

World's largest refinery relies on Purafil to protect equipment and maintain high productivity.

GUJARAT, INDIA

The world's largest refinery produces 1,240,000 barrels per day and was the first fully integrated petroleum refinery, petrochemicals complex, and captive power plant. Vertically-integrated facilities, like this refinery, using hydrocarbons to produce primary and intermediate petrochemical materials, plastics, synthetic fibers, and synthetic rubber generates highly corrosive gases such as hydrogen sulfide (H₂S), sulfur dioxide (SO₂), and nitric oxide (NO_x). The corrosion of contacts and components on circuit boards accounts for approximately 40% of all equipment failures in industrial facilities. Aware of the potential risks and costs associated with inadequate corrosion control, the refinery made plans to incorporate Purafil's corrosion control technology into the HVAC designs for their 28 control and satellite rooms.

Purafil was selected because of their experience in the industrial marketplace and superior performance of their air purification systems. **Purafil provided the technical knowledge and equipment necessary to build controlled environments that would protect production processes, and meet the standards established by the Instrument Society of America (ISA).**

Purafil's design requirements for controlled environments include the following:

- Relative Humidity: To be less than 50% with close control of deviations no greater than 6% per hour.
- Temperature: To be maintained at the lowest level possible consistent with personnel comfort, typically 72°F, 22°C (±2°F, ±1-2°C).
- Room Air Pressurization: To be 0.05 iwg to 0.1 iwg at a rate of 1 to 3 air changes per hour (2-5% of gross room volume).
- Gas-phase Air Purification: To maintain gas concentrations to levels acceptable for a G1 Class environment as defined by the ISA (i.e., H₂S <3ppb, SO₂<10 ppb, NO_x<50 ppb).

Purafil installed a Deep Bed Scrubber (DBS) at the fresh air intake of each control room and satellite room to filter 700- 2000CFM, providing clean pressurization air to the controlled space. The DBS is constructed of corrosion-resistant materials, making it suitable for installation outside of the space it is protecting. Each scrubber contains two passes of Purafil's gas-phase air filtration media, Puracarb and Purafil SP, to remove a broad range of corrosive contaminants.

Purafil OnGuard Corrosion Monitors were also installed to provide real-time measurements of the overall reactivity level of air contaminants, temperature, and humidity. The OnGuard can be used to verify the cleanliness of discharge air from a gas-phase dry scrubbing system and send an alert before contamination breakthrough could occur.

