Leading in LNG storage from the beginning

World-wide the expectations of natural gas consumption will grow fast in the coming years due to higher demand for oil, increasing oil prices and environmental regulations. Therefore you can understand that the storage of LNG in all its aspects is becoming more and more important under these harsh conditions.

As the natural gas can be liquefied, it takes up about 1/600 the space of what natural gas does in its gaseous form; long distance transportation will be more efficient in this manor.

Tank gauging and terminal automation verifies how much LNG has been stored. As LNG tanks are large and expensive, representing up to 10% of the installed plant value, safe and continuous operation is a must.

LNG storage is therefore an excellent example of a process where commercial needs have to be aligned with the highest safety demands. Honeywell Enraf is capable of offering the “SmartTerminal for LNG storage” solution, which manages and controls in a most efficient, effective and profitable way even with the highest safety level.

With over 30 years of LNG experience, Honeywell Enraf gained a leading position in the area of tank gauging and terminal automation for the LNG industry.
Our innovative products, systems and solutions are widely accepted and currently form the benchmark for other vendors to improve and market their own offerings.

Do we impose this as a threat? Our answer to that is that we actually see this as an honor. We believe that our knowledge, capabilities and dedication to the LNG industry will support us in being innovative with the aim of providing you with the best and most advanced solutions possible, whilst respecting industry values such as health, safety and the environment. Our reliable and proven solutions will maintain the industry’s excellent track record with regards to safety.

Your business environment, our “SmartTerminal for LNG storage” solution

For LNG storage management, business success is influenced by many factors some are really beyond our control. Others however can be influenced quite well. Honeywell Enraf truly understands the importance of providing the latest automation and information models for you to make better decisions and become more competitive.

That’s why Honeywell Enraf created “SmartTerminal for LNG storage”, the most advanced automation solution for land and gravity-based LNG storage terminals. With SmartTerminal, we tightly integrate dedicated storage disciplines into your process:

With SmartTerminal, we offer you a way to utilize products, systems and automation in a manner that helps you improve your operations. Insight in your inventory is in our hands and we realize the importance for you to enhance the value of your assets throughout the lifecycle.

Your user environment, our equipment as a functional contribution to it

Terminal automation begins with the ability to capture information at the point of activity. To meet the most demanding requirements and harsh conditions, Honeywell Enraf provides a number of functions and products that form our key building blocks.
Tank Gauging
Within the tank gauging discipline, all parameters involved with LNG bulk storage are to be measured. Level and temperature gauging is provided as the basis for inventory management. Density and temperature profiling functionality forms the basis for stratification monitoring and behavior modeling to ensure safe and efficient operation. Tank shell skin and bottom temperature sensing can be included for cool down and leak detection purposes.

Safety integrity
To comply with safety integrity regulation, LNG tanks are to be equipped with devices for high-high and low-low alarming to avoid overfill and dry run. SmartTerminal™ includes a set of products to provide this function. The units can be interfaced and monitored directly to any Safety Integrity System, whereas secondary outputs enable asset management service.

Field equipment interfacing
SmartTerminal™ comes with a number of modules for networking, communication, scanning and interfacing. A range of industry standard and dedicated protocols are supported to enable easy integration of a wide range of field instruments and sub systems. Special provisions are taken for highest data integrity, longest communicating distance or even maximum availability via redundancy.

Host systems integration
Ethernet and Internet technology embedded in our data acquisition units provide advanced integration with automation and business domain systems, reducing cost and risk. Web server technologies enable us to present data in any format at any place, even if your automation goes beyond the terminal borders.

Your user environment, our applications as functional contributions to it

Inventory Management
The inventory software application provides all functionality to manage storage tanks in the most efficient, effective and profitable way. Extensive alarm and events management capabilities are available to track and trace all situations occurred. Dedicated overviews enable easy overview for inventory operations, service, supervision and management. For the purpose of optimizing business processes and principles of operation, historical trends and reports can be obtained from the database for detailed analysis of operations over time.

Stratification Monitoring
Dedicated functions are available for graphical display of stratification built up of stored LNG over time by monitoring temperature and density.Profiles can be compared and alarms can be set to avoid critical and unwanted situations. Detailed scans for specific layers can be issued using specific gauge commands. Gauge detail screens provide up to date information on the status of the various devices and subsystems.
Volume and Composition Management
To limit the uncertainty involved with product storage and movement, modules are made available that accurately
calculate corrected volume following ISO, EI(formerly known as IP) and API standards. For this purpose, dedicated
modules allow the user to enter LNG composition data into the system for an accurate estimate of the final composition of
LNG after receipt of cargo and mixing of heel and load.

Behavior Modeling
Due to the characteristics of LNG, stratification can be induced due to a receipt or as auto stratification over time. This
behavior causes a risk for the so-called roll over phenomenon with rapid mixing and huge boil off. For the purpose of
monitoring this layer built up and to identify unstable situations, software modules are made available using advanced
algorithms that provide an estimate on the LNG behavior over time.

Your project environment, our global planning and execution capabilities
Project requirements go further than specifying a number of products and systems. The need for lowest capital - highest
performance systems and facilities require from us that we provide a truly integrated solution.

How do we do that? By being involved in even the early project stages. What are the site specifics and what are the
principles of operation and maintenance? Which critical systems and components are required?

The results of our surveys and consultancy studies have already guided a number of customers through their design
process choosing the optimum solution for their terminal automation, helping them reduce cost on a net-present value
basis.

Design:
- Site survey
- Feasibility study
- Scope definition
- Products selection.

What do we get out of it? Important input for new developments and the optimization of products, systems and processes.
Honeywell Enraf truly understands the importance of providing the latest automation and information models for you to
make better decisions and become more competitive.

Implementation:
- Parts procurement
- Systems engineering
- Application development
- Supervision on installation

Systems integration
How do we support this all? With a team of experts in the field, located geographically around the world and throughout
offices in strategic areas, we offer operators peace of mind throughout the lifetime of the system and equipment. But also
with engineering, project management and execution capabilities via excellence centers in Europe, the Far East and the Americas.

Operation:
- Commissioning
- Acceptance testing
- Training
- Systems optimization
- Service and support

And last but not least via a broad network of contacts with other vendors to this industry, to provide turnkey performance when needed, to be assured of supply and support of components at all times and to allocate the resources necessary to resolve any problem that might occur during the process.

We at Honeywell Enraf are committed to improving your business performance.

More Information
For more information on any of Honeywell’s Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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