K- Spice® Meter
Dynamic Virtual Flow Metering System

Perform virtual flow metering and production allocation

K-Spice Meter will improve the accuracy and reliability of the overall hydrocarbon accounting system.

It is a complete dynamic virtual flow metering system where the oil and gas produced from each well will match the total production measured by a fiscal metering system located downstream.

The uniqueness is to perform online heat and mass balance calculation including component tracking both under steady-state and during transient periods for the plant. It is a supplement to advanced multiphase instruments and can also be an alternative.

K-Spice Meter is a model based virtual flow metering system performing data validation and reconciliation of all relevant sensors in the plant. The main components in the system include a high fidelity dynamic multiphase flow and process simulation model. This model is based on first principle modelling approach including a complete heat and material balance of the fluid. The model is synchronized in real time using control signals from the field, e.g. when a valve is opened in the field, the same valve will open in the model.

Features
- Provides multi-phase flow calculation per well
- Back allocates flow deviation from fiscal metering topsides
- Calibration and monitoring of all field measurements
- 4 available simulation modes; real time, planning, predictive and retrospective mode
- Detection of gas and water breakthrough in the wells

Benefits
- Reliable subsea multiphase metering per well based on high fidelity flow assurance model
- Alternative to physical subsea meters which are typically very expensive and unreliable
- Back allocate flow deviations from topsides fiscal metering
- Installation and maintenance of such systems is much simpler than physical meters

System platform
- K-Spice®
    - Dynamic process simulation tool developed by KONGSBERG
- LedaFlow®
    - Advanced transient multiphase flow simulator developed and owned by Total, ConocoPhillips, SINTEF and KONGSBERG
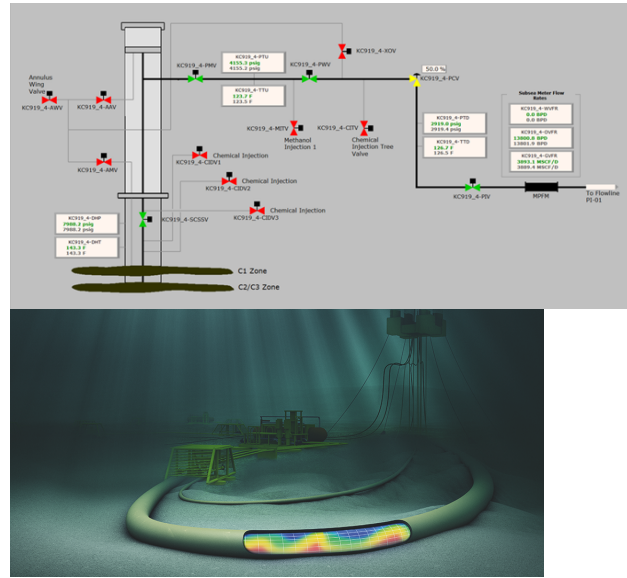
System components
- Reconciliation Transmitter
    - Gathers and stores all relevant information about a single measurement
- Optimal Value
    - Calculates the best fit to all the surrounding, redundant measurements
- System Performance Indicator
    - Calculates how close model calculations follow the real plant values
- Steady-state Identification
    - Calculates which parts of the plant are in steady-state
- OPC HDA Communication Link:
    - Link between the online simulator and the plant historian
- OPC DA Communication Link:
    - Transfer operating commands from plant to model control system

Related data sheets

K-Spice® Solution Suite
- K-Spice® Design
- K-Spice® Train
- K-Spice® IPA
- K-Spice® Learn
- K-Spice® Assure
- K-Spice® Match
- K-Spice® Meter