ABB
ASEA BROWN BOVERI

3.11 Switching on the steam jet air ejectors

Switch on the ejectors for normal operation and start-up, according to plant-related instructions.

3.12 Warming up the live steam lines

Warm up and drain the live steam lines according to the special instructions of the pipeline supplier.

4. Start-up

4.1 Definitions

The turbine must always be started up in accordance with the plant-related start-up diagram HTGD 489204. The live steam must be superheated by at least 20°K upstream of the last drain before the turbine inlet. We distinguish between three kinds of start-up, depending on the inner casing temperature as measured at the TURBOMAX 61 starting probe.

4.1.1 Cold start-up

The turbine is "cold", i.e. the inner casing temperature is less than or equal to 160°C. In this case, the admitted steam is always warmer than the turbine casing.

For a normal cold steam turbine start-up the live steam temperature has to be reduced to 350°C. A cold steam turbine start-up is also possible with nominal steam temperature but the closed loop controller will limit the runup and load gradients.

4.1.2 Warm start-up

The turbine is "warm", i.e. the inner casing temperature is between 160°C and 450°C. In this case, the admitted steam may be warmer or colder than the turbine casing.

4.1.2 Hot start-up

The turbine is "hot", i.e. the inner casing temperature is above 450°C. In this case, the admitted steam may be warmer or colder than the turbine casing.

4.2 Cold start

A cold start-up occurs only after a longer standstill during which repairs may have been made. In this case, it is absolutely necessary to inspect the unit thoroughly prior to start-up ensuring that all valves and switches etc. are returned to the position for normal operation.

4.2.1. Steam conditions required for cold start

The live steam must be superheated by at least 20 °K, before steam is admitted to the turbine. In case of a cold start it is advantageous to start with low pressures and temperatures; the pressure should, however, not be below the plant-related minimum value.