Online washing system

REASON FOR SUGGESTION:

In case of long-term continuous operation, fouling such as sodium and silica may deposit and accumulate turbine internal. As fouling gets worse, the pressure drop across the turbine increase to mechanical limit. The severe fouling is refracted in terms of higher after stage pressures, lower steam flow rate and loses output power due to flow rate decreasing.

Conventionally, hot water washing has been applied to wash turbine internal with out turbine overhaul. But it required several days shutdown.

New developed online washing has significant economic advantages. Production remains so that all of the derivative units are able to keep running during the wash.

DETAILS OF SUGGESTION:

1) Online wash can be applied to straight condensing turbine or extraction condensing turbine. Installation of system can be done by replacing governing valve and extraction control valve.

2) Fouling material on turbine internal will be washed out by higher moisture steam comparing with normal operation.

3) The machine will keep running at its normal rated speed. Online washing has proven to be an effective option for improving turbine performance while continuing to produce.
Steam inlet
Water injection
Increase steam wetness
Fouling materials are dissolved

Steam
Water injection

Fouling material wash with lower temperature steam

Before online washing

After online washing

During online washing

Significant washing effect

After 1st stage pressure [kPaG]
Steam flow [T/H]

Design line
(without aged deterioration)

After online washing

About 6% recovery

Power recovery [%]

Before online washing

After online washing

Time

2 weeks 4 weeks

0 5 10

➢ Turbine performance deterioration is occurred by long term operation and fouling material in steam.
➢ As a countermeasure of performance deterioration, due to above reason, MCO recommends to apply online washing system.
➢ After 1st stage pressure and output power recovery are confirmed from verification in field.

The detailed study is required for the application of online washing system. Therefore, if you have interest in this washing system, please inform us following information.

• Boiler feed water pressure
• Boiler feed water temperature