



## FRONT END ENGINEERING and SCOPING

Production, Gas Gathering, Gas Processing,  
Transmission Booster and Storage Facilities

### TYPICAL PROJECT DESCRIPTION

The Client has decided that it needs one or more compressor stations to move gas thru the system. This has been determined by Planning, Marketing, production field development or some similar group. With this determination of need, there is provided an initial set of process parameters such as flow, inlet and outlet pressure, and sometimes inlet temperature and specific gravity. There may be a preliminary preference indicated for the type of compressor and driver, including the need or preference for the driver to be an electric motor.

### PROCESS

Work with the client to refine the process parameters. Obtain:

- The full range of inlet and outlet pressures and temperatures and at what location.
- The critical design conditions to meet contractual obligations
- Modes of operation such as one or more side streams, multiple suctions, multiple discharges, single and two stage operations such as for storage, units operating in both parallel and series
- The minimum turndown flow
- Exact gas composition and likelihood of it to change
- Staging of capacity requirements and future expansion provisions
- What type of units is the client familiar with supporting
- Available utility electric supply if motor driven
- Site elevation and ambient temperature range
- Noise requirements
- Emissions requirements

Make a selection of one or more compressor types, using the process parameters, modes of operation and compressor performance software provided by vendors or 3rd parties and engine performance data obtained from vendors. Verify compressor capabilities over the operating envelope determined by the Client for each mode of operation. This sometimes involves reviewing performance capabilities of existing equipment and making recommendations for modification if needed.

Compile emissions data from each of the driver types along with any post combustion treatment process data, to be used for air permitting.

Create flow diagrams showing the logic of how gas will flow thru the facility in different modes of operation.

# PROJECT DELIVERABLES

## Selection of Drivers/Compressors

- Compressor type and model selection
- Engine or Gas Turbine type and model selection

## Drivers/Compressors Performance

- Compressor Performance Data at the design points and selected points over the operating range
- Engine Site Rated Performance over the temperature range

## Emissions Data at site conditions (preliminary)

- At rated power, at minimum power, over full ambient temperature range

## Emissions after treatment (if required)

- Based on project needs determine if additional treatment of exhaust gas is needed to meet emissions requirements.

## Drawings / Sketches

- Process Flow drawings showing different operating scenarios and modes of operation
- For complex situations provide annotated flow diagrams showing process flows thru the facility for each mode of operation

## Specifications

- Compressor Package (including Driver and Compressor)
- Main Motor (if compressor is motor driven)
- Adjustable Speed Drive – either mechanical or electric variable frequency drive (VFD) according to client preference or project needs
- Intake/Exhaust Systems including catalytic treatment if needed

## Compressor Comparison

- If requested by the Client, perform an economic analysis comparing two or more compressor alternatives based on CAPEX and OPEX to see if one compressor package is a better choice over another