What to Monitor for the Health of Your Reformer (SMR)

Online or During TAR

INLET SYSTEM

- Crossover pipe or mixed feed pipeline
- Inlet manifold wall temperature
- Inlet pigtail wall temperature

RADIANT / OUTLET SECTIONS

- Catalyst tubes
- Outlet reducer (fittings) and pigtails
- Outlet manifold
- Transition bull tee or riser bull tee skin temperature
- Riser pipe
- Riser transition assembly
- Reformed Gas Main (RGM) or transfer line
- Pipe connection to secondary reformer or WHB
- Wall insulation
- Coffins or tunnels
- Refractory
- Tubes and riser insulation
- Transfer line water jacket
- Transfer line / RGM internal refractory
- Transfer line / RGM internal liner
- Outlet pigtails: mechanical condition and skin temperature

COMBUSTION AIR

- FD fan mechanical condition
- FD fan operating parameters (envelope)
- FD fan vibrations
- Preheater
- Air ducts
- Combustion air ducts to burners
- Combustion air plenums

FLUE GAS

- Flame shape
- Flame color and length
- Tube skin temperature
- Tube color
- Tube thermal expansion
- Flue gas ducting
- Possible sources of tramp air
- Flue gas tunnel bypass areas
- Shell wall hot spots
- Penthouse overheating areas
- Floor hot spots

BURNERS / SUPPORT SYSTEMS

- Tube and riser hot spots

- Flame shape
- Flame color
- Flame length
- Burner tip mechanical condition
- Air damper mechanical condition
- Gas valve correct operation and condition
- Leak detection
- Corrosion damage
- Tube spring hangers
- Transfer line spring hangers
- RGM / inlet manifold sliding plates
- Pipeline spring hangers

TRANSITION SECTION

- Shell wall hot spots
- Roof, floor, and wall insulation / castable condition
- Tunnel end-wall mechanical integrity
- Debris condition where convection section starts
- Signs of water ingress

CONVECTION SECTION

- Tube mechanical condition
- End tube sheet condition
- Intermediate support condition
- Tube sagging or deformation
- Signs of corrosion or leaks
- Refractory and insulation condition
- Shell wall hot spots
- Stack fumes color
- Signs of flue gas canalization
- End tube sheets condition

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- Operating parameters
- Duct mechanical condition
- Shell hot spots
- Vibrations
- Signs of CUI
- Insulation condition
- PSV mechanical condition

PROCESS

- Tube row process temperatures
- Outlet manifold process temperature
- Mixed feed temperature
- Steam-to-carbon (S/C) ratio
- Reformer outlet temperature
- Coil flow and temperature
- Flue gas O_2 content
- Bull tee process temperature
- Reformed gas composition
- MHB (mass and heat balance)
- Transient temperatures and flows
- Periodic recording of operating conditions

SOIL Ingeniería Ltd. – More than 30 years of experience in design, maintenance, repair, and construction of reformers.

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