ETS Automation Verification

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Agenda

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

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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.

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The Current Situation

- Currently Empower supplies chilled water to around 1000 building each building is connected to the chilled water network through ETS.
- A proper functioning of ETS equipment are important to ensure efficient cooling and correct billing.
- We carry out calibration verification checks of the instruments connected to BTU meter 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.

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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 with in the measuring range of the flow meter

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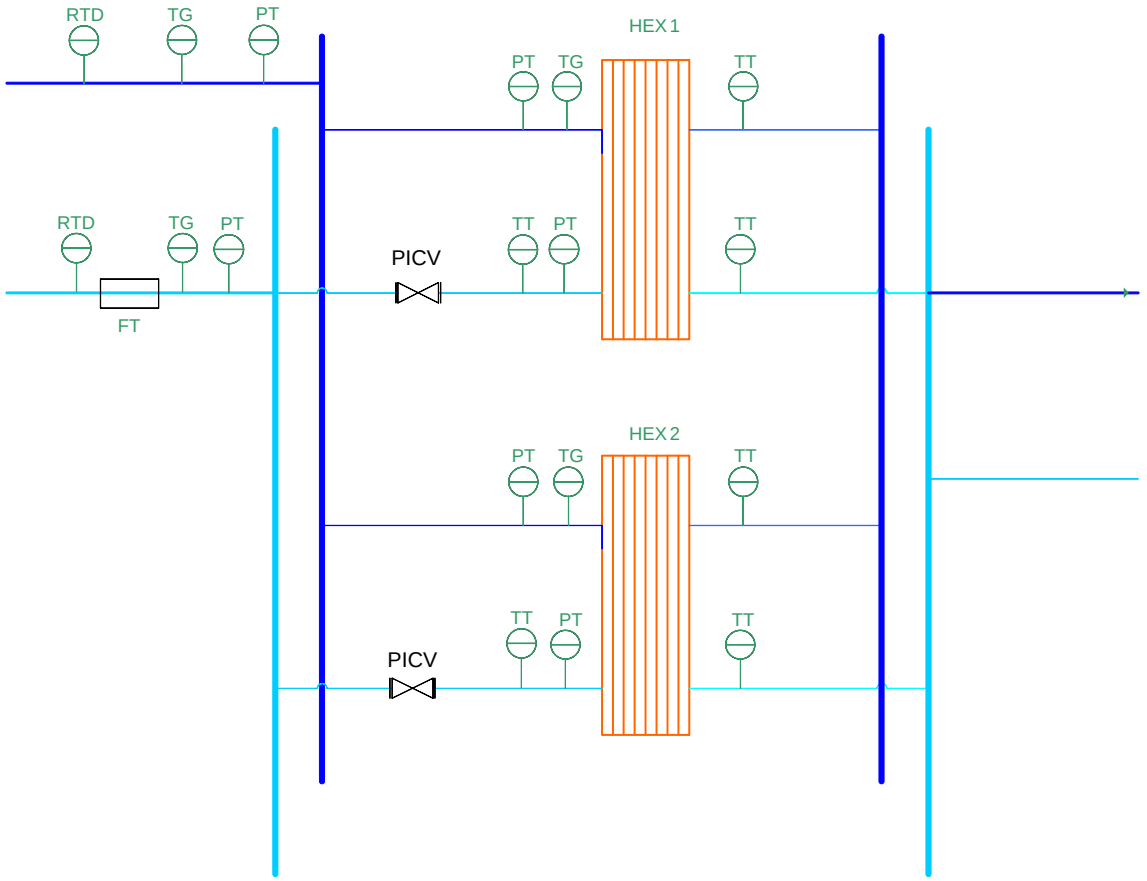
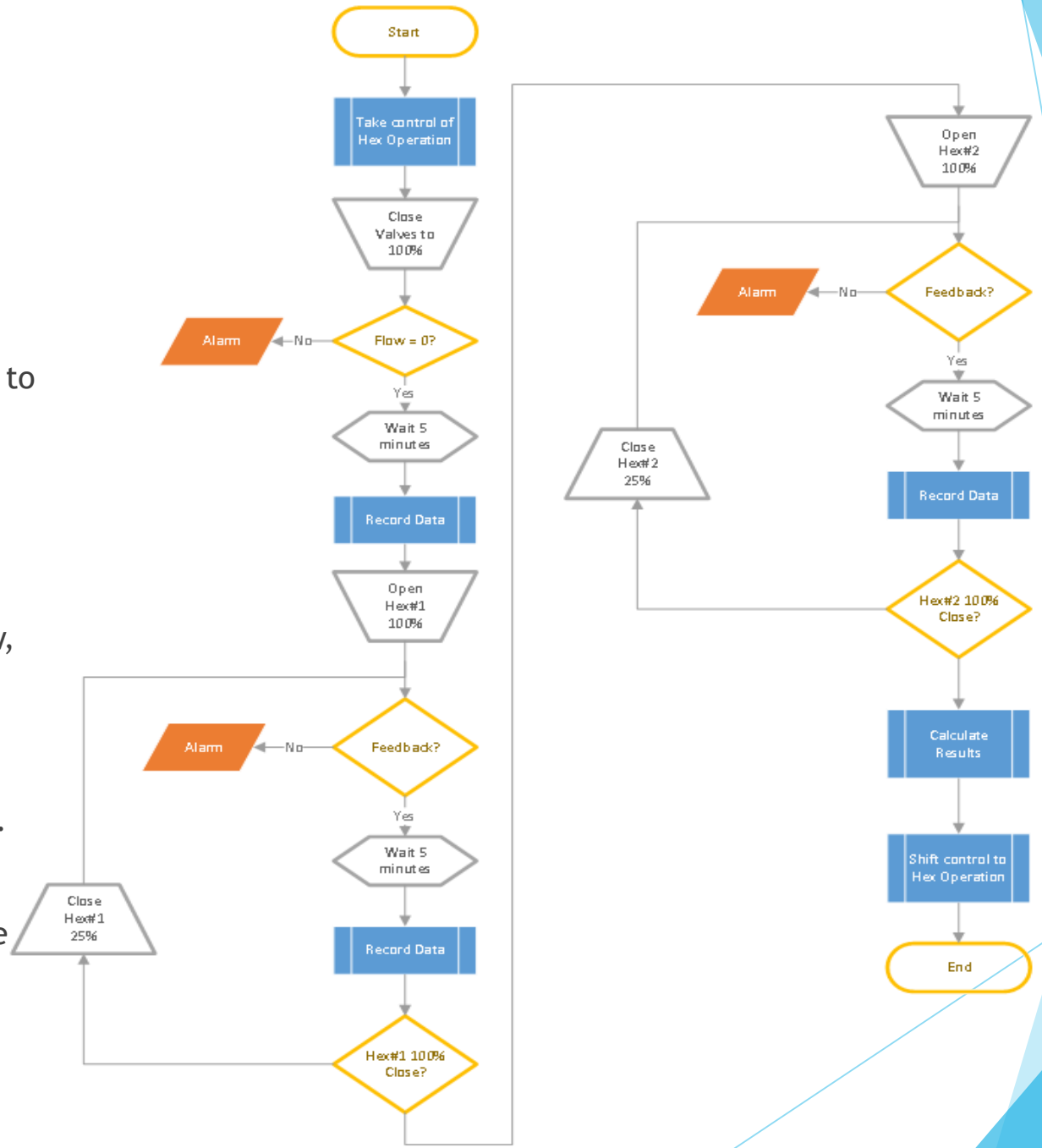
A Typical ETS Setup



Flow Chart

- 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.



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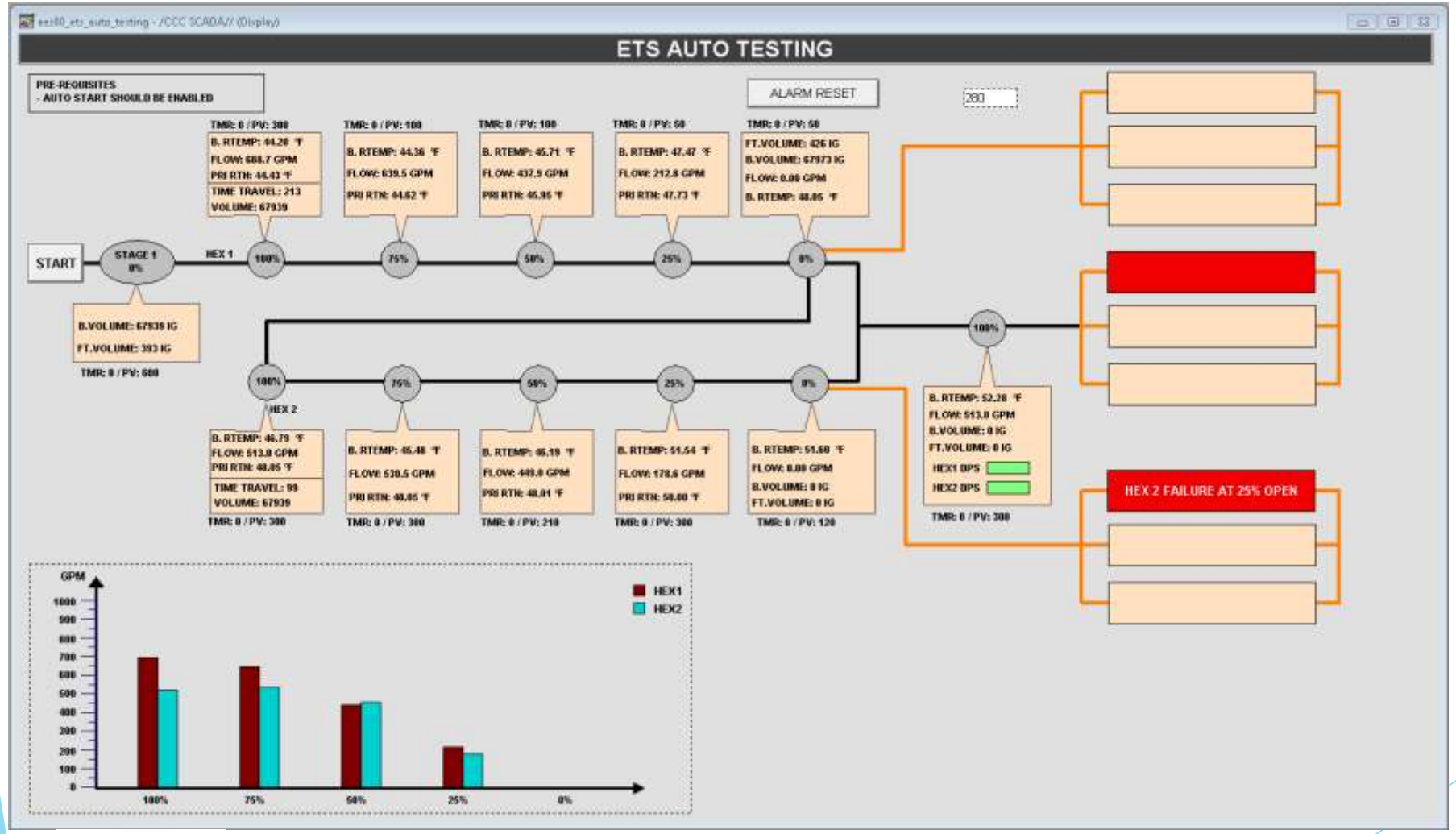
Result



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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.

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Discussions and Questions

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Thank You

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