



HVTS PREVENTS CORROSION ATTACK IN A REGENERATOR COLUMN AT LNG PLANT IN GCC



PROBLEM

An application of conventional thermal spray coating had led to failures, so the plant required an urgent response to repair the damaged thermal spray coating during an upcoming turnaround

INTRODUCTION

An LNG plant in the Gulf Cooperation Council (GCC) required a solution to prevent CO₂ corrosion attack in a regenerator column caused by a highly corrosive feedstock. A previous application of conventional thermal spray coating had led to failures, so the plant required an urgent response to repair the damaged thermal spray coating during the upcoming turnaround. Just 10 days after being instructed, IGS had mobilised a team to be ready onsite at the plant.

THE INSPECTION

Upon mobilization of IGS material, equipment, and personnel resources in September 2022, a thorough inspection was carried out by IGS and the plant's inspection team of the conventional thermal spray coating applied by a third-party provider in April 2018.

The inspection found numerous coating failures across the upper and lower chambers with visible micro-cracking and blistering apparent.

WHAT IS CO₂ CORROSION?

CO₂ corrosion is a form of degradation that occurs when dissolved CO₂ in condensate forms carbonic acid (H₂CO₃), which corrodes steels and low alloys to form an iron carbonate scale.

THE IGS SOLUTION

IGS removed the failed thermal spray coating in regions with micro-cracking, blistering, spalls, and delamination. Once completed, the shell substrate surface condition was inspected, and surface preparation was carried out by IGS technicians.

Once the surface was prepared correctly, IGS applied its own uniquely developed High Velocity Thermal Spray (HVTS) cladding, with more than 40m² of IGS HVTS cladding applied onsite, on time and at the highest quality standard.



HVTS cladding applied on internal shell

THE RESULTS

The client had initially (in 2018) chosen a conventional thermal spray contractor for short-term cost benefit. Conventional thermal spray coating providers use standard material, low-velocity process technology, and non-specialized and inexperienced workforces, factors which led to catastrophic failures in this column. The cost of thermal spray coating failure is not limited to the cost of thermal spray coating repair or replacement, but extends to the need for mechanical repair, prolonging outage/turnaround time (equals loss of production time), and even risk of loss of containment.

IGS was able to restore this column's integrity for the client and will be contracted to provide HVTS services in other amine columns in the future.

IGS has been providing the in-situ applied HVTS technology for permanent corrosion mitigation in amine process equipment for 30+ years with proven performance in the world's largest oil and gas companies.