ETS Automation Verification

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Agenda

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- The Current Situation
- Functional Check Objectives Flow chart
- A Typical ETS Setup
- Result
- Outcomes
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Introduction

- We are responsible for ensuring supply of chilled water to our clients in a reliable and efficient manner by ensuring correct functioning of all of the Control & Instrumentation Systems.
- We maintain, calibrate, program, configure, test and upgrade our systems as necessary in ensuring the above.
- We implemented a new program which verify our control and instrument system remotely from Local SCADA in our District Cooling Plant or Command and Control Center.
The Current Situation

- Currently Empower supplies chilled water to around 1000 buildings. Each building is connected to the chilled water network through ETS.

- A proper functioning of ETS equipment is important to ensure efficient cooling and correct billing.

- We carry out calibration verification checks of the instruments connected to BTU meters so as to ensure correct billing.

- Visiting each ETS room and checking HEX sequence of operation which required time, manpower and transportations.

- We have implemented further functional checks to meet our customer requirements in a reliable way. We explain this as we move forward.
Functional Check Objectives

- To check whether Header return / HEX return Temperature sensors functions
- To check whether the configuration between flow meter and BTU meter are correct.
- To check whether the pressure across the ETS is efficient to give contractual flow
- To check the flow setting of each PICV
- To check the stem time travel of each PICV
- To check whether the flow velocity are within the measuring range of the flow meter
A Typical ETS Setup
- Close all HEX PICV

- Test begin on HEX1 by opening PICV 1 to 100% then 75%, 50%, 25%, close

- Same steps will be carried on HEX2.

- In each step we are recoding the Flow, Temperature and Valve Travel time values.

- This process take 30 minutes per HEX.

- Any abnormality in the process will be recoded in the report.
Result
Outcomes

- Temperature Sensors verification.
- PICV Valve configurations verification against the flow & pressure requirement.
- PICV Valve opening times verification.
- Contractual Flow verifications.
- On demand testing and verification.
- Historical logs keeping results for future reference.
- Remote testing (not required to visit each ETS room).
- Ensuring a fully functional ETS.
Discussions and Questions
Thank You