

FOUNDATION DESIGN

Offshore oil and gas projects have always presented significant geotechnical challenges to the design of foundations. As projects continue to move into more challenging areas, the design requirements and ground conditions become more onerous.

In deep water environments, traditional foundations are often expensive and consideration needs to be given to novel foundation solutions such as suction anchors, plate anchors or finned piles. SEtech has a strong track record in providing innovative foundation solutions supported by extensive back analysis and research.

SEtechs experienced personnel work closely with other disciplines within the project design team and where required SEtech can offer a complete foundation design solution including foundation/structure interaction and structural design.

Foundation design is carried out using in-house developed software based on design codes (API, DNV, BSI etc) and associated technical papers. Specialist geotechnical packages are also utilised including 2D and 3D finite element analyses for more complex problems.

SEtech have experience of the full range of marine soil conditions including the very soft clays of the Gulf of Mexico and West Africa, glacial soils of the North Sea and calcareous soils of the Middle East and Australia.



Design activities include:

Foundations for Fixed Platforms

Suction Caissons	Capacity, cyclic loading, installation pressures, buckling potential, settlement
Piles	Single and group analysis, axial and lateral capacity
Gravity Base	Capacity, installation and removal

Foundations for Floating Systems

Suction Anchors	Capacity, cyclic loading, installation pressures, buckling potential, removal
Drag Anchors	Fluke anchors, setting distance, embedment depth

Subsea Structures and Pipelines

Shallow Foundations	Stability, settlement, skirt penetration, scour potential
Piles	Axial and lateral capacity, driveability
Suction Caissons	Capacity, cyclic loading, installation pressures, buckling potential, settlement
Seismic Hazard	Dynamic soil structure interaction, liquefaction potential

Drilling Operations

Conductors	Axial and lateral capacity
Jack Up	Spud can penetration, scour potential
Semi Sub	Piled or drag anchor design

