

Compressor Performance Algorithms and PLC Support

When a PLC does not properly model the unit it is controlling, then unit optimization is rarely achieved, issues with safety occur, and reduced operating maps are likely.

ACI not only provides dynamic compressor performance curves to operators, but the same level of performance prediction can be provided to Automation Controls so that unit is properly modeled in the PLC.

Robust Algorithms Provide:

- Load Predictions
- Flow Predictions
- Fuel Predictions
- Pressure Drop Considerations
- Proper Rod Load Considerations
- Crosshead Pin Reversal Considerations
- Low Volumetric Efficiencies
- Discharge Temperatures
- Safe Startup Maps
- And much more...

Also Included:

- Load step sequencing chart with load indication for automation purposes
- Alerts for any known areas of concern during compressor operation
- Fast-executing code for Gas Compressibilities and Interstage Pressure Balancing routines
- Automation Methodologies
- Comparisons between PLC-based prediction routines against those from eRCM, or other OEM software

The screenshot displays the ACI eRCM software interface, which includes several key components:

- Unit #1: 2-Stage Mode:** A table showing head end pockets and head ends for different load steps (1-6) across various parameters like HE1, HE2, HE3, HE4, h1, h2, h3.
- Unit #1 Data Tables:** Multiple tables providing detailed compressor data, including:
 - FIXED DATA:** Amperage, GasKa1 Value, InvertKa2, etc.
 - TEMP VARIABLES:** Minimum VE1 Section, Minimum VE2 Section, etc.
 - ROD LOADS:** 30000 Rod Load Limit Temp, 40000 Rod Load Limit Comp, etc.
 - BP Constants:** MaxAsHP, FramedAsHP, AddAsHP, etc.
 - BP Adjustment Constants:** A, B, C, D, E, F.
- Graphs:** A graph showing Suction Pressure (X) versus Discharge Pressure (Y) with multiple colored curves representing different operating conditions.
- Code Snippets:** Ladder logic and assembly code for PLC integration, including comments like "PLC programmer must code the PLC to account for all safety checks..."
- Startup Tables:** Tables for "Region to Map" and "Table of First Safe Load Steps" with columns for Pk, Min, and Max values.

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