



Project: Fadhili Gas Program Project

Contractor: Energy Recovery Inc (ERI)

End User: Saudi Aramco

Product: Isoboost Turbocharger Skids

Location: Kingdom of Saudi Arabia

Year: 2018

### Application

This contract was the first order OGS received from ERI and was for a product that is to be trialled within Saudi Arabia. There were a total of 5 skid packages, 4 off for the Hasbah Facility and 1 off for the Kurshaniyah Facility. Although similar in design and using similar equipment, the process conditions and therefore the flange ratings were different between the two sites. All of the equipment and manufacture was completed and tested in accordance with project and Saudi Aramco specifications.

### Description

OGS acted as a packager for ERI on this contract and the scope of work included providing a 1 piece structural steel skid base to support the ERI Isoboost Turbocharger. Access on to the skid was provided via short stairways and raised walkways and the top of the skid base was completely covered with a sloping base plate designed for drainage.

Along with this, OGS manufactured all of the associated pipework systems and provided all instrumentation in line with ERI Piping and Instrument Diagrams. Piping materials were a combination of carbon steel and 316/316L stainless steel and piping sizes ranged from 1"-150# up to 12"-900# and 16"-600#.

All instrumentation was supplied by OGS apart from the Turbocharger vibration monitors and proximity probes. All instruments were supported on stands and sunshades were fitted as required. Instruments were cabled back to instrument junction boxes located next to the raised walkways and were a combination of both 4-20mA HART and Foundation Fieldbus transmitters.

The main process control valves were air actuated and OGS provided a skid edge Instrument Air Termination Point and instrument tubing to each user. The lubrication system for the Turbochargers required a filtration system that needed to be operable from the skid edge. Duplex filters were purchased from John Crane (Indufil) for this purpose.

### Challenges

The original proposal was for the equipment to be supplied on two skids which would be re-assembled on site. However, design modifications were requested and OGS was instructed to supply all equipment on a single skid base measuring 7.75m x 4.95m.

During the contract OGS was asked to change the main Turbocharger inlet and outlet connections from standard welded concentric reducers to single piece forged and machined cones.

The extent of earthing required on this contract was far more than envisaged. Apart from the normal instrument cable and cable tray earthing, all walkway grating and pipe supports were also earthed to the skid base.

Finally, the Turbocharger instruments were supposed to be pre-assembled on to the machines but instead these had to be installed by OGS. The instruments were supplied with fixed cable lengths, which were not long enough to reach the appropriate junction boxes so OGS had to fit new cable trays and conduit.

