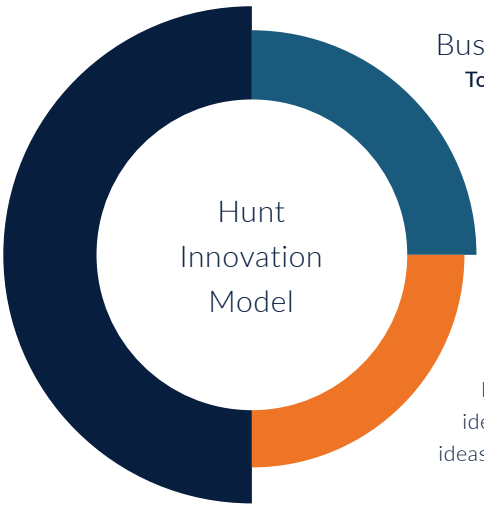
INNOVATION IN PERU

Peru has established an Innovation Management System looking at top-down and bottom-up approaches to innovation that focuses on identifying changes that have a positive impact; these can be changes in processes, procedures, technology, and equipment within the organization. The innovation program in Peru culminated with an Innovation Day of which 45% of employees engaged by entering over 300 ideas into an "innovation idea funnel" which led to 100 successful ideas that have been implemented or are being pursued by the company.



Business Driven
Top-Down Approach
Projects identified by shareholders and management as required for business maintenance and growth

Operational Excellence
Incremental and breakthrough improvements throughout the business process

Employee Driven
Bottom-up Approach
Innovation driven by employees identified through employee ideas and entrepreneurship

SPOTLIGHT

Recovering LNG Byproducts for Emission Reduction and Profit

The LNG plant in Peru, has reached an agreement with Japanese companies Osaka Gas Co., Ltd. (Osaka Gas) and Marubeni Corporation (Marubeni) to perform a joint feasibility study to assess synthetic methane (Syngas) production in Peru and potential sales of this Syngas to markets in both Peru and Japan.

Syngas is methane obtained from a process called methanation. The methanation process converts CO_2 from captured emissions and green hydrogen (produced from water electrolysis and renewable energy) into Syngas. Through this joint feasibility study, the three companies will analyze potential sources of CO_2, renewable energy supply, water electrolysis technology for green hydrogen production, as well as methanation technology among other topics.

This opportunity to develop Syngas can minimize emissions, considering that Syngas production requires CO_2 usually recovered from emissions that currently are vented into the atmosphere. As an example, the Japanese Government has already included a target to inject more than 1% of Syngas into Japan's natural gas pipelines by the year 2030 and increase this target to 90% by the year 2050.

CASE STUDY

Innovation in Action: Port Availability in Peru

The Problem

Since the beginning of Hunt operations in 2010, pilots and crews have experienced issues loading LNG vessels in adverse weather conditions when the Maritime Authority closes the port to avoid safety incidents and property damage. This sometimes led to the port being closed for more than six days during the winter (May to July), or closed 35-50% of the time during those months, impacting LNG production.

To improve port availability, several projects were implemented, including installation of additional buoys to improve wave forecasting. And while these projects did improve the forecasting, they did not eliminate the port closures.

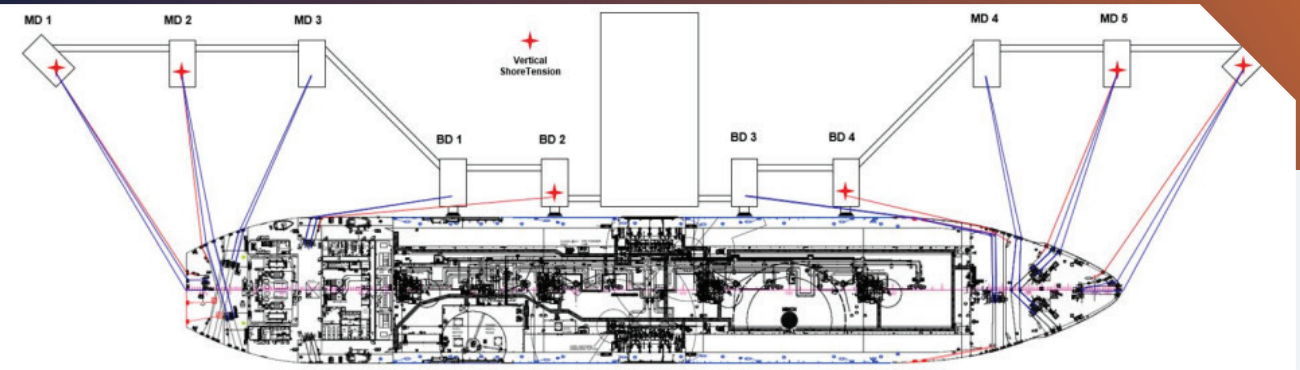


Fig: Setup of the 6 VSTI units on the dolphins.

Innovating for a Solution

The company commenced a search for a solution, identifying and evaluating over 20 recommendations with seven of those making it through the innovation funnel to the evaluation phase. The evaluation included computer simulations of the impacts on waves and ship loading in varying conditions utilizing different technologies.

Horizontal ShoreTension units were developed in 2021 in response to an incident in the Port of Rotterdam, were a vessel caused over EUR100 million in damages. The Horizontal ShoreTension units were evaluated but quickly discounted due to the availability of port space for their installation, with dolphins (isolated marine structures for mooring or berthing vessels) only being available within the port for installation.

ShoreTension of Rotterdam, a third-party contractor on the project, identified the need for a new vertical ShoreTensions system which provided a solution to our port space problem. However, they had not been tested or installed anywhere in the world and were in the pilot development phase. Through computer simulations it was identified that six of the units would theoretically improve the availability of the port. Following a thorough review of the technology, six units were purchased. The Vertical ShoreTension Integrated (VSTI) units included the integration of the required mooring lines quick release hooks, for vessel and loading safety.

Implementation of VSTI

The installation was completed in early 2022 with the first vessel loaded while utilizing the system in March of 2022. The port has seen a marked increase in availability and has reduced production downtime significantly. Port availability in 2022 increased by almost 9% above the previous 4-year average, leading to three additional vessels being loaded in 2022. Operationally, the LNGSHIPS EMPRESS captain and crew were impressed by the new mooring system's performance during the recent loading operations compared to previous accounts.

(Far left) ShoreTension units waiting to be installed; (Center) VSTI in use; (Above) ShoreTension medals awarded to members of the Project team in Hunt / PERU LNG.