At the Chair of Logistics and Supply Chain Management of TUM School of Management we are looking for an interested and qualified student to conduct his/her

Master Thesis

on the topic:

Defining Cylinder Pool Storage Locations and a Global Utilization Policy of Cylinders at Linde AG

Cylinders are one of the most important assets of Linde in the Packed Gases business. The global movements of these cylinders among plants, filling stations and customers are very complex. To ensure the optimal asset utilization, generating cost savings in distribution and increasing the efficiency in the current production plants, the cylinder pools between the operating countries will be managed centralized soon. The aim of the thesis is to identify the optimal locations to establish strategic points of cylinder concentration across countries, the flow between these pools and the plants, as well as the optimal stock level needed to respond to the requirements of the businesses.

Selected research tasks:

• To perform a literature review on combined facility location problem, transportation and inventory issues
• To evaluate the existing global transportation network of cylinders
• To determine the requirements of forward and reverse transportation of cylinders between facilities, considering multiple sourcing, based on the capacity planning
• To implement a MILP-Model for the facility location problem with an integrated flow and stock optimization (using Xpress)
• To analyze and discuss the results

Company description:

The Linde Group is a world-leading gases and engineering company with approximately 62,000 employees working in more than 100 countries worldwide. In the 2012 financial year, it generated revenue of EUR 15.280 bn. The Gas Division offers a wide range of compressed and liquefied gases as well as chemicals for a huge variety of industries and healthcare businesses. The Engineering Division focuses on market segments such as olefin plants, natural gas plants and air separation plants, as well as hydrogen and synthesis gas plants. The last division, Gist, combines leading-edge experience and expertise to offer a range of solutions to transform supply chains.

Begin: October 2013
Advisor: Pirmin Fontaine