Control-Care

Station Control Application (SCA) functionality and capabilities

Renowned control solutions to the Oil & Gas, Chemical and Petrochemical industries world wide

The compressor load-balancing control application or Station Control Application (SCA) developed by Control-Care allows load-balancing of multiple compressors running either in parallel or in series, or in combination of both, keeping the station's preferred control parameter at its setpoint without unnecessary compressor recycle or performance fluctuations. Advanced feed forwarding algorithms, setpoint averaging techniques and control parameter normalisation calculations are used to ensure that the all compressors operate as one unique turbo-machinery unit at highest individual efficiencies. At the same time the compressor's individual operational limits are respected and seamlessly controlled.

The entire Control-Care compressor control scheme can include antisurge (ACA) and performance (PCA) control, load-balancing optimization (SCA), compressor auxiliaries sequencing, parametric diagnostics and ESD system interfacing.

Station Control Application (SCA) is used to

- maintain the main process variable to desired setpoint
- load-balance compressor trains running in parallel and/or in series
- minimize compressor recycling during lowered throughput situations

Hardware platform independent

- The core SCA functionality is identical on each control system platform
- The SCA applies to multiple compressor configuration in parallel and/or series operation
- Configured according to project specific requirements (no programming)

Load-balancing set-up

- needs one (1) SCA and multiple PCA companions according to number of trains
- combines PCA with SCA software modules
- through configuration, no programming

Compressor individual performance controlled by

- compressor speed setpoint
- inlet guide vane (IGV) setpoint
- inlet (suction) or outlet (discharge) valve position setpoint
- compressor recycle flow

Load-balancing parameters

- Normalisation of the actuating element for parallel load-balancing
  - > Speed Setpoint
  - > Inlet guide vanes setpoint
  - > Inlet or outlet valve position setpoint
- Normalisation of compression ratio for load-balancing in series
- Normalisation of proximity to surge calculation

Load-balancing scenario

- Units in operation are balanced on normalized
  - > Speeds, or
  - > Inlet guide vanes setpoint, or
  - > Inlet or outlet valve position setpoint if units are running away from surge
- Balanced on normalized compression ratio for load-balancing in series
- Balanced on proximity to surge calculation if
  - > One unit gets closer to surge than the others
  - > Multiple units get close to surge
- Balanced on compressor recycle flows when multiple units run closer to surge

Limiting mode

- Load-balancing application reverts to alternative process control when
  - > low or high flow limit
  - > pressure or temperature limit
  - > power limit is reached (through PCA limiting)

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