

Industrial machinery and heavy equipment

Kulthorn Kirby

Kulthorn Kirby improves efficiency to gain market leadership

Product

NX

Business challenges

Comply with energy-saving regulations from the global market

Expand competitive brand strength

Manufacture environmentally friendly products

Improve service and product quality

Keys to success

Improved product design

Shorter production line planning time

Easy to use, integrated tools for design, engineering and manufacturing

Results

Reduced design time up to 25 percent

Improved efficiency and greater design capacity

Reduced manufacturing costs by five percent



NX software helps compressor manufacturer save up to 25 percent of design time and reduce manufacturing costs

Adopting inventive technology in different sectors

Kulthorn Kirby Public Company Limited (Kulthorn Kirby) is the first manufacturer of hermetic reciprocating compressors in Thailand and one of the leaders in the compressor business in Southeast Asia. Established in 1980, Kulthorn Kirby Group now comprises six other companies that employ around 6,000 employees. The group's companies and products include

Kulthorn Kirby, which manufactures compressors and condensing units for domestic and commercial refrigerators and air conditioners; Kulthorn Premier, compressors for domestic and commercial refrigerators; Kulthorn Materials and Control, enameled copper and aluminum wires; Kulthorn Kirby Foundry, quality iron castings; Kulthorn Steel, slitting and blanking of steel products; and Kulthorn Metal Products, metal forging, precision machining and heat treatment.

Kulthorn Kirby prides itself on providing high-quality products that best meet customers' needs. The company's compressors are exported throughout the world, and 70

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Chief Operating Officer
Kulthorn Kirby

percent of the company’s revenue comes from export sales. With strong emphasis on global standards and international quality management, Kulthorn Kirby has achieved certification under many international safety and quality standards, including Conformité Européenne (CE), Underwriters Laboratories (UL), Technical Inspection Association (TÜV), China Compulsory Certificate (CCC), Saudi Arabian Standards Organization (SASO), Thai Industrial Standards Institute (TISI), Restriction of Hazardous Substances (RoHS), International Organization for Standardization (ISO), and Occupational Health and Safety Advisory Services (OHSAS). The company’s management systems are certified for quality under the ISO9001:2000 standard, for environmental management under ISO14001, for

laboratory testing and calibration under ISO/IEC 17025 and for occupational health and safety management systems under OHSAS 18001.

The need for efficiency due to higher industrial standards

Speed is very important in developing new products for the global market. Kulthorn Kirby begins the process with market analysis and a review of specific customer requirements. Development proceeds with a review of the compressor’s design for the specific application, followed by redesign and fine-tuning. The company then must assess the production department’s capability for manufacturing the new design, and conduct performance and endurance testing before mass production.

Kulthorn needed accurate and user-friendly software tools to accelerate the design process and to reduce time in trial-and-error testing. The company sought an integrated software solution that could be used by all departments, including research and development (R&D), production and the tool room, so that all information could be transferred quickly and accurately for prototyping and production. The company selected NX™ software from product lifecycle management (PLM) specialist Siemens PLM Software. NX includes advanced design, simulation and manufacturing functions that help reduce compressor development time.

Kulthorn appreciates the ease of operation and short learning curves of NX. "NX software is very friendly to the user; it's easy to use and also easy to learn how the functions work," says Santi Anurak, assistant research and development manager at Kulthorn Kirby.

A changing market with environmental awareness

In the refrigeration and air conditioner industries, there are two main regulatory market drivers. First is the energy efficiency standard in each country, and second is the use of environmentally friendly refrigerants. Kulthorn Kirby has to be aware of both requirements, and monitor when the regulations will change in target markets.

"In the compressor industry, the focus is to supply more energy-efficient compressors to the end user, with environmentally friendly gas," explains Titisak Simakulthorn, chief operating officer of Kulthorn Kirby. "As a compressor maker, we must follow our customers' industry regulations, which will be renewed every two to three years. Of course, NX software can help us design those new compressors."

Appreciable results with analysis-driven design

The temperatures of compressor components must be within operating limits to minimize thermal distortion. The structural

strength must be analyzed to support the capacity of the product. Transfer of the prototype from engineering to the factory must be reliable, rapid and accurate. To meet these requirements, Kulthorn Kirby uses the NX suite of integrated computer-aided design/engineering/manufacturing (CAD/CAE/CAM) tools in an analysis-driven design approach. The company specifically utilizes NX CAE to deliver high quality performance and make smarter product decisions.

"With NX CAE, Kulthorn can integrate analysis modeling with simulation solutions for structural, thermal, flow and motion," notes Anurak. These tools give the company the ability to expand simulation to the design community and increase collaboration in the organization.

The use of NX helped Kulthorn engineers and designers to analyze the gas flow and internal temperature of the compressors. The ability to evaluate such a wide range of design variables in a very competitive timeframe allowed them to maximize their performance. Kulthorn Kirby feels that NX software offers the right functionality to meet their needs. It has reduced the time needed to design and improve overall efficiency by 25 percent.

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Solutions/Services

NX
www.siemens.com/nx

Customer's primary business

Kulthorn Kirby Public Company Limited manufactures and sells reciprocating motor compressors for refrigeration products, including refrigerators, freezers, water coolers, commercial refrigerators, and air conditioners.
www.kulthorn.com

Customer location

Bangkok
Thailand

"With NX, Kulthorn conducts computer-aided manufacturing operations more accurately and easily, reducing time and errors."

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Streamlined manufacturing

When the design is complete, Kulthorn can easily move to manufacturing. NX delivers a full range of computer numerical control (CNC) programming capabilities that are optimized for machinery parts, which streamlines generation of G-code programs. "With NX, Kulthorn conducts CAM operations more accurately and easily, reducing time and errors," says Anurak.

NX capabilities proved to be very useful for Kulthorn in manufacturing subassembly components. By first analyzing the 3D CAD file, NX helps engineers to determine the possible axes of operation, the required outcome, and the suitable tools (for example, 3-axis, 5-axis, turning or mill-turn machines), while performing simulations to prevent clashes. All these steps are accomplished in NX, granting both flexibility and control to the engineer.

Kulthorn's target is to deliver the best-quality product to end user and to shorten the lead time. The company also wants to strengthen and improve partners' relationships and satisfaction. In addition, Kulthorn seeks to continuously improve its services offering, internal processes and market expansion.

"NX integrates new, innovative technologies in both products and processes," says Anurak. "It delivers design flexibility with added support for manufacturing. With CAE, it can reduce model preparation time and shorten design-analysis iterations. For CAM, it enforces the rules for existing processes such as milling, assembly and injection-molding. With these tools we can reduce re-work, improve manufacturing time and prevent assembly problems."

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