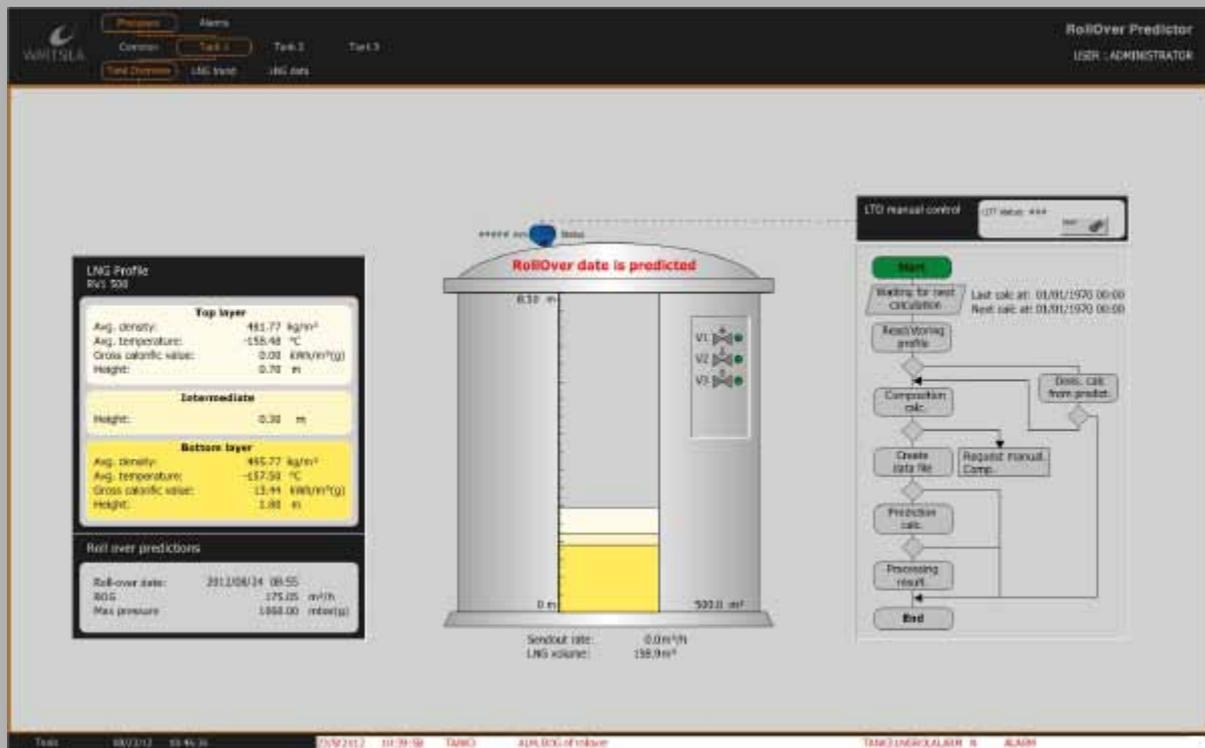ENERGY
ENVIRONMENT
ECONOMY

TANK CONTROL SYSTEMS
WHESSOE ROLLOVER PREDICTOR

Liquefied natural gas (LNG) terminals need to be able to store multiple grades of LNG, and to have sufficient storage capacity available for all of these. Managing storage to ensure availability and to optimise the use of storage capacity is therefore essential.

With the increasing diversification of LNG supply sources, an increase in short-term trade, and a general global trend towards the liberalisation of gas markets, reception terminals need to be able to deal with a greater variety of incoming LNG qualities. Furthermore, with the need to reduce capital and operating costs, the capacity of both existing and new storage tanks must be utilised to their fullest extent.

At the same time, while the LNG is in storage, boil-off will result in a continuous change of its chemical composition. Consequently, storing different grades of LNG in receiving tanks, together with the ongoing modification of the chemical characteristics, calls for certain proactive measures. In particular, monitoring of the possible development of stratification is needed, and warning must be given in case unstable stratifications that might evolve into a rollover of the layers are detected.

A level temperature density gauge alone is simply not capable of monitoring the stratification evolution. Therefore, in collaboration with GDF Suez, Wärtsilä has developed the Wärtsilä Whessoe Rollover Predictor software. Thanks to the predictor you are able to make the right decisions at the right time, and to manage LNG storages in a safe, timely and optimal way.

WÄRTSILÄ

The Wärtsilä Whessoe Rollover Predictor provides the user with a watchdog that monitors all the site components which impact and influence the formation and evolution of LNG stratification. The predictor continuously monitors all data and calculates the expected development of stratification, if any.

Should a certain stratification appear likely to evolve into a rollover situation in any of the tanks linked to the same vapour space, the predictor automatically generates an alarm, leaving sufficient time for the operators to take corrective action. As such, the Wärtsilä Whessoe Rollover Predictor meets all requirements of the European SEVESO II directive.
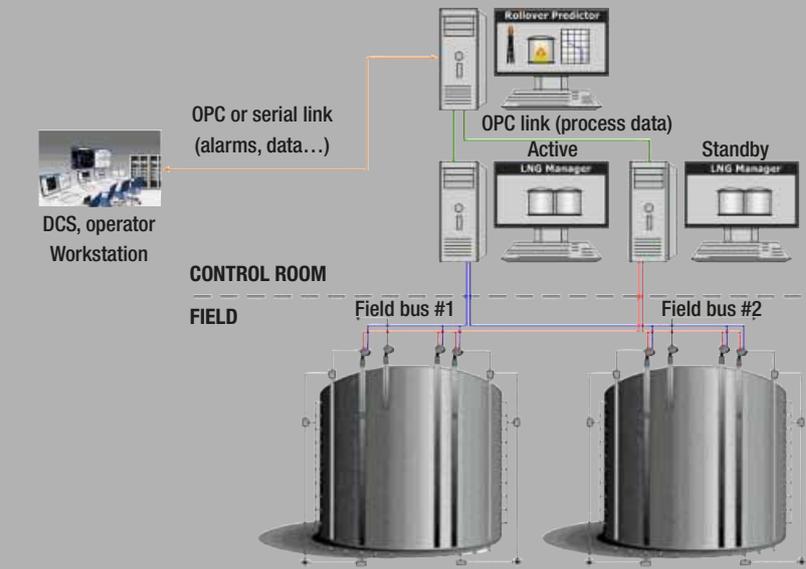
The predictor detects the occurrence of a rollover within the next 30 days (configurable from 1 to 30 days), showing to the operator the:
- Tank where rollover is expected
- Remaining time to rollover
- Predicted boil-off gas level during rollover
- Predicted pressure (rise) during rollover

The Wärtsilä Whessoe Rollover Predictor handles all grades of LNG and calculates their chemical composition in real-time.

INTEGRATED SOLUTIONS

As well as LNG rollover prediction software, Wärtsilä Tank Control System provides level, temperature and density measurement, alarm systems, SCADA systems, and data management systems for LNG and LPG terminals. Thanks to Wärtsilä's Electrical & Automation Services organisation, full turnkey solutions can be offered to our customers, from engineering, installations on site and commissioning to full lifecycle support solutions including services, spare parts and upgrading solutions.

OPC or serial link (alarms, data…)

OPC link (process data)

Active · Standby

DCS, operator Workstation

CONTROL ROOM

FIELD · Field bus #1 · Field bus #2

AUTOMATION VIEW
- Automation system overview
- Communication status
  - LTD status

PLANT VIEW
- Tank overview with alarm information
- Site Safety devices status

LOG FILE VIEW
- Complete log file
- Archive

The Wärtsilä Whessoe Rollover Predictor
- Predicts stratification and rollover phenomena accurately
- Facilitates operations for LNG storage tanks

- Displays tank levels, layer height, average density and temperature per layer
- Indicates plant safety devices status
- Maximises product calorific value

- Generates automatic alarms in case of rollover without any operator intervention
- Reduces operational costs

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