POWER MANAGEMENT UPGRADE

505 REDUDANT STEAM TURBINE CONTROL

Bumpless control mode transfer

Minimize process over/undershoot

On-line tunables configuration

On line repair and replacement

Automatic and/or manual transfer

First out problem indicator logics

Front of cabinet

Introduction

The above refinery has four steam turbine with 505 steam turbine controls. The plant started operation in 2007, after a mechanical failure on of the turbine almost caused a plant shutdown in 2009.

Turner Engine Control Solutions rectifies this problem while the turbine remained on line. Following this even reconsideration was made on the plant redundancy philosophy. To increase the availability of the steam turbine driven compressor, the existing simplex Woodward 505 steam turbine controls have been upgraded by a Woodward 505 Enhanced redundant configuration.

The new control cabinet was installed and commissioned during the plant shutdown January 2010.

As the existing cabinet also included other control components, modifications were made to the existing cabinet to act like a marshalling cabinet for the new cabinet.

POWER MANAGEMENT UPGRADE

PROJECT SCOPE

- Engineering new system
- Demolition drawings (red/blue)
- Modify wiring in existing cabinet
- Assembly of a new cabinet
- Operation instruction document
- Factory acceptance test of cabinet
- Installation new cabinet on site
- Commissioning of new system

REDUNDANT OPERATION

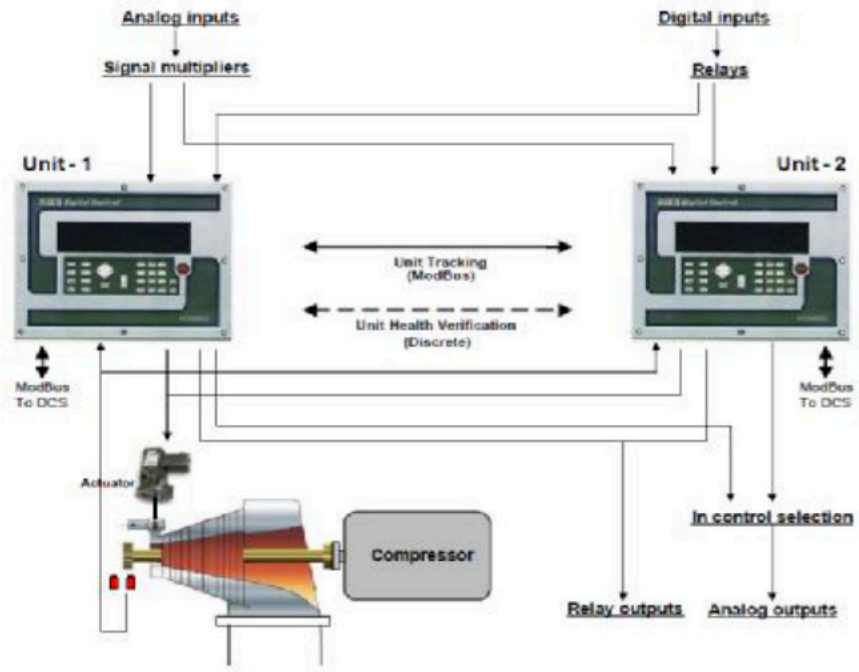
The two 505's steam turbine controls operate in redundant **Master/Slave** configuration.

In this configuration, one 505 will function as the master controller and controls all aspects of the steam turbine system. The second 505 functions as a slave controller (Tracking Unit) and tracks the master 505 control unit.

If the master control 505 fails for any of the configured reasons, such as loss of any turbine-related I/O signal or user-defined input wired to this unit, operation is transferred to the Tracking 505 control.

The redundant set-up also makes it possible to make changes in the configuration of the Slave 505 or even perform a control replacement while the turbine remains on-line.

When the 'In Control' 505 is tripped by the Emergency Stop button or a user programmed External shutdown, the turbine will trip



More information?

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