

# SPG DRY COOLING

## Induced draft ACCs

MEMBER OF

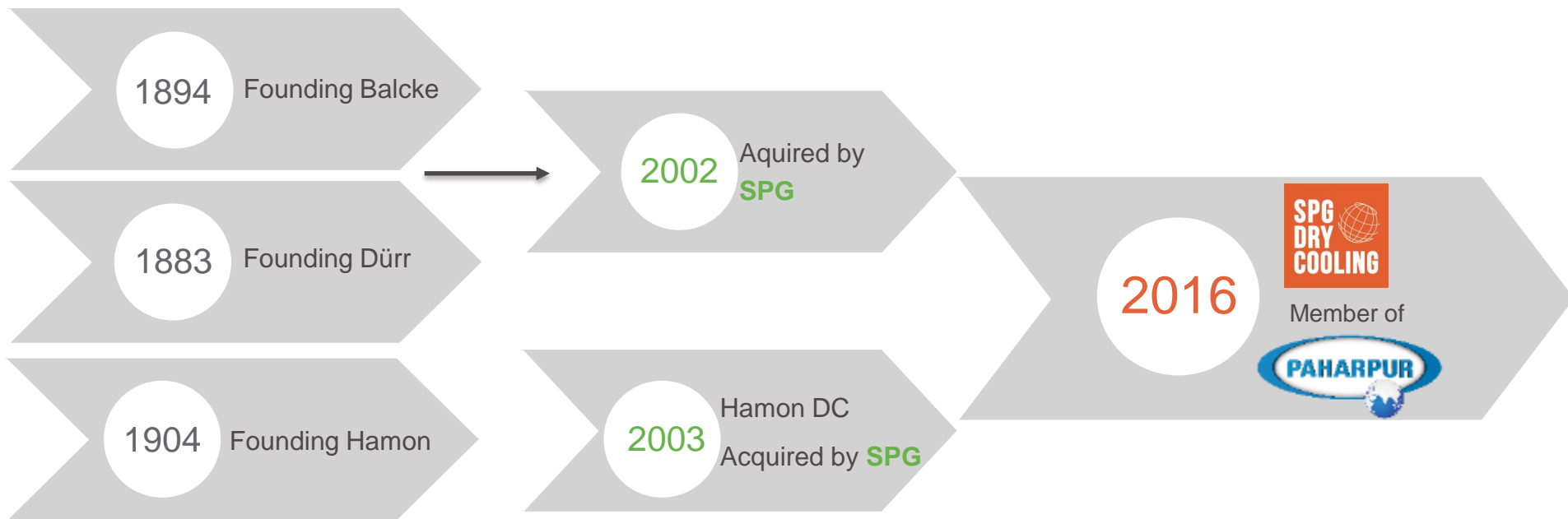


Company Confidential

SPG  
DRY  
COOLING



# HISTORY & HERITAGE



## SPG Dry Cooling

is an innovative Global Leader in Air Cooled Condensers & Coolers with the largest installed base



# GLOBAL NETWORK



# W-STYLE ACC<sup>®</sup> INDUCED DRAFT ACC



MEMBER OF



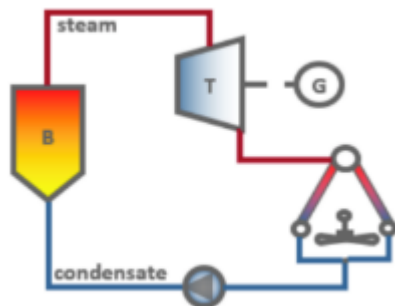
Company Confidential

SPG  
DRY  
COOLING

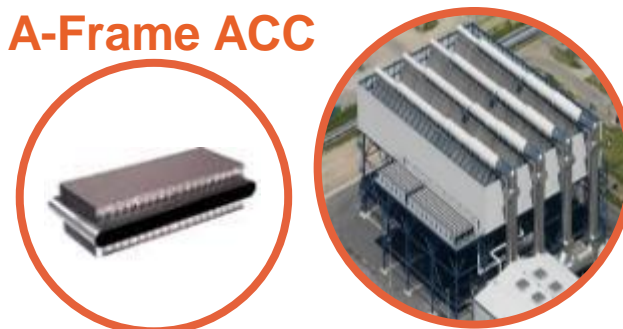


# SPG DRY COOLING PRODUCTS

## Air cooled condenser (Mechanical Draft)



## A-Frame ACC



State of the art forced draft ACC with SRC© tubes  
Other types of finned tubes available

## SPG DC Unique and patented

### BoxAir ACC®



*Induced Draft*

**<30 MWe**

Standard Product

### Hexacool®



*Induced Draft*

**<50 MWe**

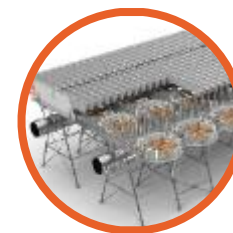
### W-Style ACC®



*Induced Draft*

**All size**

### ModuleAir ®



*Forced Draft*

**All size**

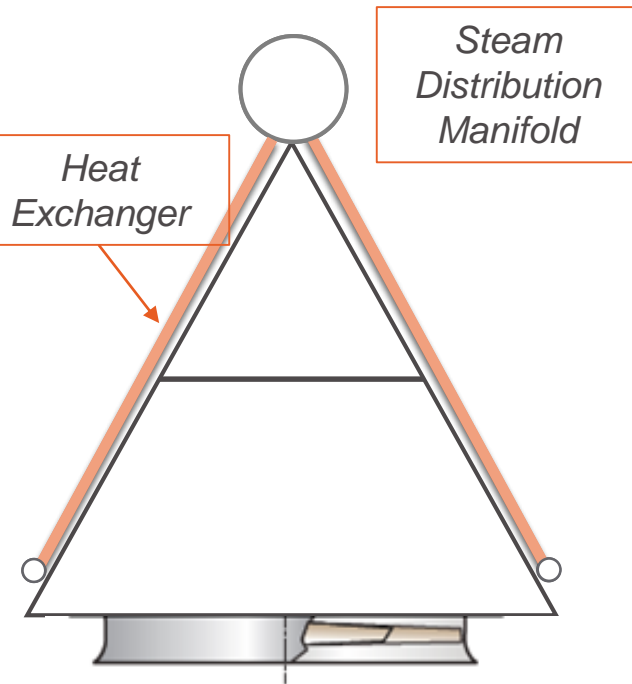
High pre- assembly level

Induced draft family

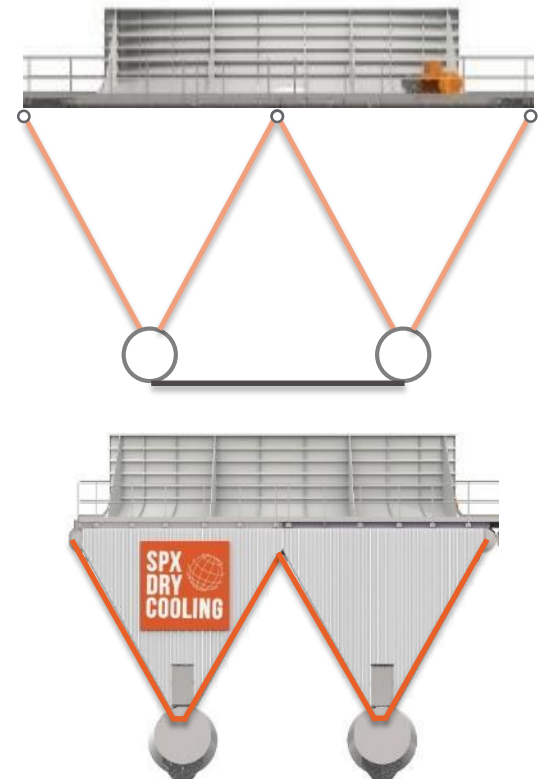


# FROM A-FRAME TO W-STYLE

A-Frame ACC



WStyle ACC



# W-STYLE ACC<sup>®</sup>

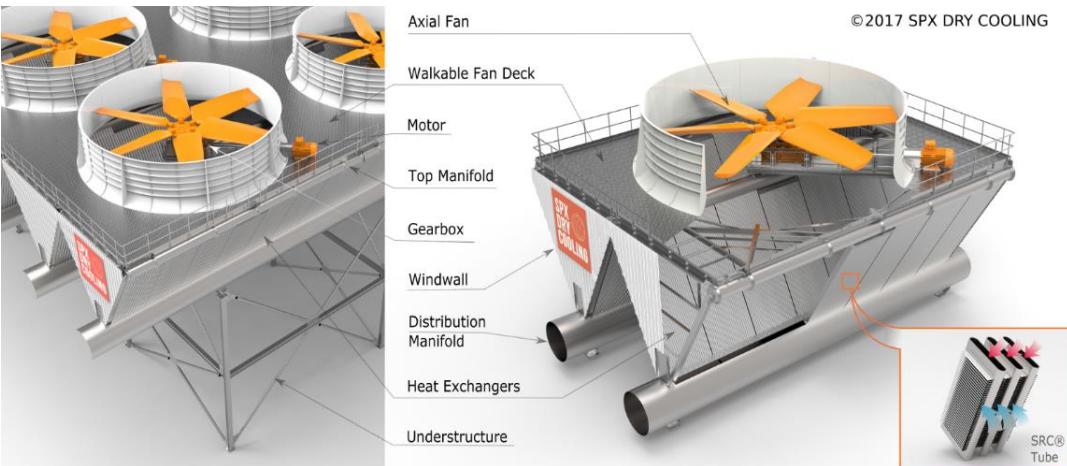
## GENERAL PRINCIPLE



**W-Style ACC<sup>®</sup>** is an induced Draft Air Cooled Condenser, with a unique “W” heat exchanger arrangement.

### Features

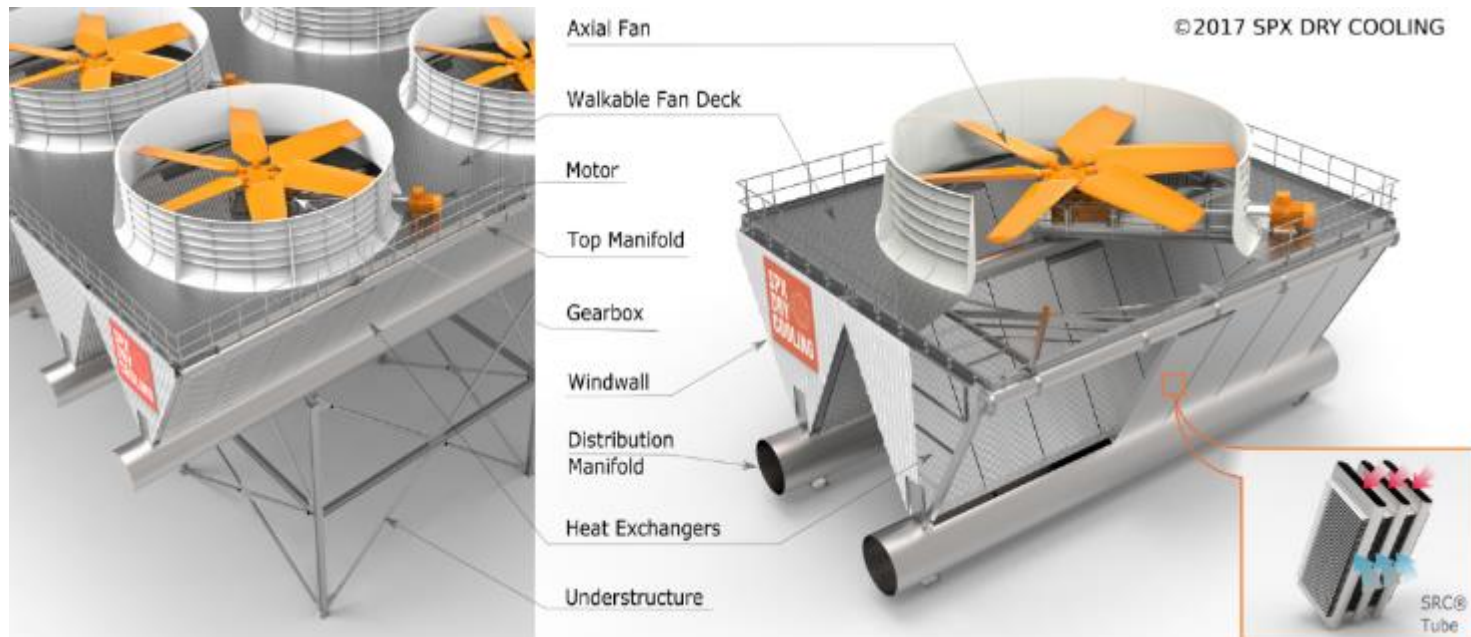
- Each street with two steam distribution manifolds at the bottom.
- Heat Exchanger arranged in W with a typical **tube length of ~6m**.
- Concrete or steel understructure supporting ACC modules with a flexibility in foundation localization.





### Features

- Heat Exchanger with state of the art SRC® finned tubes
- Fan deck level with perpendicular shaft Gearbox, Motor, Fan, Fan Bell on top of the exchanger.
- Short Fan bridge supported in the middle by the central top manifold .
- Fan deck fully accessible for maintenance ; walking area between bundles above the steam manifold for cleaning





# W-STYLE ACC<sup>®</sup>

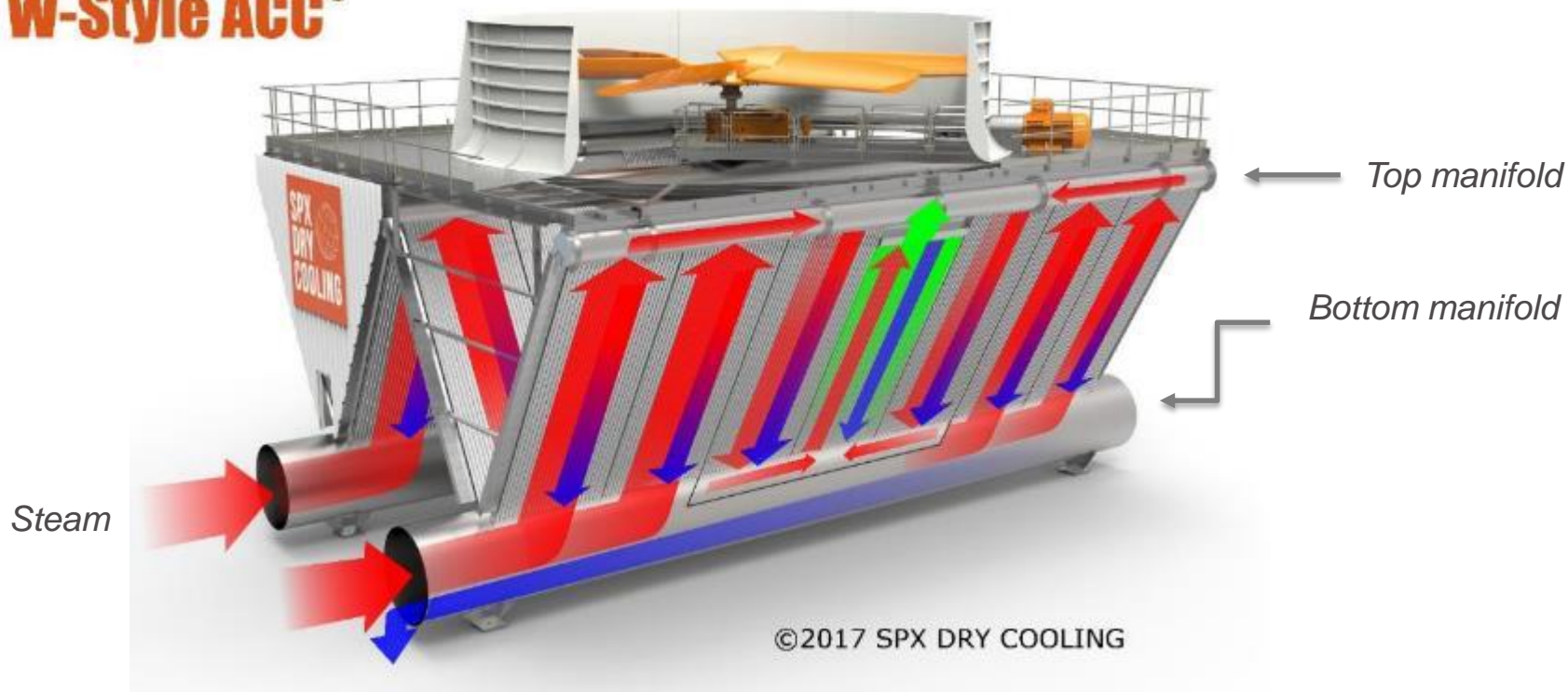
## GENERAL PRINCIPLE

### Steam Distribution

- Distribution manifold under the heat exchangers
- Intermediate manifold at top of the heat exchangers. (common in the middle)
- Condensate collection from bottom manifold and condensate header

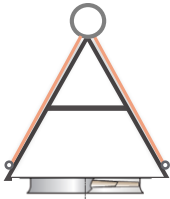


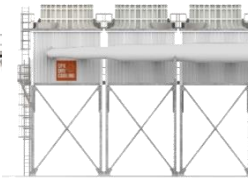


**W-Style ACC<sup>®</sup>**



# INDUCED DRAFT ACC

## SELECTION GUIDELINES

	A-frame	Hexacool	W-Style	BoxAir
				
<b>Fan Configuration</b>	Forced Draft / 36ft	Induced Draft / 36ft	Induced Draft / 36ft	Induced Draft / 12ft
<b>Layout Limitation</b>	No	Line arrangement	No	Line arrangement
<b>Tube length</b>	~11m	~11m	~6m	~2m
<b>Pre-assembly level</b>	Normal	High	Normal	Very high
<b>Capacity limitation</b>	No	< 50MW	No	< 30 MW

# 「WHAT DOES IT IMPLY FOR O&M ?



MEMBER OF



Company Confidential

SPG  
DRY  
COOLING

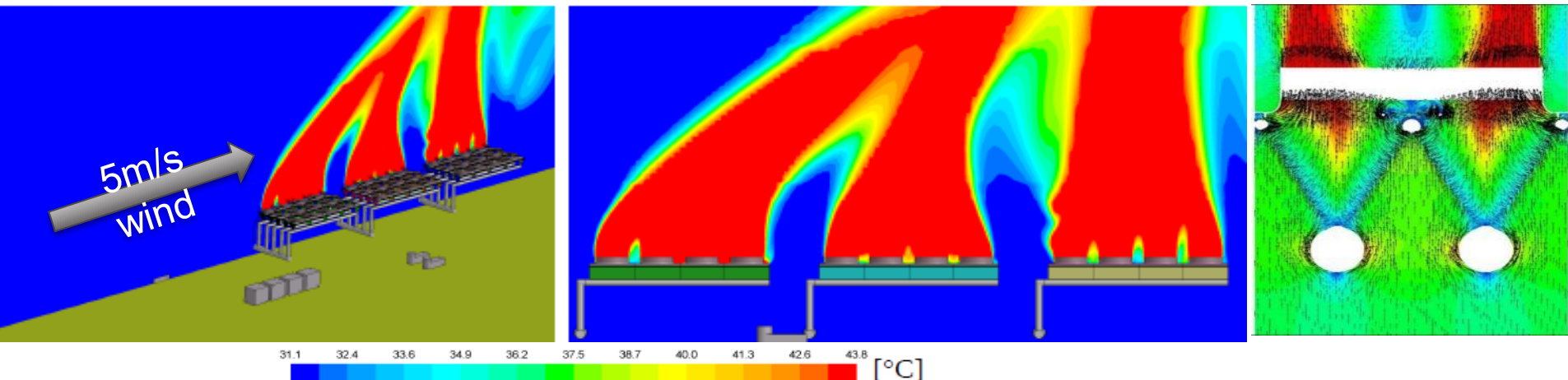


# W-STYLE ACC® : OPERATIONAL FEATURES

## WIND SENSITIVITY IS REDUCED

### Two main negative effects of wind on an ACC performances:

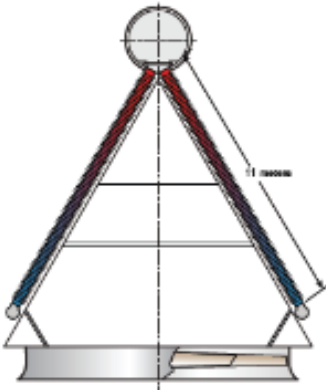

- Recirculation of hot air exiting the ACC.
  - With **W-Style ACC** in induced draft, **recirculation is reduced due to higher exit air velocity**
- Reduction of fan air flow due to disturbance at air inlet
  - With **W-Style ACC** the fan inlet is **protected** from cross wind by the bundles acting like a screen



# W-STYLE ACC® : OPERATIONAL FEATURES

## FLOW ACCELERATED CORROSION IS DECREASED

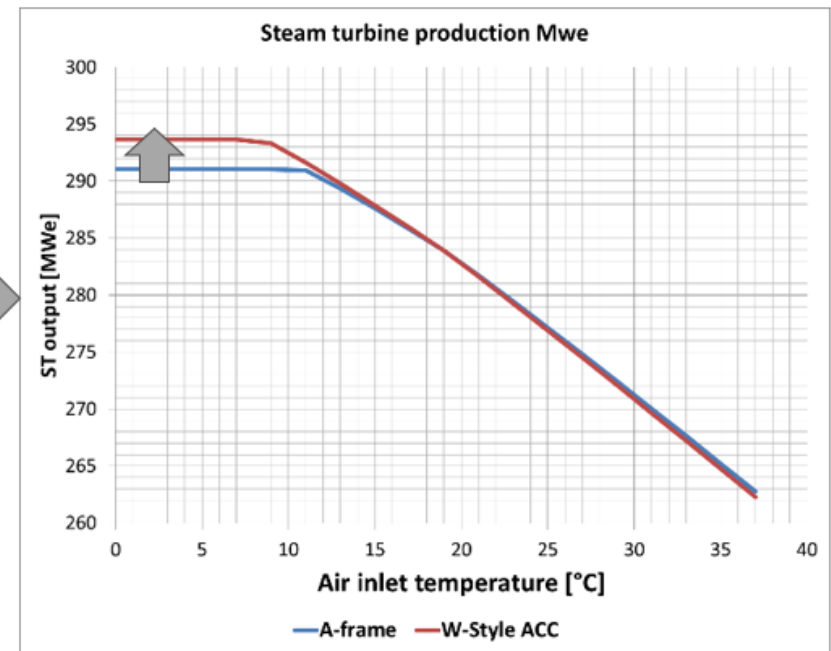
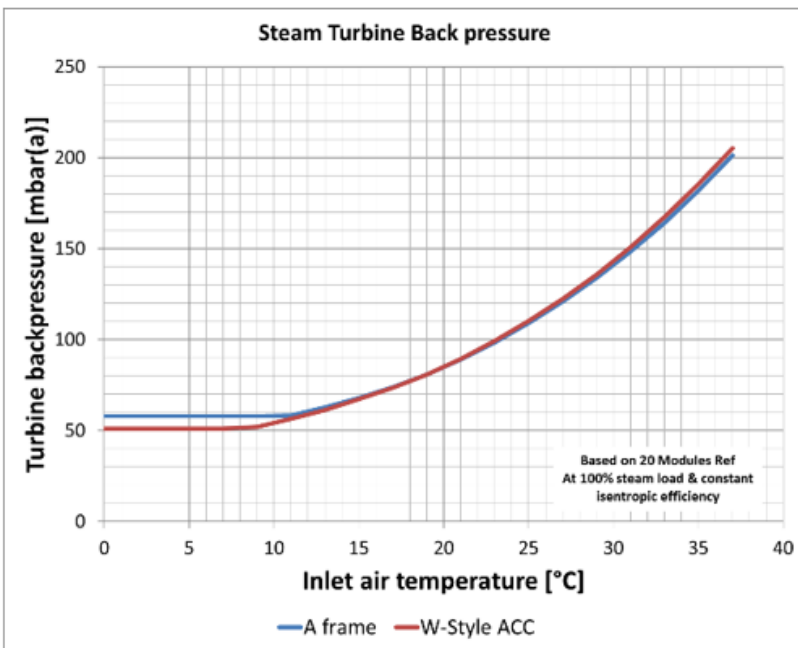


	Classical A-Frame	W-Style ACC	Comments
<b>Heat exchanger arrangement</b>	 <p>Long tube [11.4m]</p>	 <p>2 x shorter tube [5.7m]</p>	<p>Lower steam pressure drop Reduced overall height Self supporting structure</p>
<b>#of Tubes</b>	~6000	~3000	About 2x more tubes with W
<b>Tube cross section</b>	~219x19mm	~219x19mm	Identical
<b>Steam Velocity @145mbar, 25°C</b>	~45 m/s	~28 m/s	Steam velocities roughly follow the tube number ratio
<b>Steam Velocity @94mbar, 15°C</b>	~70 m/s	~45 m/s	
<b>Steam Velocity @65mbar, 2°C</b>	<b>~105 m/s</b>	~73 m/s	



# W-STYLE ACC<sup>®</sup> : OPERATIONAL FEATURES

## LOWER PRESSURE AT LOW AMBIENT

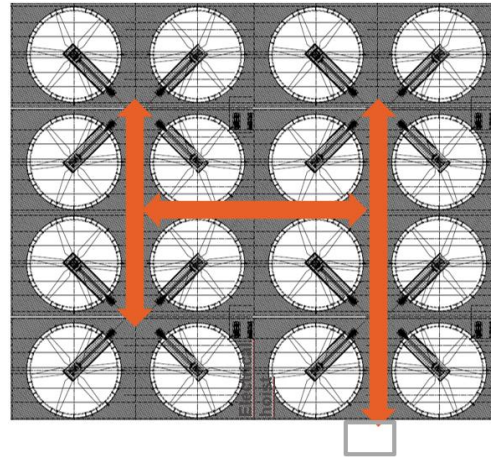
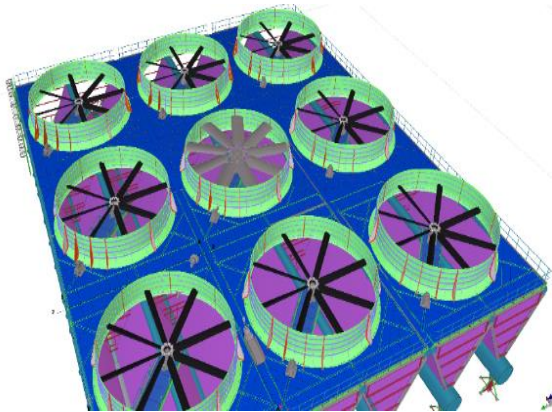


**Improve steam turbine output**



# W-STYLE ACC® : OPERATIONAL FEATURES

## IMPROVED ACCESS FOR MAINTENANCE



Hoist to  
ground level



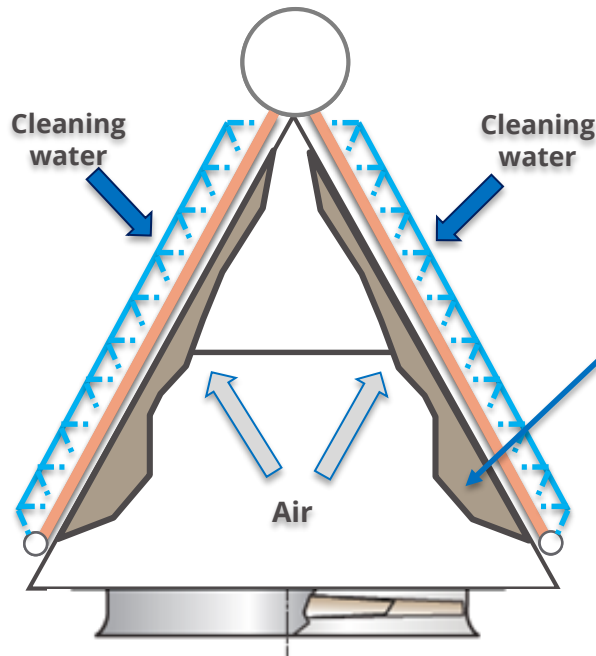
W-Style: Access for maintenance

One platform giving access to all fans, motors and gearboxes

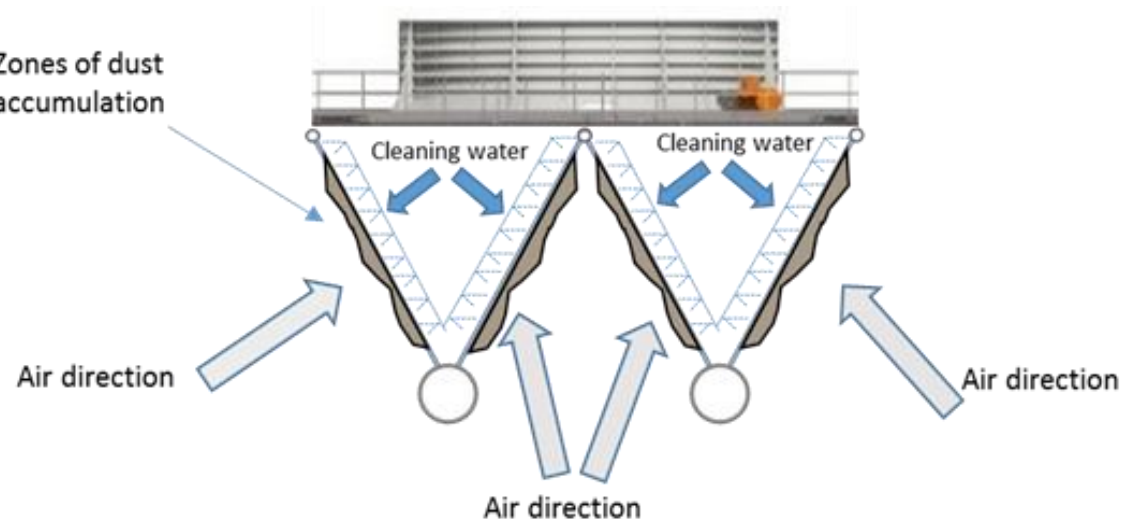


# W-STYLE ACC® : OPERATIONAL FEATURES

## CLEANING

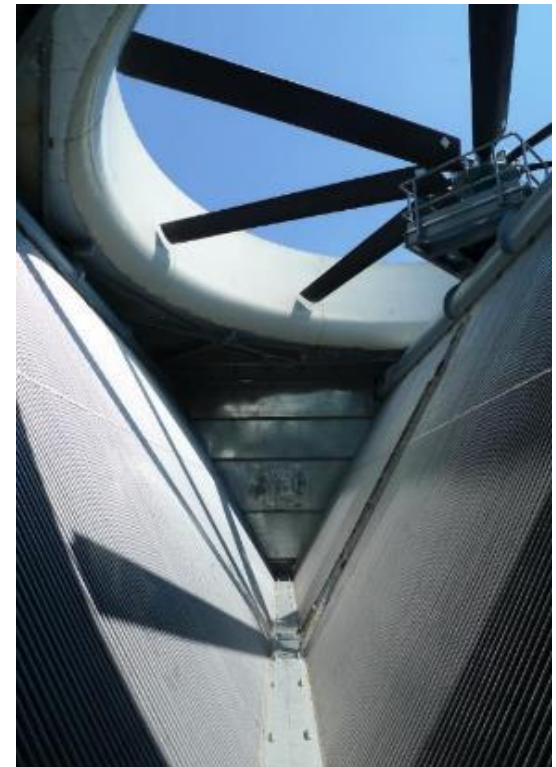
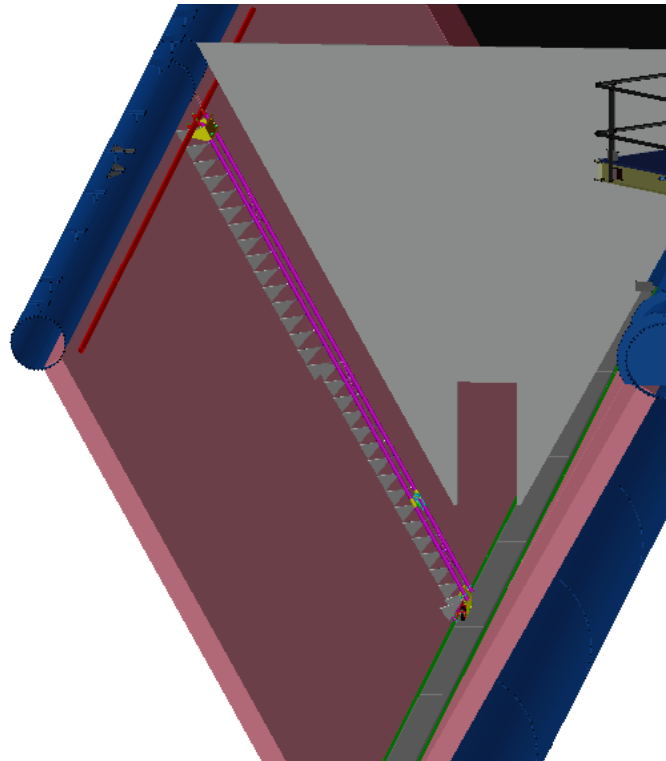
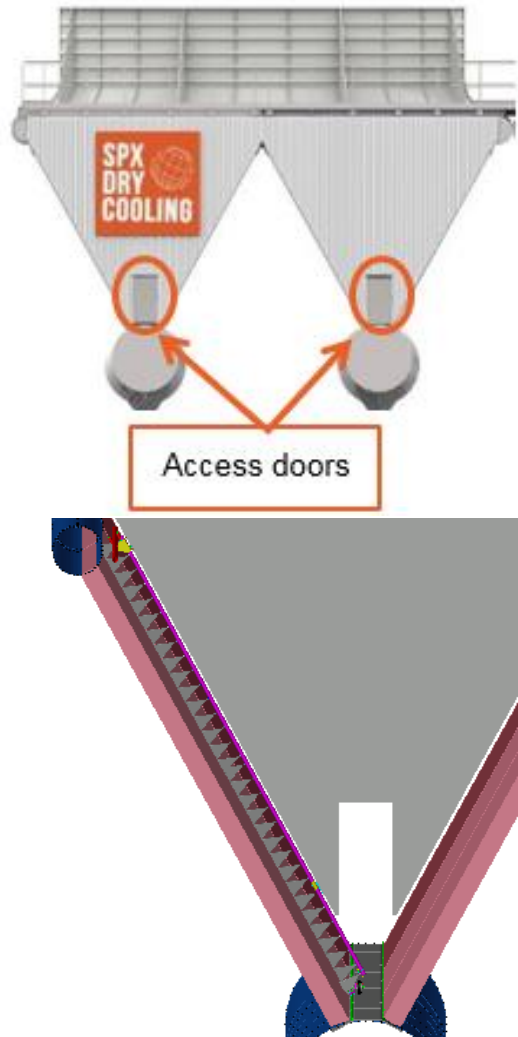


Zones of dust accumulation



Cleaning opposite to air direction (as A-frame)

# W-STYLE ACC® : OPERATIONAL FEATURES CLEANING



# 「Q&A



MEMBER OF



Company Confidential

SPG  
DRY  
COOLING

