



Valero St. Charles Refinery Has Success with CCC Guardian Overspeed Prevention System

November 11, 2003

By **Chaille Percy**, Senior Instrumentation & Electrical Engineer, Valero St. Charles Refinery, Louisiana

"The Coker Wet Gas Compressor at the Valero St. Charles Refinery in Louisiana has been in operation for approximately six years without a major overhaul. During the Coker 2003 turnaround, a team was assembled to facilitate a major revision of the compressor due to multiple trips of the system. The original manufacturer of the compressor was brought in to rework the balance piston and seals, the PLC system was replaced, all old transmitters were replaced, and, where possible, all single source signal shutdown devices were replaced with dual voting systems. Among other innovations, Compressor Controls Corporation's Guardian Overspeed Prevention System was chosen to replace an old mechanical overspeed trip device.

There were several key reasons why Valero St. Charles chose the new Guardian Overspeed Prevention System from CCC. The Coker Wet Gas Compressor is driven by a 650# steam turbine, and since the original mechanical overspeed trip device was one of a kind, the replacement parts for the device had to be handcrafted, thus costing the plant a lot of money, and a modern solution was a must. In addition, the refinery has different voltage needs for overspeed prevention. So, it was extremely important to have the flexibility offered by the Guardian for variable requirements. Another consideration was the ease of installation: the Guardian was installed from a manual, no additional engineering was required and no field services from CCC were necessary.

The operators' training was fast and easy as well. We were able to mount the three speed sensors, during a limited amount of time, when the turbine case was removed. The Guardian Overspeed Prevention System monitors the three speed sensors, and will cause a shutdown based on a 2 out of 3 voting. This system was mounted in a local control panel on the compressor structure.

The Guardian Overspeed module, upon trip initiation, diverts control oil pressure from the Gimpel throttle trip valve to the steam turbine. Valero St. Charles employs two output trips from the Guardian Overspeed module to each of two 3-way "Y" solenoids. This action trips both, the

turbine and the compressor.

The holistic approach to compressor control solution secured this project's success. The Coker Wet Gas Compressor has been running continuously since it was put back in service in mid-June 2003. CCC's Guardian Overspeed Prevention System played a pivotal role in the compressor controls upgrade and the turbomachinery availability."