



Mitigating Wind Effects on ACC's/ACHE's

Jeff Ebert

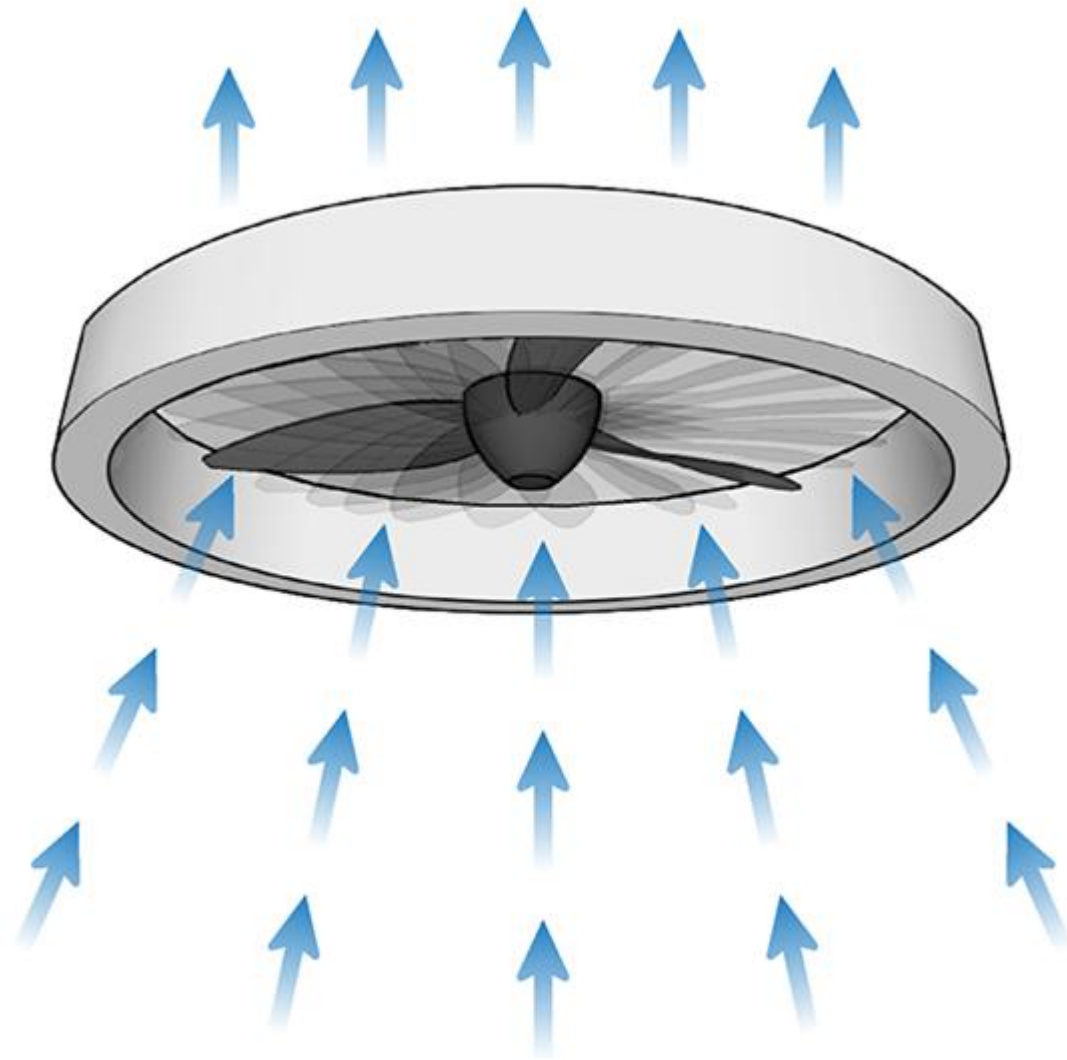
- Intro to Galebreaker
- ACC/ACHE Design and Wind Conditions
- Mitigation
- Questions

ABOUT **GALEBREAKER**

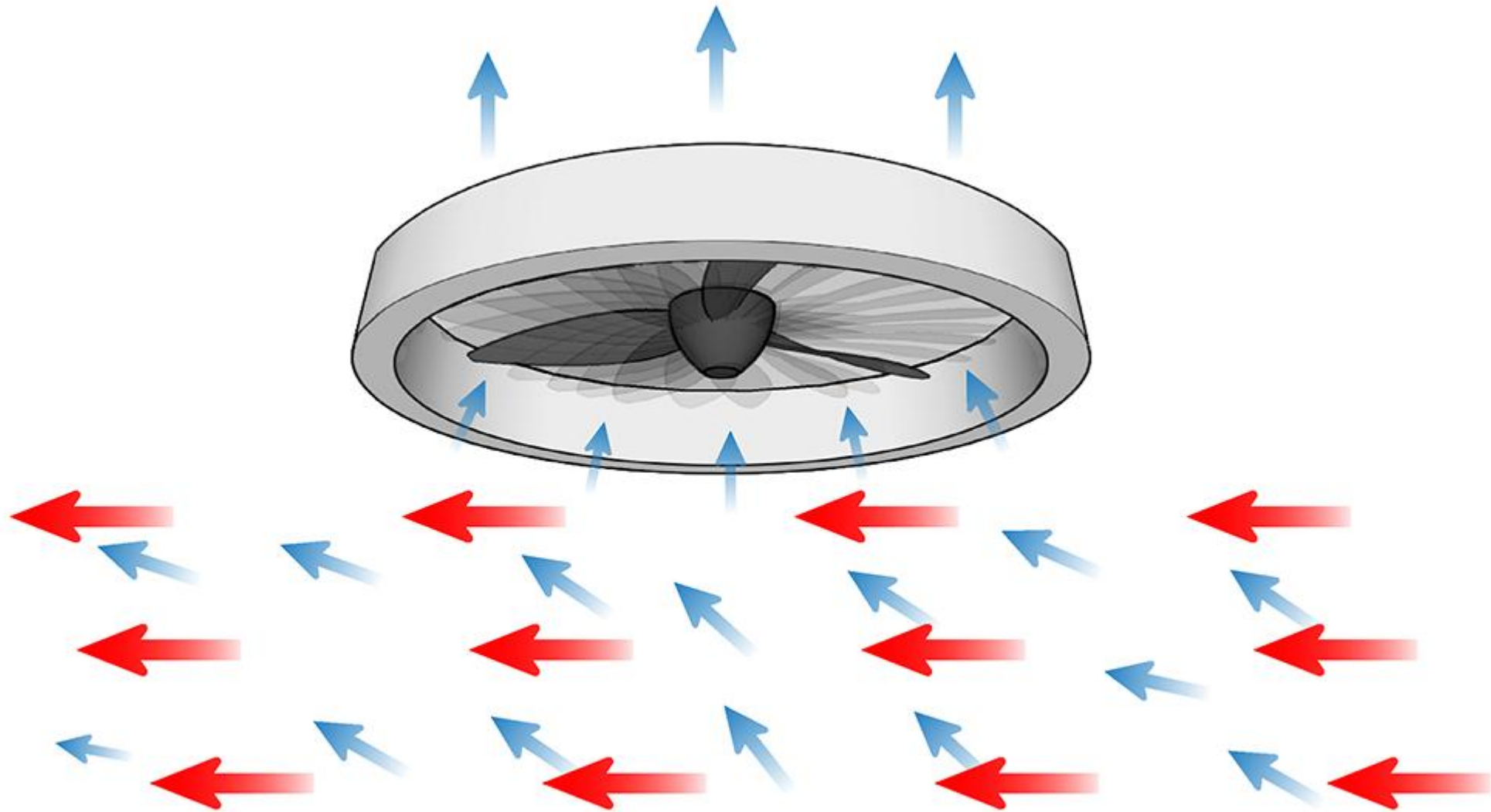
- Over 35 years' experience with the elements
- Wind Screen solutions all over the world
- Power, petro-chemical, industrial, data centers, agricultural and off-shore
- Design, manufacture, CFD simulations
- 50,000 sq ft factory



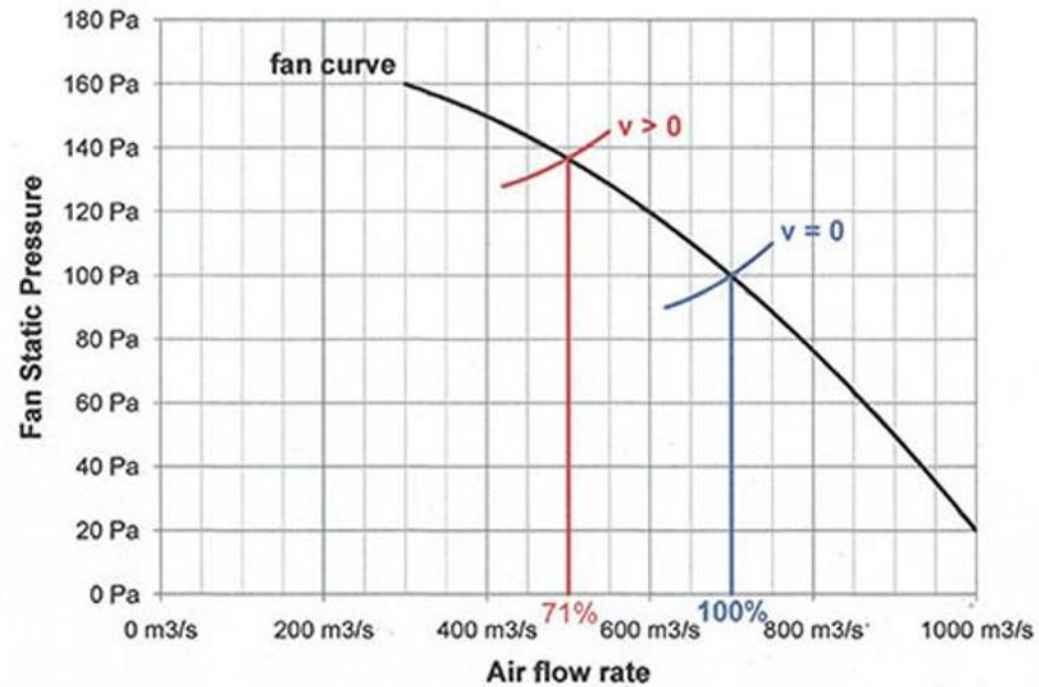




**Fans Are Rated/Selected to Overcome the Resistance of the Coils
and Deliver Design CFM**

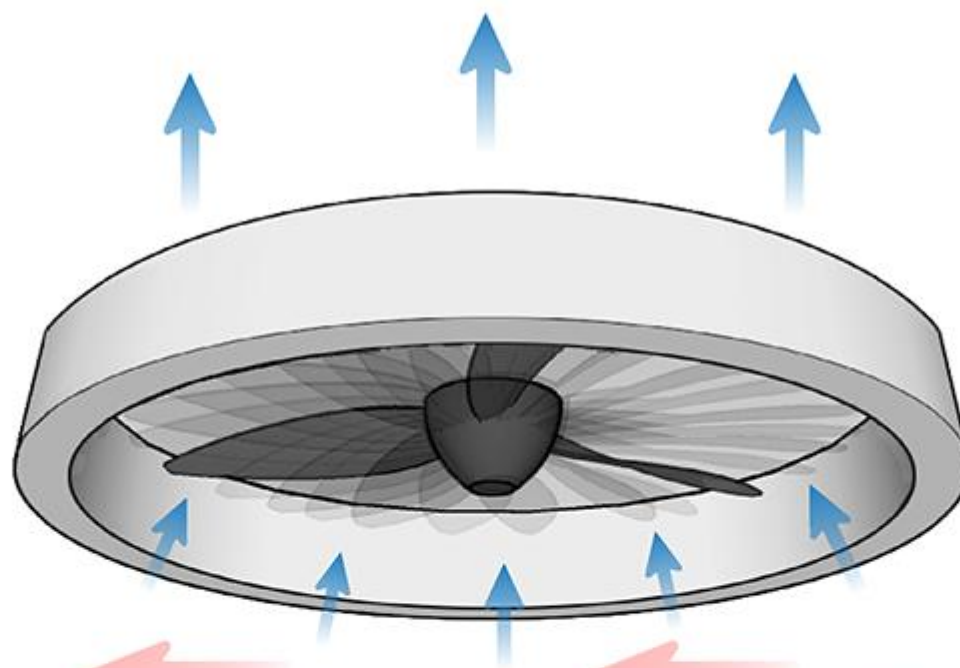


Aerodynamic impact of wind on fan operation



If v_{wind} increases $\rightarrow$ static pressure increases $\rightarrow$ reduced air flow

**Static pressure increase =
airflow reduction –
GEA/Kelvion**



**20% airflow reduction =
33% back pressure increase
– Conco Services**

**>5m/s = 30% airflow
reduction – Cofimco**

**Dynamic blade loading and
vibration - Howden**

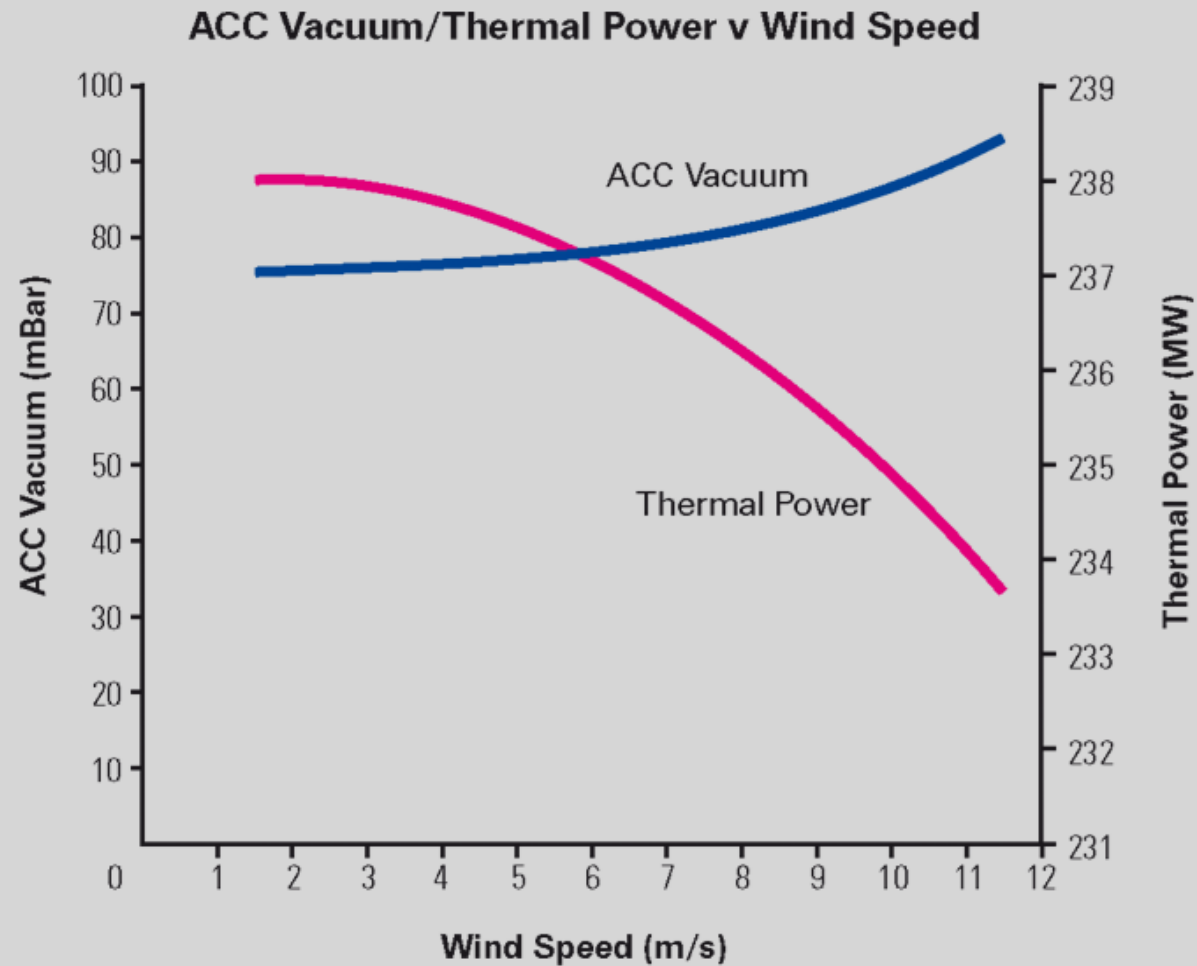
**Fan & mechanical damage –
PS Colorado**

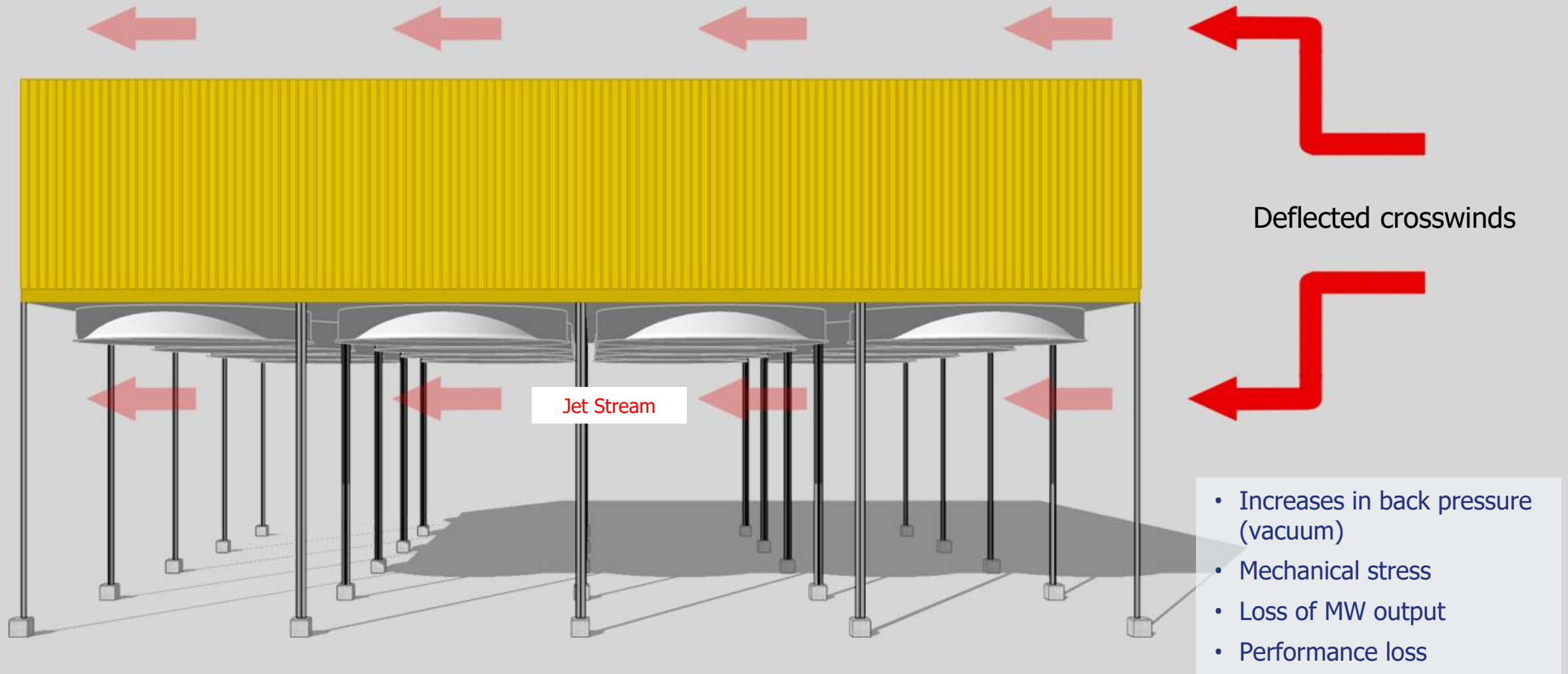
Thermal
Power-
Energy (Heat)
Transferred
Because of ΔT

Coil heat
transfer
characteristics

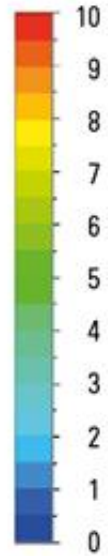
Design air
volume over
coils

Design air inlet
temperature



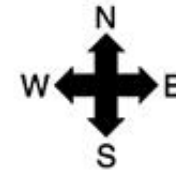
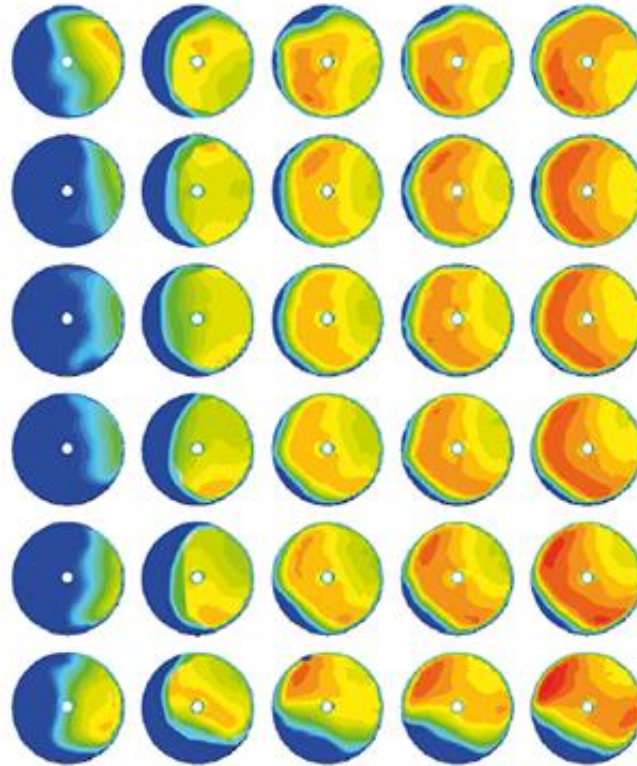


Vertical Velocity
(wind speed 10mph)



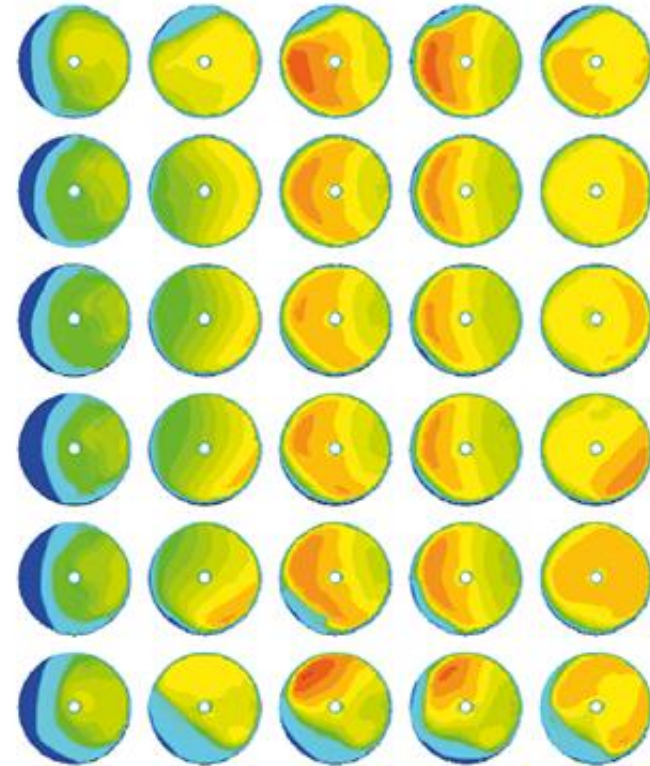
Air Velocity through
the Fans (m/s)

No Wind Screens



Wind direction


With Wind Screens



HOT AIR MIGRATION

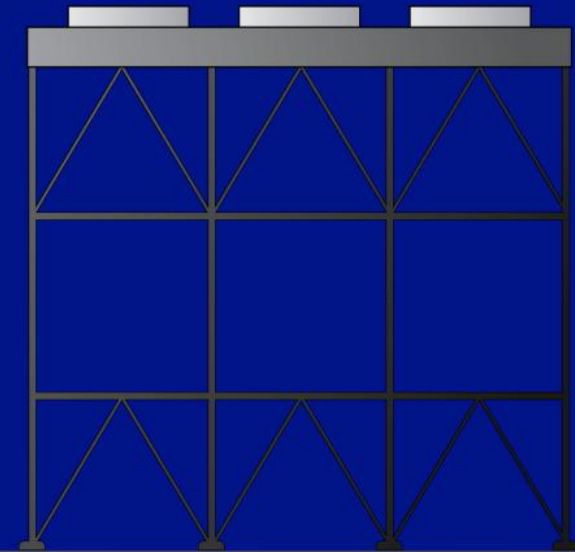
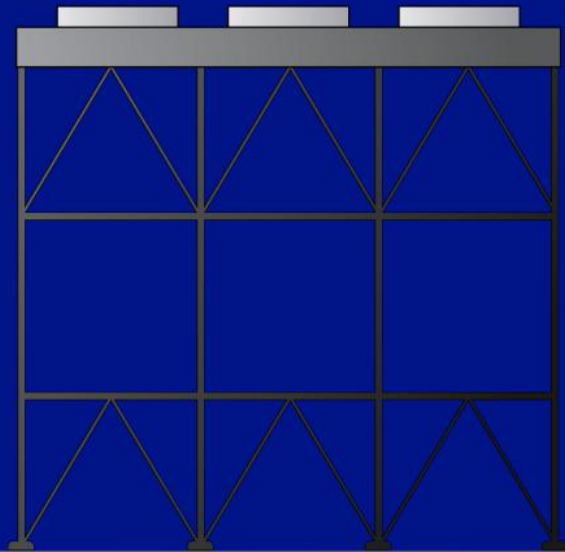
Temperature
Streamline HAR

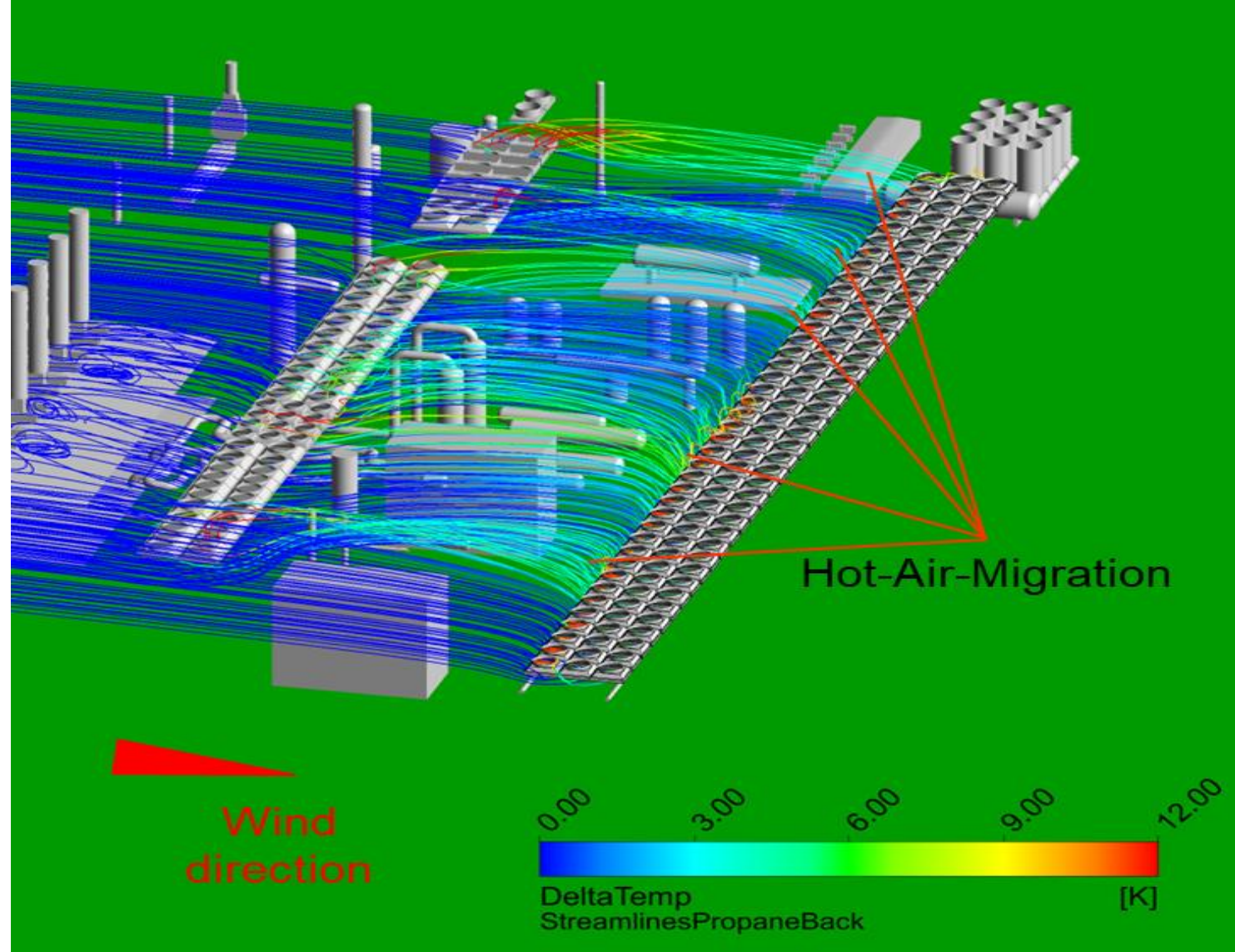
[K]



AMBIENT

75°C / 167°F





HOT AIR RECIRCULATION

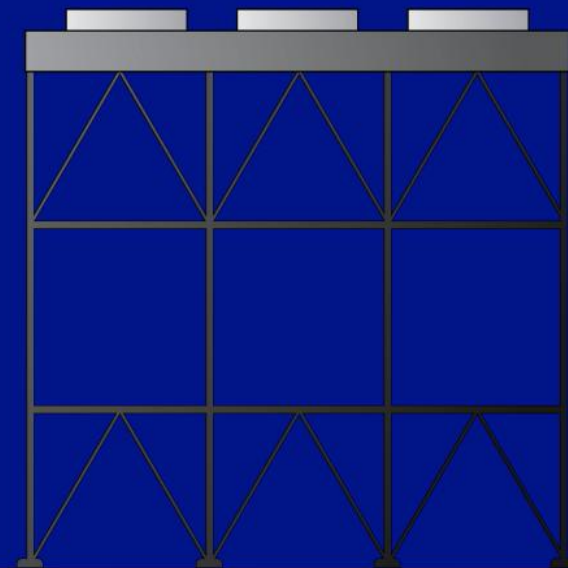
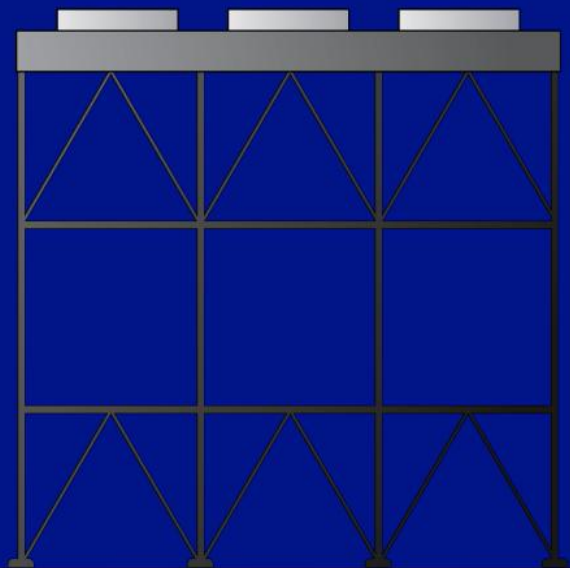
Temperature
Streamline HAR

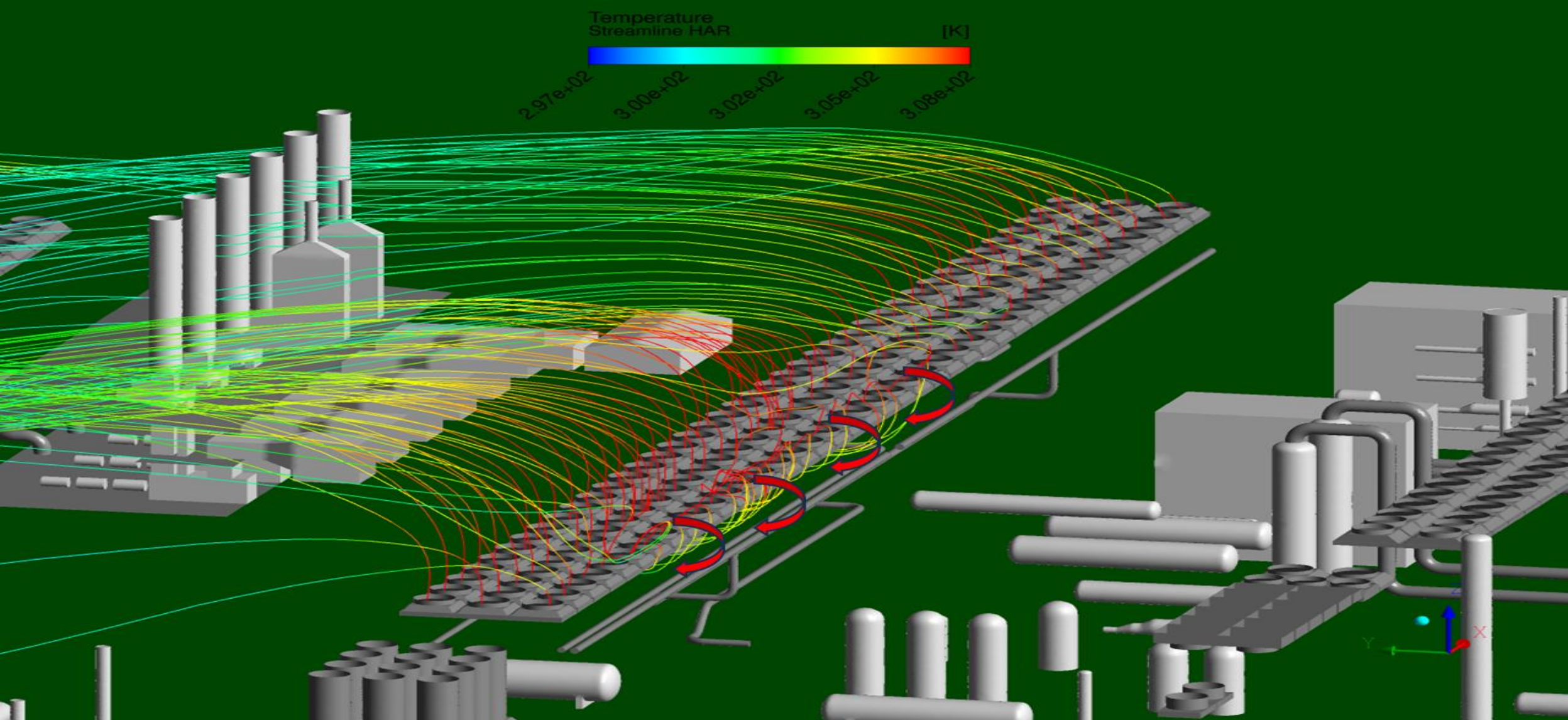
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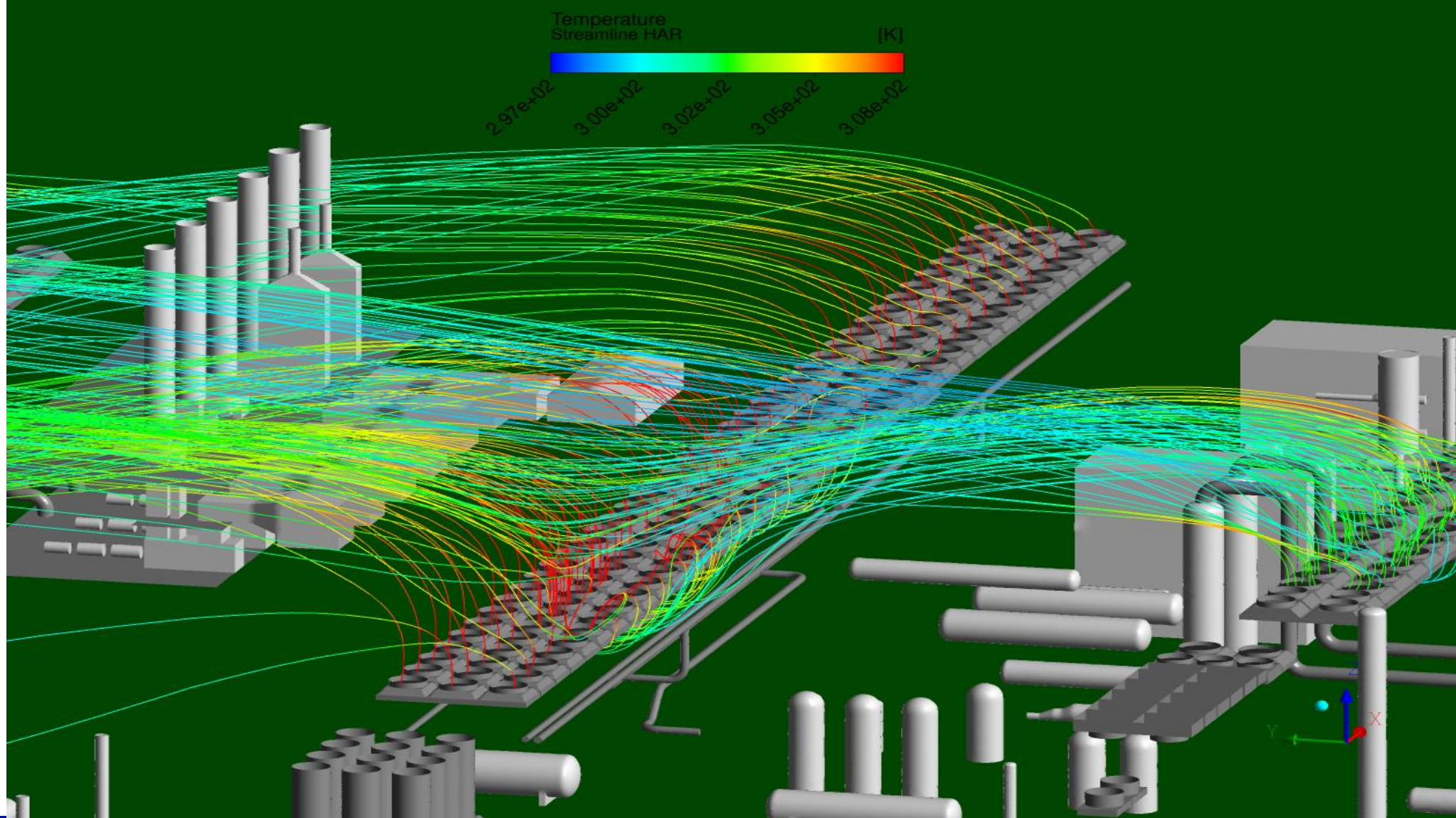


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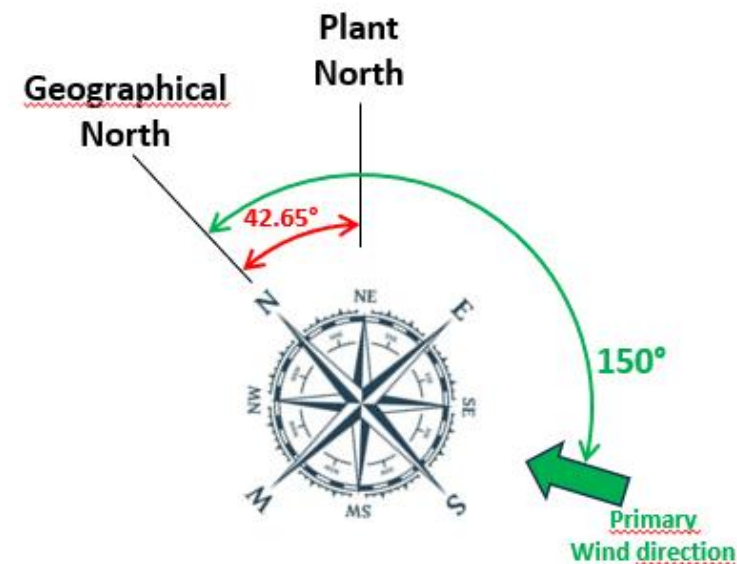
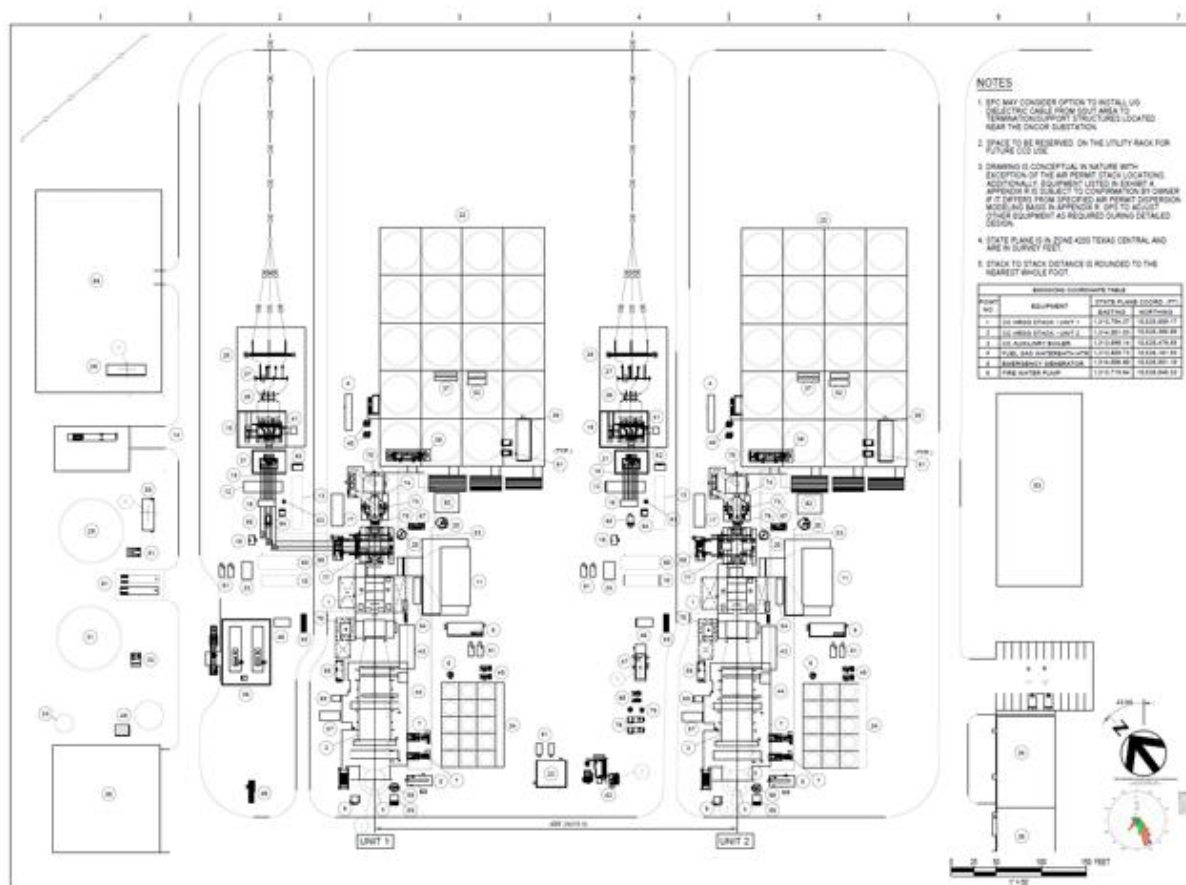






Manage or Mitigate Potential Wind Effects

- Top view of power plant















Thank You !

Questions?