Testing & Commissioning of Pressurization Unit – Chilled Water System

1. Purpose

The purpose of this procedure is to define the step by step method to implement the correct practices for the pre-commissioning & commissioning of **Pressurization Unit** through the guidelines contained herein so as to ensure that the job execution complies with the project requirements and serves the intended function to satisfactory level.

2. Scope

The scope of this Method Statement is to define the method of Testing and Commissioning of **Pressurization Unit** installed within the project in accordance with the part of commissioning checks at site.

3. References

- Contract Specifications and Approved
- Shop Drawings
- Approved Material Submittals

4. Tools / Material /Testing Instruments

4.1 Material

- Chilled water circuit piping in line with the Pressurization unit
- Electrical Starter and Cables

4.2 Tools / Testing Instrument;

- Hand Tools
- Clamp Meter

5. Quality Control

- In general, it shall be ensured by Site Engineer that product manufacturer's recommendations are followed and shall be monitored by QA/QC Engineer.
- Project Engineer shall further oversee the **Pre-commissioning and commissioning** activity as per the approved method statement for Start-up and Commissioning of Pressurization Unit.
- The Pressurization Unit shall be tested under direct supervision of manufacturer / local dealer's representatives while respective engineer shall monitor the work progress and final inspection by consultant /Engineer.

6. Pre – Commissioning & Commissioning Procedures

6.1. Mechanical Checks

- External pipework connected to the unit should be supported so as not to stress the pipe work connections
- Water and other connections are intact, and that water is available.
- Check operation of water tank float valve, ensuring valve will open, and close drip-tight.
- Check inside break tank for any debris or sediment and if necessary drain tank and clean out.
- Generally check over and clean the exterior of the unit, at the same time checking for leaks.
- Check that the pressure gauges / switches are installed and is operating

6.2. Electrical Checks

- Ensure the connected cables have been tested and verify the test reports.
- Check all terminations are complete and tightened as required.
- Check the cabling / wiring including grounding is completed and dressed neatly.
- Ensure all identification and labelling is completed.
- Set the overload relay to correct setting as per the Pump motor current on the name plate.

6.3. Start – Up and Testing

- Before commencing the commissioning procedures detailed below, ensure that the system is full, eensure that the unit water tank is full.
- Prime the pump by removing the plug at the top of the pump body, and allowing water to flood through. When all air has been expelled, replace plug.
- Check that the pre-charge pressures in both the unit pressure vessel and the system expansion vessel (s) are correct.
- Close the isolating valve between the unit and system, and switch on the unit.
- The pump should run up to cut-out pressure, and stop.
- Open the system isolating valve, and observe the pressure gauge on the unit.
- On falling pressure, the duty pump will start at its cut-in pressure.
- The duty pump forced to fail to start the pressure will continue to fall until the standby pump starts.
- Only one pump ever operates at one time.
- Open the valves to the system and switch on.
- The unit will run, if required, to bring the system up to the fill pressure.
- This ensures that the correct fill pressure has been achieved
- Note the pressure at which the pump starts, and adjust this pressure if required to suit the system fill pressure as required
- Close the system isolating valve.
- Lower the pressure within the unit by draining away and note the pressure at which the system low pressure cut-out switch operates
- Run the pump, thereby raising the pressure and note the pressure at which the system high pressure switch operates.

6.4 Sequence of Operation of Pressurization Unit:

- H/O/A switch on off position, the relevant pump stops.
- H/O/A switch on hand position, the relevant pump starts provided there is enough water in the feed tank.
- H/O/A switches of all the pumps on Auto position, the pumps works automatically based on the pressure demand.
- On System pressure demand (Press. SW makes), the pumps starts.
- At system pressure satisfaction (Press. SW breaks), the pump stops.
- Duty Selector switch in position 1. Pump – 1 will work and the second is standby.
- Duty Selector switch in position 2. Pump – 1 will work and the first is standby.

- If one pump trips on fault, the second pump will start automatically to meet the same demand.

7. Inspection & Records:

- Inspection Request (IR) duly signed by the Consultant.
- Specialist Suppliers commissioning report /document.

8. Safety

- All safety precautions shall be followed as per the established Project Safety Plan.
- Only experienced and skilled technicians shall be engaged for carrying out Start-up and Commissioning of Pressurization Unit.
- Safety guards shall be in place and secured prior to start-up.
- Cable test reports shall be verified prior to energizing
- Appropriate Warning signs and tapes shall be placed during start-up and commissioning as required.
- All PPE shall be worn as appropriate according to the nature of the job.
- Work area shall be maintained neat and clean.