

Low-maintenance control systems improve NGL recovery at Texas gas plant

Advanced regulatory control strategies at El Paso Field Services Co.'s Thompsonville, Tex., gas plant have optimized plant performance for the past 9 years with little or no required maintenance, according to John R. Phillips of El Paso Field Services Co., San Antonio, and Barry D. Payne of Barry D. Payne & Associates Inc., Stafford, Tex.

In a presentation to the Gas Processors Association 82nd Annual Convention, Mar. 9-12, 2003, San Antonio, the authors outlined the implemented strategies that reduced operator intervention and improved control and process economics.

They said that the strategies were implemented in the plant's distributed control system (DCS) and required no additional computers. Engineering costs were the only system installation outlays required.

Automatic multivariable C₁:C₂ ratio control helps maintain high C₂₊ recoveries, reduces "methane giveaway," and eliminates the need for operators periodically to compensate for tower pressure, inlet rate, inlet composition, and ambient temperature effects, according to the authors.

The plant was able to reduce unexpected upsets caused by tower flooding using a flooding prevention strategy, which provided several years of protection until process design changes rendered it unnecessary.

The authors said that the strategy required little engineering labor to design and commission and no additional instrumentation. The system, therefore, was inexpensive and required little or no maintenance during its term of service.

Tower flooding protection included online estimation of liquid rates and automatic exchanger balancing to limit liquid production and feed rates. Rapid-response logic for expander and compressor trips reduced operator intervention and minimized the impact of equipment trips; this prevented tower overpressure or recompressor shutdowns due to low suction, they said.

Automatic rate control coordinates tower pressure and recompressor speeds, which gives tighter control of volumes delivered to residue markets. Automatic rate adjustment on a full-time basis reduces operator intervention, according to the authors.

They said that this strategy also controls plant inlet pressure to improve recovery and stabilize production pressures. It includes additional constraints that reduce the likelihood of upsets and increase plant reliability and operator confidence.

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