Large-Scale LNG SWHE And “Made in China 2025” Proposal

LNG-SWHE as a key equipment is becoming an increasing factor in FLNG field, because of its advantages of good thermal compensation performance and so on. In order to efficiently use spiral wound heat exchangers (SWHEs) in the field of offshore natural gas liquefaction, the heat transfer mechanism in two-phase flow outside tube bundle should be known. For breaking the blockade of foreign technology development of LNG-SWHE is included in “Made in China 2025” Proposal.

Milestones

CNOOC is the leading technical service provider in areas of Large-scale natural gas liquefaction and LNG SWHE. Any qualified manufacturers of SWHEs may request for CNOOC’s technical licensing. CNOOC has applied and obtained 2 software copyrights, more than 15 authorized patents and published more than 20 thesis papers on CI and SCI.

Advantages of CGasEquip®

An Independently-Developed LNG SWHE Design and Simulation Software, which enables a deep-level interaction with Aspen® tool kits to facilitate the development of heat exchanger models: process design, data analysis, property calculation and etc. The software provides integrated solutions to heat-exchange processing on various industrial applications: oil and gas processing, natural gas liquefaction and purification, petroleum engineering and etc., of working conditions both onshore and offshore.

Three leading advantages:
- Quickly properties calculation
- Correlations dynamic link
- Third party data interaction

Domestic Manufacture of LNG SWHE - A Mission of CNOOC

The Research and Development Centre (R&D Centre) of CNOOC Gas & Power Group has achieved substantial technological progress on the domestic and independent manufacturing of LNG-SWHEs, with the support of multiple state-level scientific research projects administered by the Ministry of Industry and Information Technology (MIIT). The CGasEquip® software, independently developed by the R&D Centre, is the only software developed in China capable of supporting the simulation and design of LNG/FLNG SWHEs.

CNOOC has established a complete set of technical systems and standards for the research, design, manufacture, installation, start-up, examination and maintenance of large-scale SWHEs. These standards are capable of supporting the operations of LNG, FPSO and LNG plants with processing capacities of over a million tons per day. We have also developed the first set of domestically manufactured LNG SWHE, with a capacity of 300,000 standard cubic meters per day.

Core Technology

Our Diverse Technical Support and Services:
- LNG/FLNG Processing Packages on all scales
- Technical Support on LNG Plants
- LNG SWHEs

Leading Industrial Standards

As a leading force in China's development of domestically manufactured SWHE, CNOOC has established a complete set of industrial systems and standards on the design, manufacture, examination, installation, calibration and quality control of SWHEs. Quality control solutions are made and delivered to satisfy the technical features and requirements of specific projects.
- Industrially feasible manufacturing solutions
- Reliable, up-to-standard raw materials
- Strict and delicate industrial standards of manufacture and examination
- Professional third-party inspection

Reference

CHEN J, SHAN Tongwen, LIU Miaoer, MI Xiaoguang, LU Laiyun, ZHANG Xiaohui, CHU Jie, SU Qingbo, LI Endao, YIN Quansen, HUA Yihuai, HU Suyang, CHANG Xjinge, YU Sicong. Large-Scale LNG SWHE And “Made in China 2025” Proposal [J]. R&D Center, CNOOC Gas & Power Group, Beijing 100028, China.