

Oil & Gas is one of the World's most strategic resources, placing immense demand upon the engineering industry in order to economically extract and process them in a safe manner.

The complex operations involved require the highest calibre of engineering services and welding is no exception as considerable demands are placed upon both the materials and the welds.



The welding engineer has to consider all potential failure mechanisms and ensure that the completed welds can withstand them for the design life and beyond.

WOOD GROUP INTEGRITY MANAGEMENT (WGIM) can provide technical welding advice for all Greenfield and Brownfield Oil & Gas facility design and construction.

Jackets / Topsides / Drill Rigs / FPSOs



The environmental and structural requirements for these demand different controls for the welding.

Corrosion occurs, but the driving force is the capability of the welds to withstand the structural loads placed upon it.

The following factors all require consideration:

- Hydrogen-induced cold cracking.
- Lamellar tearing.
- Distortion.
- Fatigue and strain age embrittlement.
- Low temperature properties.
- Fracture toughness in weld and HAZ.
- Destructive and non-destructive tests.

Pipelines

The arteries of oil and gas operations carry products over vast distances, often under harsh conditions and are often inaccessible once

installed, therefore, they require greater care in design, materials selection and installation.

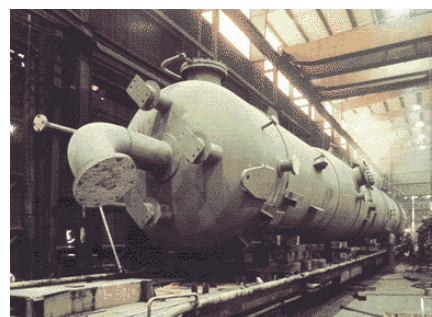
Key issues to consider in pipelines involve:

- Linepipe manufacture.
- Construction welding.
- In-service modification.
- Hot tap and sleeving.
- Weldability.
- Hyperbaric welding.
- NDT usage.



Process Plant

Process plants are utilised to contain and treat hydrocarbons for the production of useful substances. Often involving elevated temperature and pressure, together with corrosive media, process plants utilise nearly all engineering alloys.



The crucial aspects of metallurgy and welding are:

- Sub-zero temperatures (toughness).
- Elevated temperatures (creep & rupture).
- Hydrogen attack.
- Scaling.
- Hydrogen sulphide/CO₂.
- Polythionic acid attack.
- Amine and caustic service.

Codes and Standards

WGIM staff are experienced in the application of all the relevant material, welding and construction codes involved, such as:

Pipelines: API 5L, API 1104, ANSI B31.4, ANSI B31.8, AS 2885, BS 4515, CSA Z669.2 and DnV OS-F101.

Pressure Vessels: AS 1210, AS 3992, AS 4037, AS 4458, ASME BPV, BS 5500, TEMA.

Process Pipe: ANSI B31.3, AS 4041 and ASTM's.

Storage Tanks: API 650.

Jackets / Topsides / Drill Rigs / FPSO's: AS 1554, AWS D1.1 and MODU.