

IS HIGH PRESSURE GAS LIFT COMPRESSION SAFE?

WITH THE INTRODUCTION OF HIGH PRESSURE GAS LIFT (HPGL) COMPRESSION TO THE OIL AND GAS INDUSTRY, OPERATORS ARE ASKING, “IS THIS SAFE?” AS THE INDUSTRY’S LEADING PROVIDER OF HPGL COMPRESSION, WE WOULD LIKE TO TAKE A MOMENT TO EDUCATE OPERATORS ABOUT HPGL TO ENSURE YOU OF THE SAFETY OF THIS EQUIPMENT.

WHAT GENERAL SAFETY TESTS SHOULD AN OPERATOR LOOK TO ENSURE THAT HPGL IS SAFE?

Hydrotesting all fabricated process components proves both the design and fabrication integrity. All process pipe and pressure vessels are hydrotested to 1.3 times the Maximum Allowable Working Pressure (MAWP).

Pressure Vessels: ASME Boiler and Pressure Vessel Code
Section VIII, Division 1

Process Piping: ASME B31.3

Vibration Analysis: API 618 (5th Edition) Design Approach 2

These codes and standards establish generous margins of safety and require rigorous design efforts to ensure reliable engineering. Further, in accordance with the codes, fabricated components undergo Non-Destructive Examinations (NDE) to validate that the actual product conforms to the design.

AM I GOING TO HAVE TO CHANGE MY WELLSITE DESIGN?

Probably, but likely nothing real significant. Of prime importance is ensuring that the component (piping, fittings, etc.) pressure ratings are adequate. Also, with the likelihood of increased production, you should ensure that your production separator is capable of handling anticipated fluid rates.

Generously sized flow lines (wellhead to production separator) are critical for maximizing production and should be evaluated as well. For a good overall discussion of the topic, reference the case study, specifically the section titled: Description of Application of Equipment and Processes.

DO THE UNITS UNDERGO ANY OTHER TYPES OF TESTING TO HELP ENSURE SAFETY?

Yes. Welds on all pipe are x-rayed according to ASME B31.3. Where it is not feasible to x-ray welds on process pipe, Magnetic Particle Inspection (MPI) is used to verify weld integrity.

WHAT KINDS OF ENGINEERING CONTROLS (“SAFETIES”) ARE IN PLACE TO ENSURE PRESSURE LIMITS ARE NOT EXCEEDED?

First, the control panel monitors process pressures and will shut down the gas lift compressor should the pressure limit be exceeded. As a redundant safety, Pressure Relief Valves (PRVs) are installed and set to relieve at or below the MAWP of the lowest rated component.

WHAT HAPPENS IF THE WELL/SITE RECEIVES AN EMERGENCY SHUT DOWN (ESD)?

A couple of potential outcomes exist. Ideally, the compressor is connected to the ESD system (we can assist with that process) and will shut down at the same time the ESD is received. Alternatively, when the well shuts in, the compressor will shut itself down if it senses a high-pressure limit. Regardless, the compressor will safely shut down and no pressure limits will be exceeded.

WE STILL HAVE QUESTIONS ABOUT THE SAFETY OF HPGL, WHAT ELSE CAN YOU DO TO HELP US WORK THROUGH THESE QUESTIONS?

A Process Hazards Analysis (PHA) or a Hazard and Operability study (HAZOP) can be a great tool to review design details of the equipment, the potential hazards and how they are mitigated by the engineering controls.