

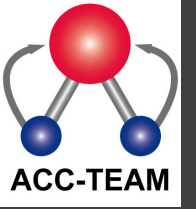


ACC Maintenance

Compared to wet cooling Towers

ACC's have little maintenance.

Still, after years of operation, maintenance is required.



ACC Maintenance

This presentation will discuss maintenance on

Items with long deliverie time and high costs.

Compared to wet cooling towers

ACC's have little maintenance.

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Introduction

Off the shelf items such as instruments, valves etc. will be ignored.

Items discussed.

Fans

Gearboxes.

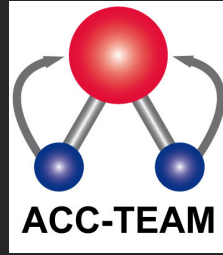
Motors

Pumps

Evacuation systems



Fans



Fans are vital items in an ACC.

If installed properly most fans can run for 10 to 20 years.

As the life time of an ACC is 30 to 40 years, repair or replacement can be required.

Damage can be:

- Cracks between top and bottom half.
- Cracks near the clamping



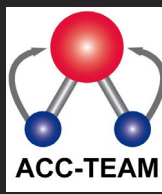
Fans

Due to vibrations, unbalance and wind impact, cracks can be formed. The locations where this happens are in the stem and the front edge.

To prevent this, regular tests on vibrations must be carried out as well as test on balance.

Also the blade angle should be checked regularly, they must be the same for all blades





Gear boxes.

The main components of gear boxes are bearings, seals and gears,

The lifetime of bearings is often 100000 hours plus, which is about 12 years.

In many cases this lifetime can be extended for a few years, but at a certain moment the bearings have to be replaced.

This is also applicable for the seals.

The gears and most bearings are lubricated with oil.

The end bearing of the outgoing shaft is mostly Grease lubricated.

This end-bearing is located in a separate chamber.

An oil seal prevents oil entering this chamber.

When the seal is leaking, lubrication is in danger.

This can be seen from oil spots on the fan ring.



Gearbox maintenance.

Gearboxes should have oil change regulary

With mineral oil every year, with synthetic oil every two years.

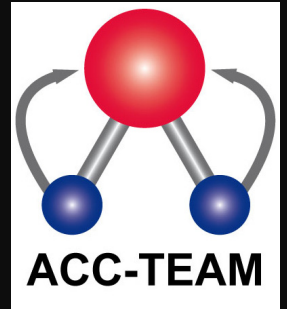
During operation vibrations must be checked, Oil samples to be analysed and moist breather replaced when they are saturated.

This breather absorbes water from the air Entering and leaving the gear box due to thermal expansion.



Electrical motors

Electrical motors are vital for operation.
Motors do have a lifetime of 5 to 10 years.
For reliability it is recommended to have
one spare on stock.
In most places electrical motors can be
repaired within a few days.
For this reason motors are not considered
To be critical items.



Evacuation system

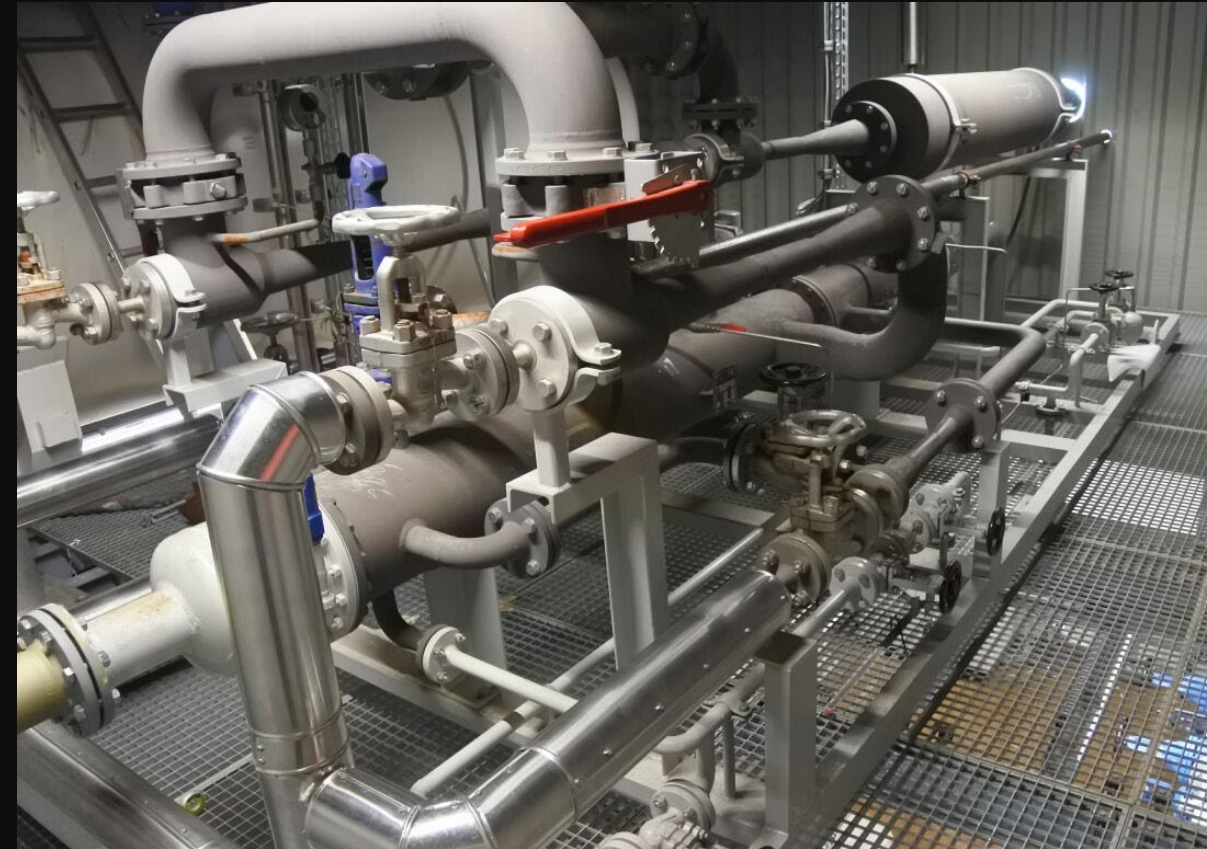
The evacuation system is mostly installed with a redundant system.

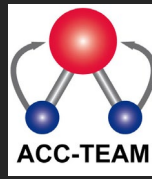
This means that major repairs should not stop operation.

An important issue on maintenance of the steam evacuation system is the replacement of gaskets.

As parts of the system are subject to temperatures of approx 250 C

Gaskets can start leaking after a few years.





Pumps

Pumps for ACC's are installed for two functions

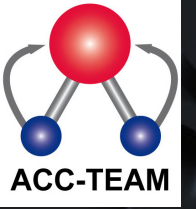
1. To pump the condensate from the condensate tank to the boiler
1. To pump condensate, collected in the steam duct, into the condensate tank.

These pumps are mostly installed with a redundant system.

If a pump is under repair the redundant set can be used.

For this reason spare pumps are seldom kept in stock.





Thank you for your attention

For question you can contact the ACC Team