



ACC USER GROUP Conference

Oct 2017



Who am I?

Romain PENNEL

Director of AX SYSTEM since 2016.

AX SYSTEM

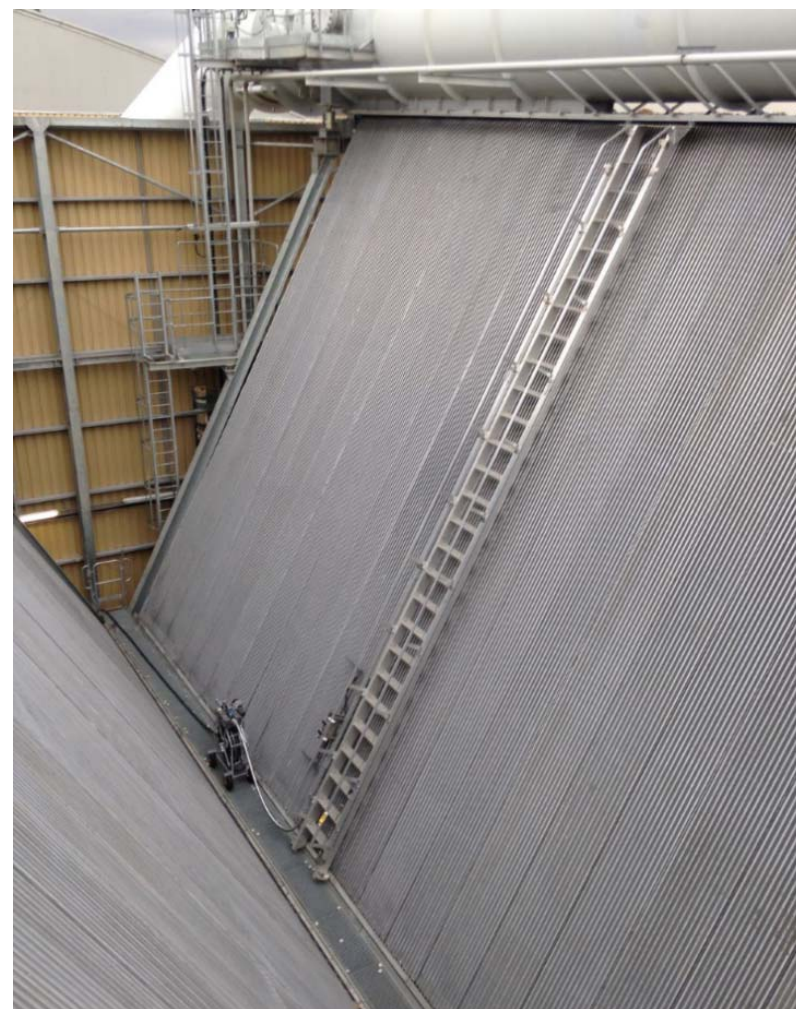
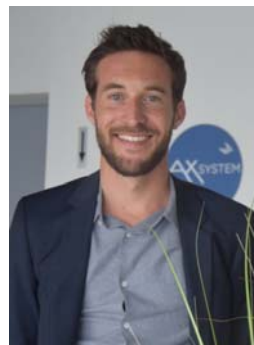
Created in 2008 by Mirosław GLUSKO
Inventor of the AX CLEANER®.

Based in France

Our market is global.

OUR MISSION:

Improve ACC and ACHE performances.





Agenda

- Why to clean? Fouling : Origin and Effect
- How to clean? When, which material?
- Example of configuration
- Case study



FOULING Origin & Effects on Performances



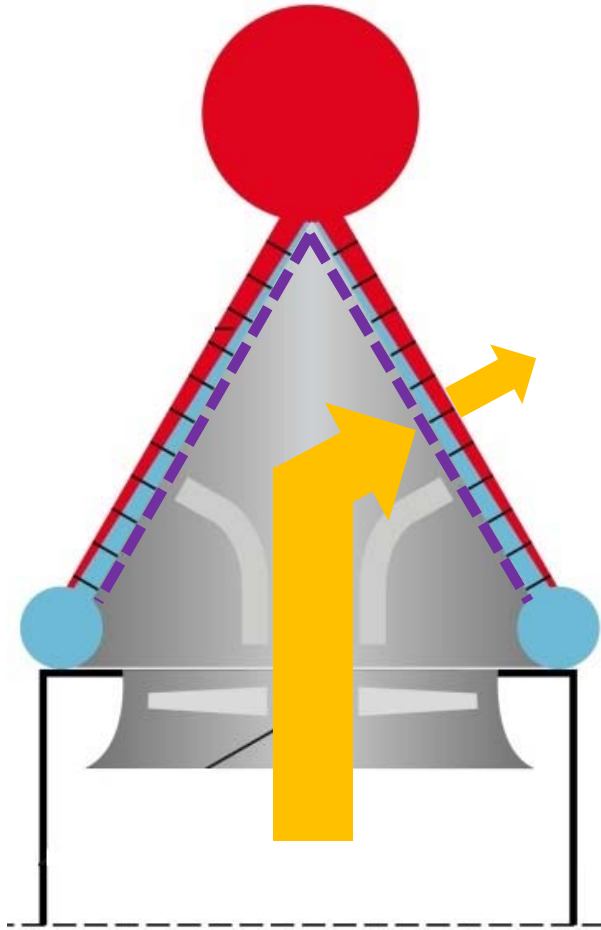
Where does the fouling come from?

- Pollen
- Bird droppings
- Sand
- Oil spillage
- Fiber dust
- Limescale/ calcium





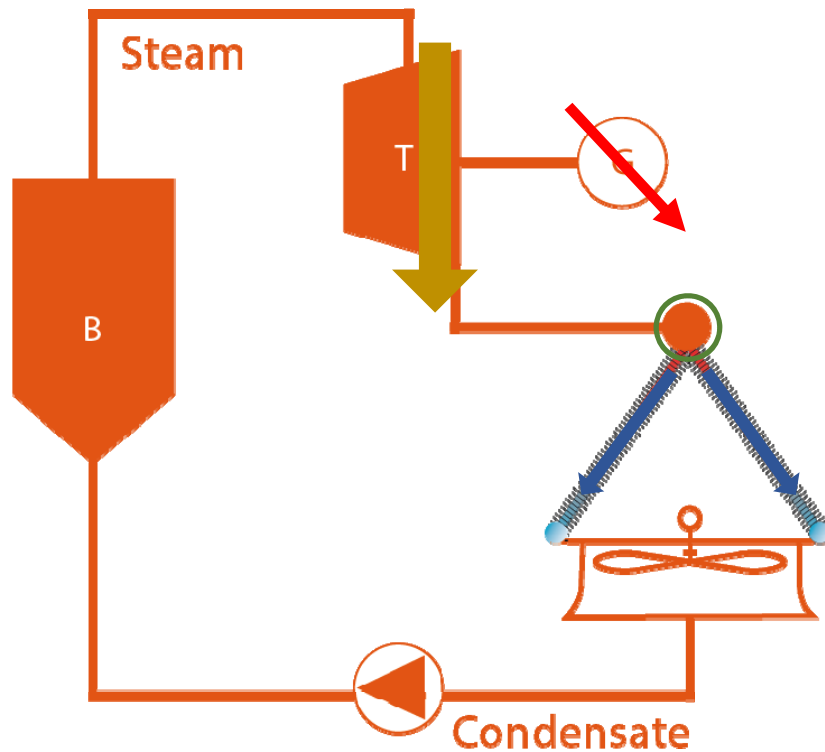
Fouling's effect on performances (1/2)



- Create an isolation film
 - Reduce the Air Flow trough the fins
- Heat transfer is dropping



Fouling's effect on performances (2/2)



- Vapor condensates into water slower.
- Vacuum level in ACC drops
- Vapor flow rate in the turbine drops
- Turbine turns slower and produces less electricity

→ The plant is LOOSING MONEY



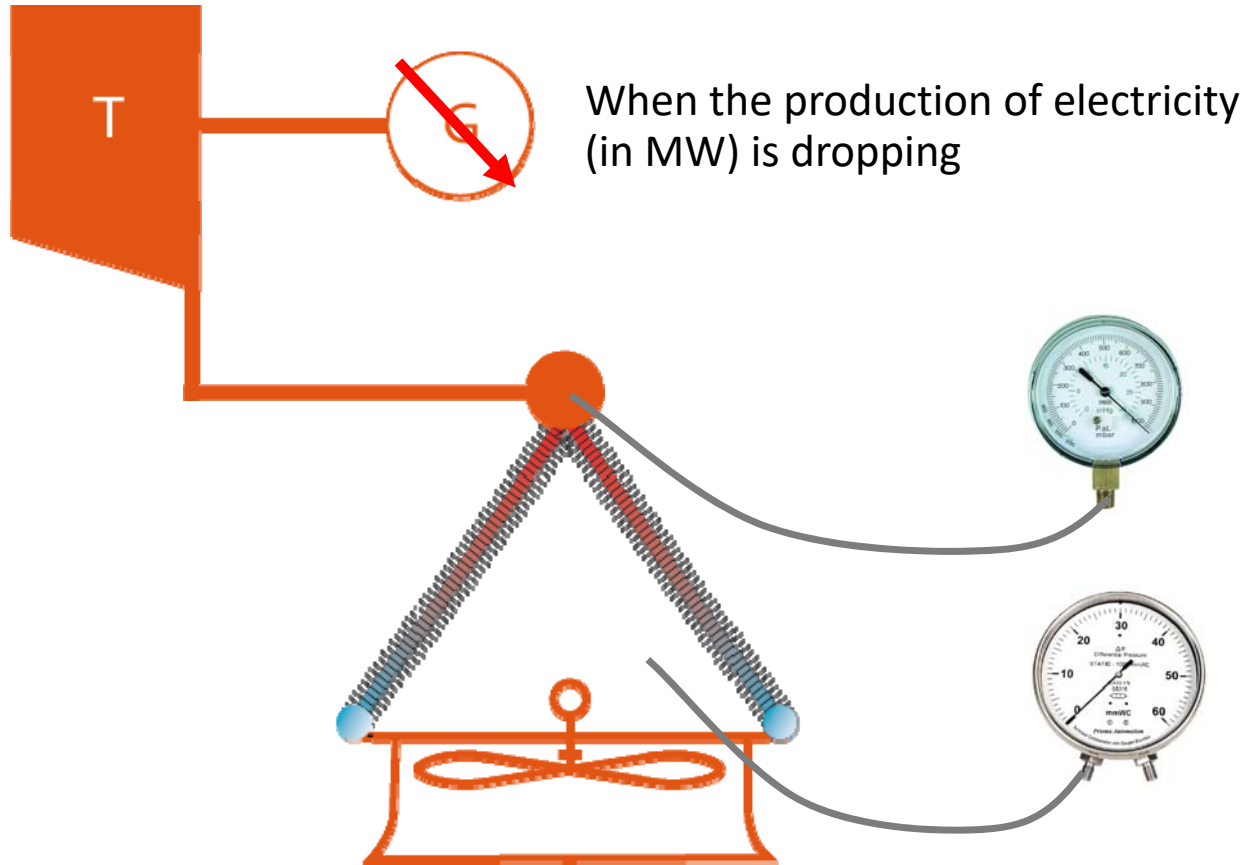


CLEANING



When to clean? (1/2)

Visual control :
if the fouling is visible



When the production of electricity
(in MW) is dropping

When the vacuum level (in bar) in
ACC is dropping

When internal static pressure rises
(measured by a differential
pressure recorder)



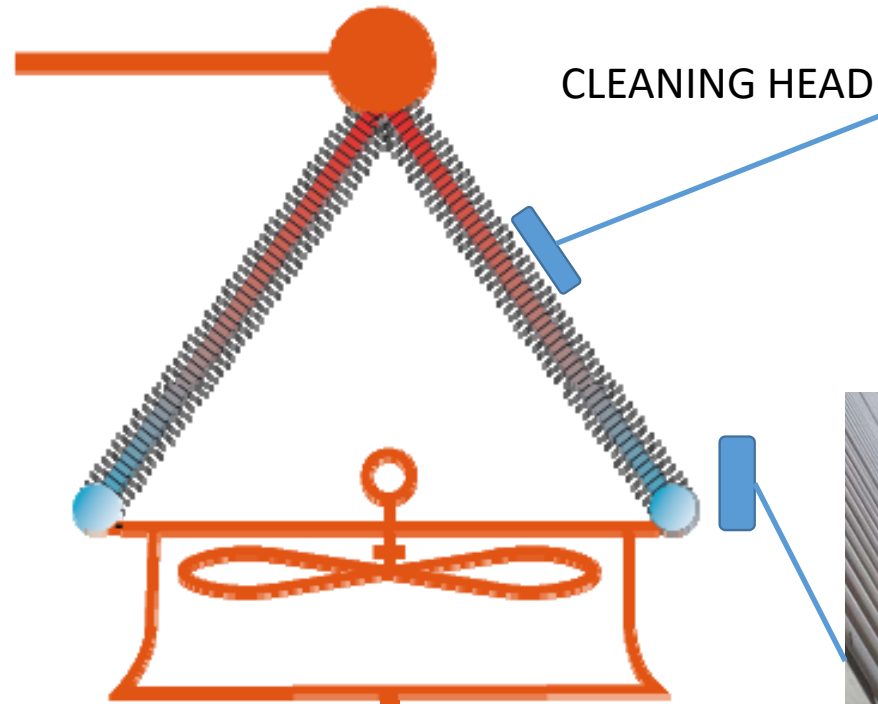
When to clean? (2/2)

But we recommend to clean:

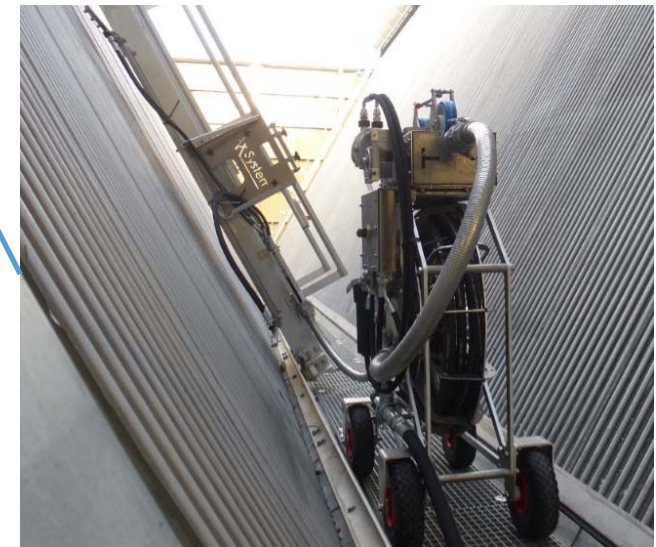
- Periodically: more often you clean, easier it is!
- At least once a year, after pollen season (depending on the area and environment)



Material to clean : AX CLEANER®



HIGH PRESSURE PUMP
22KW – 120 lpm – 130 bar

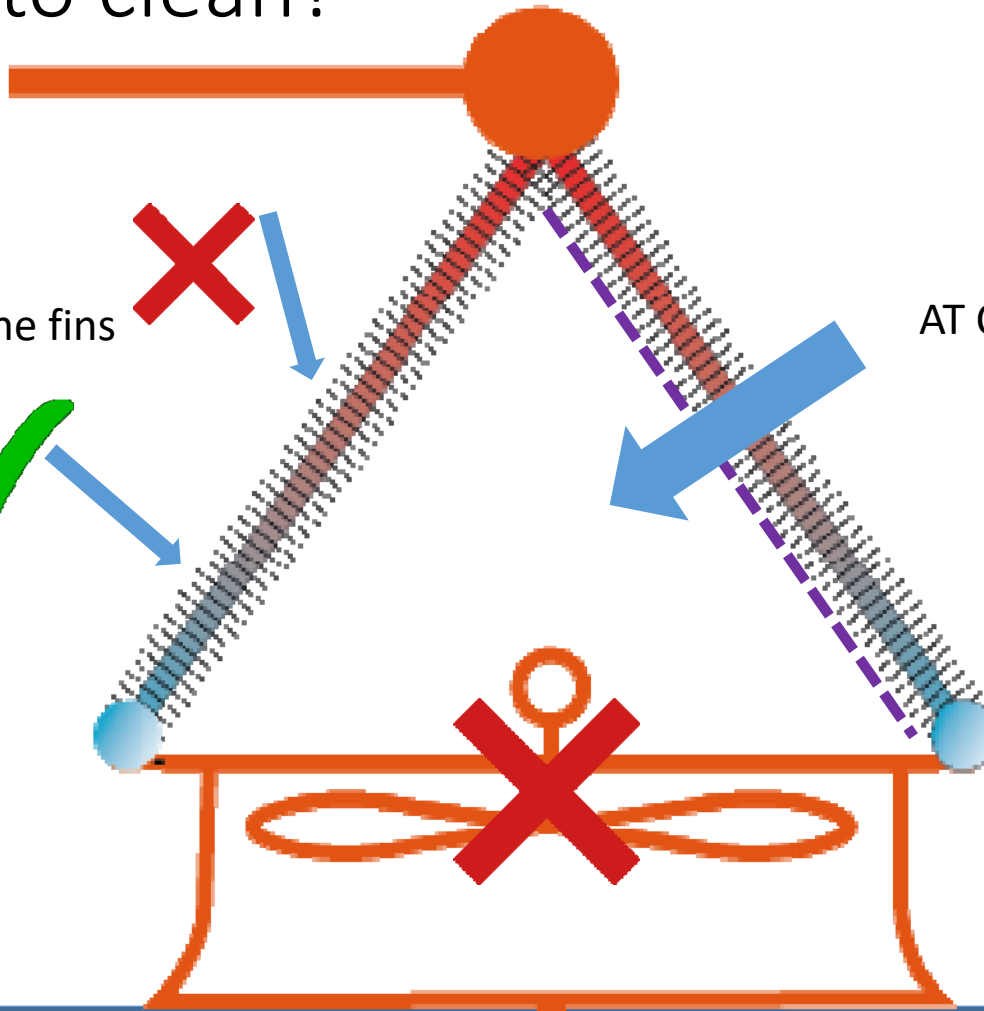


HOSE PUSHER WITH
SPOOLING DEVICE



How to clean?

To spray in front of the fins
without any angle



AT COUNTER FLOW

To stop the FANS



How not to clean and why?

Manuel HP cleaner
→ risk to fold the fins.



In sand blasting → it can damage the fins, and remove the aluminium coated

In sodium bi-carbonate blasting → there's a risk of electrolyse effect between Aluminium and NaHCO_3 which will damage the fins

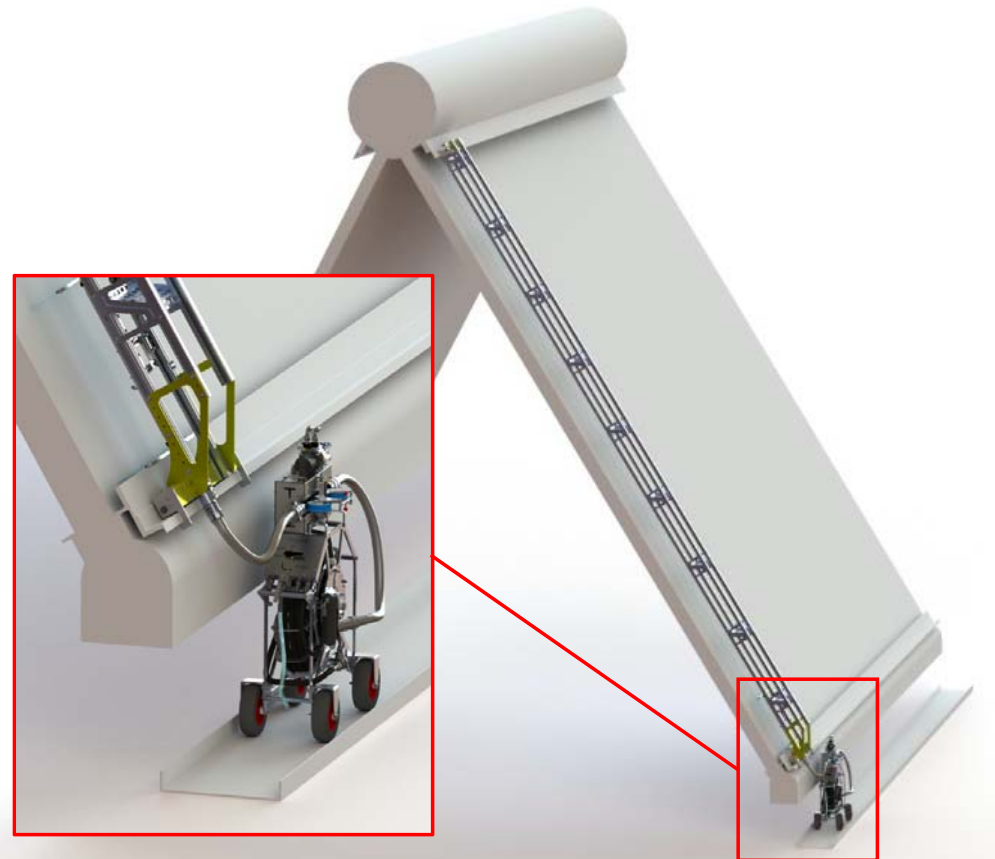




EXAMPLE OF CONFIGURATIONS



A-FRAME ACC



Single Row

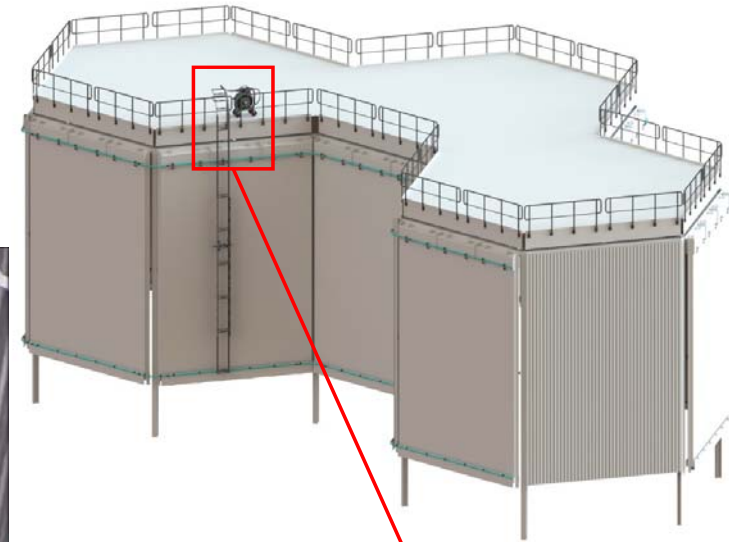


Multi Row



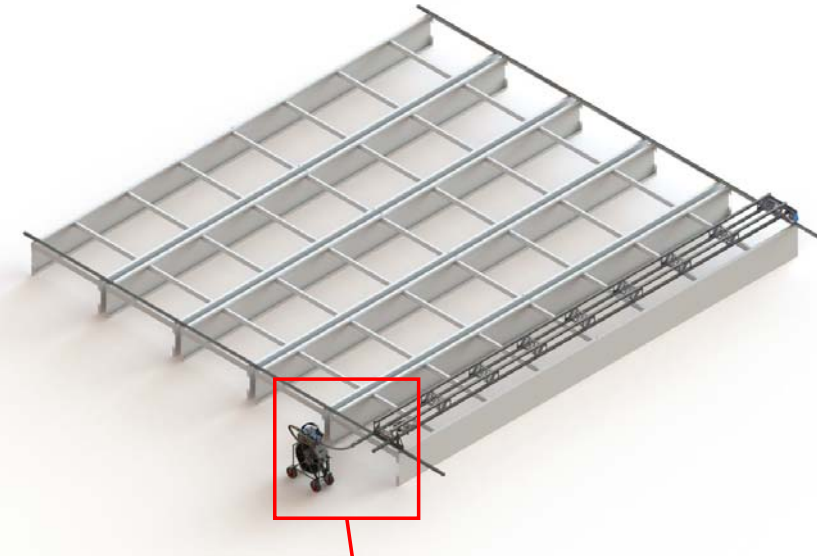


Vertical ACC - Hexacool





Flat Heat Exchanger





V-Frame ACC – MODULAR ACC...





CASE STUDY



Presentation of the plant

- A Waste treatment plants in UK
- Commissioning in 2014
- Nominal Power : 29 MW
- EPC Contractor : CNIM





Presentation of the ACC

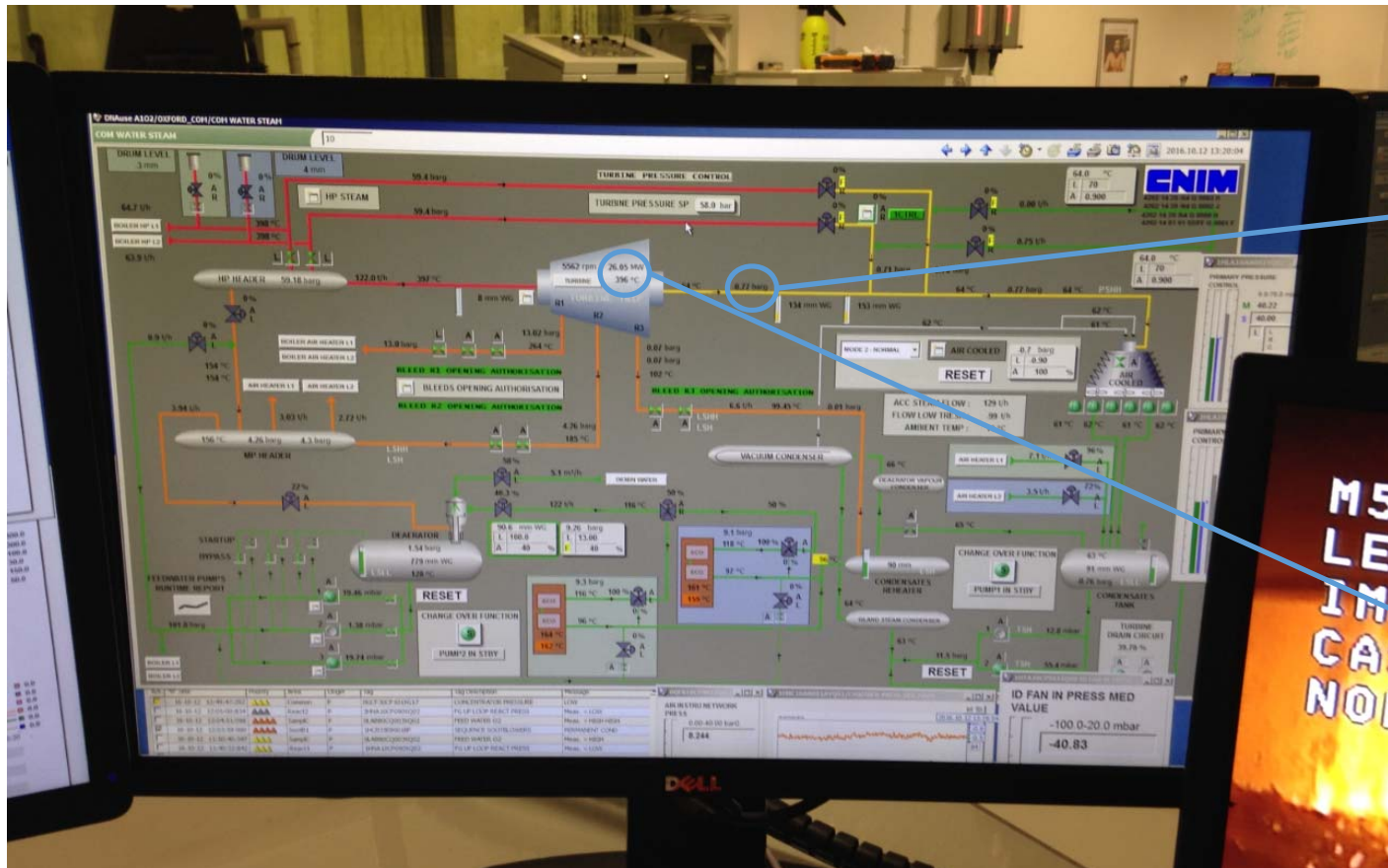


- ACC
manufacturer :
GEA
- ACC type : A
Frame
(quantity 2)
- Bundle Size: 12
m x 40 3
(quantity 4) ->
1900 sqm





Fouling's effect on performances



Vaccum level
dropped to - 0,7
bar

Power dropped
to 26,05 MW

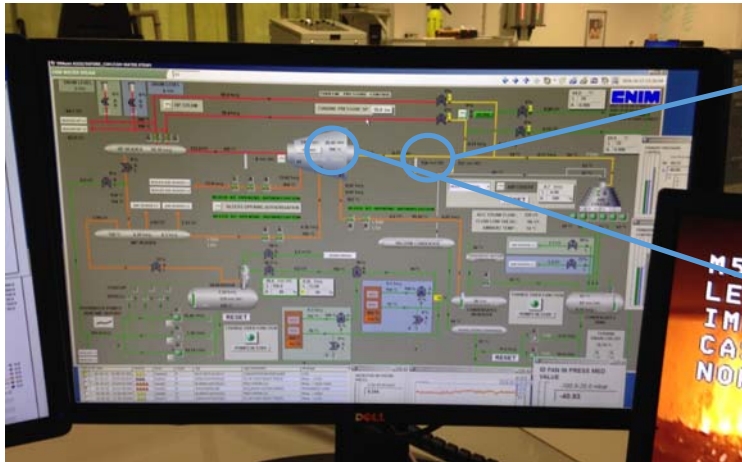


What we did : AX CLEANER® installation





Performance after cleaning



Vaccum level
- 0,9 bar

Power dropped
to 28,29 MW

Theorical saving in those conditions :
1600 MWh per month → 100 000 EUR per month



CONCLUSION

