

# **SCROLL DESIGN IN THE REFRIGERATION COMPRESSOR INDUSTRY**

Lecture by:

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*This part of the course is intended to give an overview of how the design of a new compressor product is approached by industry. It will start from the beginning with the introduction of a new technology – scroll technology – into an existing market, and lead through to more detailed considerations, such as how to extend the range of applications and present the product to the user.*

Part Two

## **SPECIFIC ASPECTS AND USER REQUIREMENTS**

The extension of scroll technology from air conditioning to refrigeration applications has resulted in specialized designs. For lower volume applications it is essential to take advantage of the production investment to control costs, and at the same time not to compromise on fitness for purpose.

Lubrication combines the need for lubricants which ensure the lifetime of the product, and at the same time behave in the system in a way which is acceptable to system designers. For Copeland, the lubricant is an essential component of the compressor, and candidates must undergo life test procedures. Aspects of the transition from mineral oil/CFC refrigerants to polyolesters/HFC refrigerants will be considered.

In refrigeration, air conditioning and heat pump applications the operating conditions of a compressor can vary within very wide limits of pressure and temperature with the possibility of many refrigerants, each with its own physical properties. Operating envelopes are used to describe the limits within which a compressor may be applied, and determination of such limits forms an integral part of the design process.

Finally, the description of the product and its abilities to the user must be considered. How the industry uses equations to define and predict power input, reference to standards.