In an onshore or offshore field development, the successful operation of any multiphase production transport system needs robust and cost-effective engineering solutions to ensure reliable flow from reservoir to the process facility over the life of field.

**Proven processes**
Petrofac’s flow assurance team delivers this through its thorough understanding of flow assurance basics, such as reservoir behaviour, fluid chemistry, production profiles and the potential risks of solids deposition, for example asphaltenes, wax, hydrates, emulsions, soaps, scale and sand.

These foundations are supported by an extensive knowledge of other system design parameters such as tubing, flowline and pipeline diameters, insulation, trenching with back-fill and operating limits, for example, maximum and minimum production rates. By considering these parameters, the team can achieve a clear view on how they affect system operability (including slugging, hydrate formation and wax deposition risk assessments) for all production modes, including start-up, normal operation, rate change and shutdown throughout the system life cycle.

**Expert analysis**
The flow assurance team's analysis dictates the operating philosophy and operating strategies for managing hydrates risks (chemicals, thermal or depressurisation), wax deposition (chemicals and/or pigging) and slugging (gas lifting, slug catcher). It also allows the engineers to translate operating philosophies and strategies into solid operating procedures, to cover initial start-up and life cycle field production operations. Additional flow assurance support to operations may also be required to confirm the feasibility of operating procedures used during the hook-up and commissioning phases.
Dynamic simulation
Petrofac’s dynamic modelling expertise has been further strengthened by the recent formation of a process dynamic simulation team. Along with the flow assurance team, it can deliver a one-stop shop to customers for a fully integrated upstream-downstream dynamic modelling solution for both current and future projects and studies.

Flow assurance in practice
Petrofac’s flow assurance team has been involved in a variety of projects that include:

**Middle East**
- Gas condensate gathering system network
  - Detailed design - Steady state and transient analysis to assess liquids management (slugging/slug catcher sizing)

**Russia**
- Oil & gas production system
  - Detailed design - Steady state and transient analysis of production, water injection and gas export systems

**Global support**
Petrofac’s dedicated team of experienced flow assurance and process engineers are fully conversant in Pipesim/Pipesim-Net, OLGA and flow assurance analysis work. As a specialist team, it provides consultancy support to a wide range of onshore and offshore customers as well as to Petrofac’s engineering centres around the world.

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