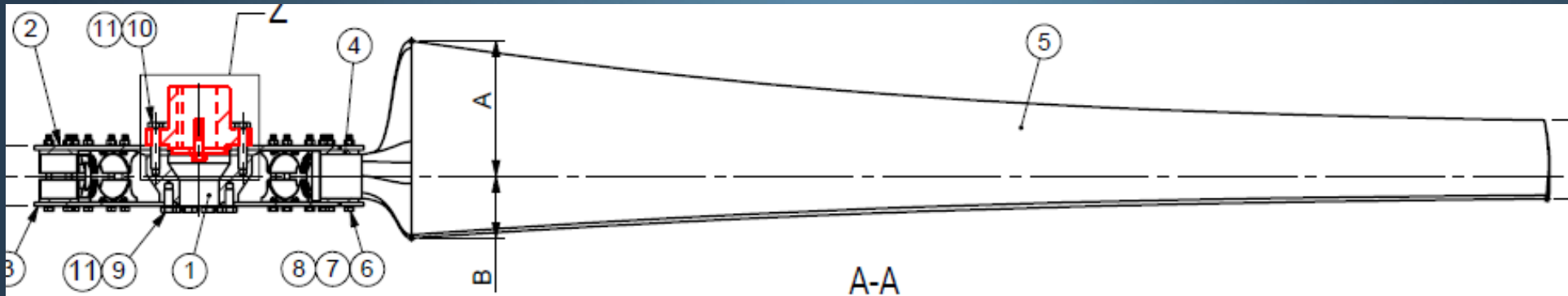
Requires Fan or ACC Data Sheet

Fan Model	Existing	X-Flow
Fan Blades	7	7
RPM	73	73
Static Efficiency	62%	64.5%
Total Efficiency	87%	90%
Sound Power Level (dBA)	99.3	98.9
Static Pressure (Pa)	93	93
Air Density (Kg/m <sup>3</sup> )	1.22	1.22
Blade Pitch (°)	14.0	13.8
Air Flow (m <sup>3</sup> /s)	733	733
Fan Power (HP)	147	141



# Coupling Flange

- ⚡ **Re-use current coupling flange for installation**  
Does not require removal of the gearbox
- ⚡ **Adapter can be manufactured to match fan hub to existing coupling flange**



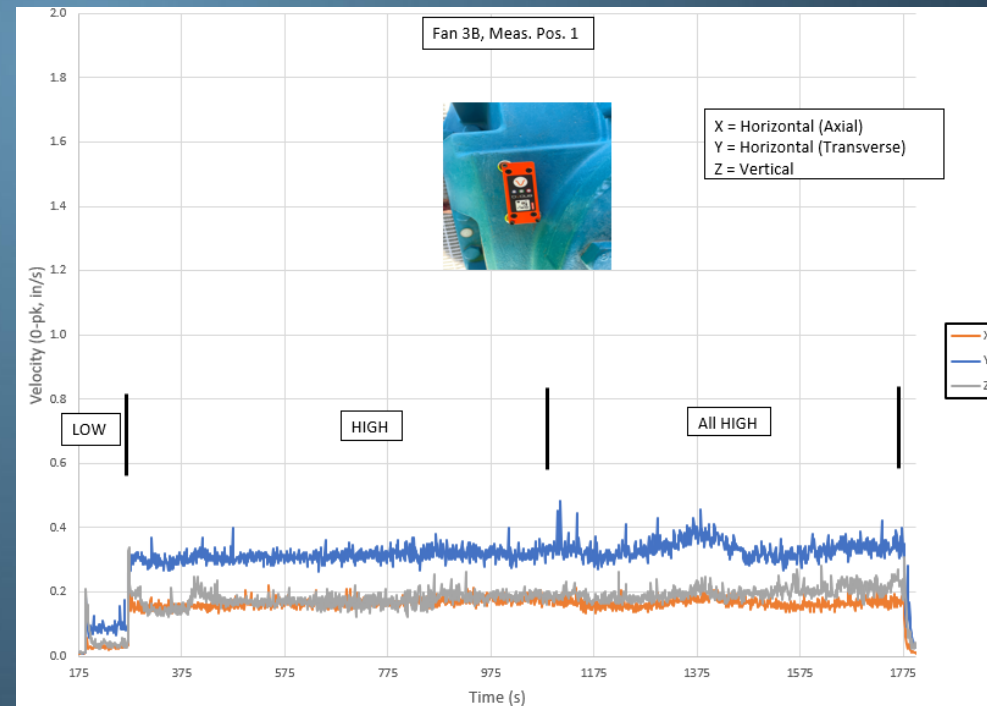
# Vibration Analysis



Bump test

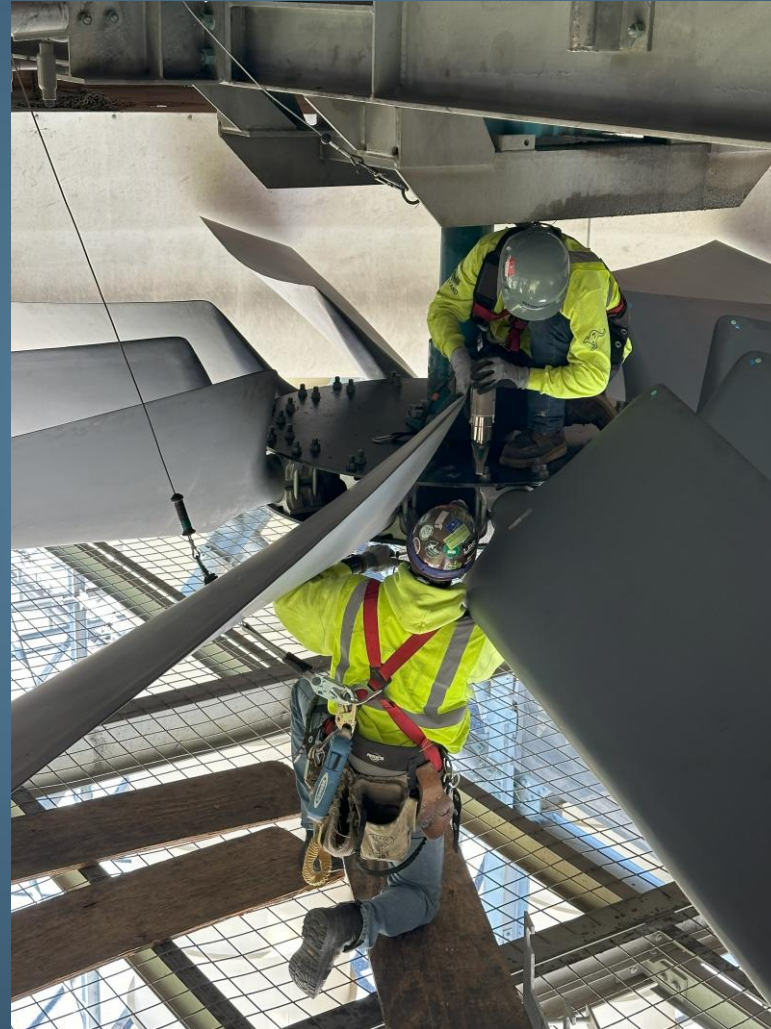


Operational Test





# Installation





## BUSINESS CONTACTS



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