

EMISSIONGUARD™ TR² & PURGE PANEL INSTALLATION AT PETROCHEMICAL FACILITY IN ITALY

The Challenge

At a petrochemical facility in southern Italy, a single-stage, lubricated Nuovo Pignone hydrogen compressor was operating with an outdated packing case design. This legacy configuration resulted in excessive gas leakage and posed serious safety concerns, as the escaping gas was venting directly into a designated safe zone without being routed to the flare system.

To address these issues and enhance both safety and performance, the customer sought to modernize the compressor. The objective was to improve the sealing efficiency of the main packing case by updating the ring configuration and redirecting leakages to the blowdown line. CPI was brought in to lead the engineering study and develop a solution.

The Solution

Following a comprehensive analysis of the compressor's operating conditions and original packing case design, CPI proposed a series of critical upgrades:

- Conversion from lubricated (LUBE) to non-lubricated (NON-LUBE) operation to eliminate the need for cylinder lubrication oil.
- Installation of a new packing case equipped with EMISSIONGUARD™ TR² rings in CPI184 material. This advanced low emission ring design significantly improves the sealing efficiency and reduces frictional heat generation compared to conventional segmental packing enabling the non-lube conversion.
- Integration of an EMISSIONGUARD™ Purge Panel to manage vent leakage flow and regulate the nitrogen purge injection for improved environmental control.

These enhancements not only boosted system efficiency but also aligned the operation with modern emissions and safety standards.

The Outcome

The customer implemented CPI's recommendations by converting the compressor to NON-LUBE, installing the new packing case, and adopting the EMISSIONGUARD™ Purge Panel. The results exceeded expectations:

- Substantial improvement in sealing performance
- Increased operational safety
- Extended maintenance intervals

Overall, the upgrade delivered a safer, more efficient, and environmentally compliant compression system.

