



DIGITAL SOLUTIONS

SESAM™ PIPELINE

Pipeline Engineering Tool

The Pipeline Engineering Tool is a calculation tool for early phase pipeline assessment covering different aspects of pipeline design. The tool is a VBA (Visual Basic for Applications) based program with a user-friendly interface.

- DNVGL-ST-F101 design checks
 - Burst during operation and system pressure test
 - Collapse
 - Propagation buckling
 - Load combination, load controlled, load combinations 'a' and 'b'
 - Load combination, displacement controlled, load combinations 'a' and 'b'
- Weight and volume
 - Calculates volume mass and dry weight of the components that constitute a pipeline, i.e. steel, coating layers and content
- Volume, mass and dry weight are calculated individually and totally, per metre pipeline and totally for a given length of the pipeline
- End expansion during operation and system pressure test
- Upheaval buckling
 - Safety level for given input
 - Temperature, internal pressure and imperfection height that will trigger upheaval buckling
 - Cover Height to prevent upheaval buckling for a given safety level
 - Simple and approximate

- On-Bottom Stability
 - Safety level for a given input
 - Weight coating required to ensure stability for a given safety level
 - Steel wall thickness required to ensure stability for a given safety level
 - Calculations according to DNVGL-RP-F109
- Fatigue Screening
 - Critical span length according to VIV on-set screening criterion in DNVGL-RP-105
 - In-line and Cross-flow
- Reel Straining
 - Max strain and ovality on reel
 - Design check according to DNVGL-ST-F101
 - Accumulated plastic strain
- Reel Packing
 - Amount of pipe on given reel according to, volume restriction and weight restriction.
- J-Lay
 - Top tension
 - Curvature and moment in sag bend including utilisation ratio according to DNVGL-ST-F101
 - Distance from touch down to barge
 - Length of pipe in the free span
 - Minimum horizontal lay radius
 - Catenary calculations
- S-Lay
 - Top tension
 - Strain on stinger including utilisation ratio according to DNVGL-ST-F101
 - Curvature and moment in sag bend including utilisation ratio according to DNVGL-ST-F101
 - Distance from touch down to barge
 - Length of pipe in the free span
 - Minimum horizontal lay radius
 - Catenary calculations
- Cathodic Protection
 - Calculated anode requirement according to DNVGL-RP-F103 ensures:
 - sufficient anode material to cover mean loss throughout the design life
 - sufficient current at the end of the design life for de-polarisation
 - maximum spacing