

Industrial machinery

Luyckx

Big changes that don't void the warranty

Products

NX, Teamcenter

Business initiatives

New product development

Production efficiency

Business challenges

Reduce development time for custom-made cranes and excavators

Keys to success

Fully digital 3D product development

Replacement of physical prototypes with digital ones

Direct control of milling machines

Results

Large projects can now be completed in only 1 year

Software validation of performance

Manufactured products match design intent

All-digital development process based on NX reduces development time for heavy equipment customizations

Growing demand for modified equipment

Since 1953, Luyckx has been supplying machinery to the earth moving, forestry and agriculture sectors. Almost from the beginning, the company has made modifications to existing machines, starting with truck and tractor-mounted cranes. Over time, Luyckx has become the primary dealer in Belgium for a number of companies, including Hitachi, whose machines are the subject of many adaptations such as extensions to excavator arms to increase their range. Larger adaptations are also done, such as the Starfish project for the dredging company Jan de Nul. The challenge there was to design a very strong structure that could operate in all conditions. Because each project is unique, there is no room for error. In addition, customers want their machines "yesterday" so reducing development time is always a goal.

"Our strength lies in developing the machines that the customer wants in a relatively short time," explains Kris Meeus,



design engineer in Luyckx's engineering department. "In this process as much equipment as possible is added to standard machines, keeping lifecycle costs in mind. We are fully authorized by machinery suppliers such as Hitachi to introduce modifications while maintaining the warranty."

The fact that Luyckx's engineering department has grown from one person to three in the last three years illustrates the growing market for these adaptations. Even though the machines are supplied to customers in Belgium, they are used all over the world. Luyckx employs approximately 120 people, the great majority of whom perform the modifications, maintenance and services.



Optimizing the modifications

“Precisely because we cannot allow ourselves any mistakes, we move into a 3D working method as soon as we agree with the customer on the layout of the new machine,” explains Meeus. Up until two years ago, the engineers were using I-deas™ software from Siemens PLM Software. Since then they have switched to the NX™ digital product development solution along with Teamcenter® product data management (PDM) system which is preconfigured for rapid deployment and fast return on investment. These solutions are also from Siemens. “In the beginning we looked into the possibility of whether we could do without a PDM system but we became rapidly convinced of its necessity,” Meeus notes. “Teamcenter immediately became a revelation. We use the standard functionality, which has improved collaboration in addition to providing strong data management capabilities.”

Although Luyckx is authorized to modify the machines for which it holds a dealership, the engineers who design the modifications typically don’t have access to the machines’ CAD data. “We would like to be able to work from the manufacturers’ 3D CAD data but the reality is different. At best, we get drawings and we regularly

have to measure the machines ourselves,” Meeus explains. “We enter that information into NX, wherever possible limiting ourselves to generating 3D contours and the interfaces.”

The new parts are developed in full detail, and it is at this point that Meeus and his colleagues take advantage of advanced NX functionality such as motion simulation and finite element analysis to optimize the designs. “The perfect integration between NX and NX Nastran is a great advantage for us,” Meeus explains. “We can go through many design iterations at high speed. From our point of view, NX Nastran is irreplaceable, particularly with complex constructions, which are what we usually deal with.”

The company also uses NX CAM functionality. In fact, it has one of the largest milling machines in Belgium with a work length of 18 meters (59 feet) and fitted with a Heidenhain control system. Programmed using NX CAM, “This machine is used so that a complete arm can be milled in a single operation,” Meeus notes. The reason for this top-of-the-range machinery is that Luyckx wants to guarantee quality and flexibility and not rely on third parties.

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Kris Meeus
Design Engineer
Luyckx NV

“We spent six months developing the Starfish, which we would have never been able to achieve without our NX and Teamcenter environment. As a result, it took twelve months to turn the original idea into a working machine.”

Kris Meeus
Design Engineer
Luyckx NV

An invaluable combination

All engineering data, from the first request to the last drawing, is managed in Teamcenter. In this way, Luyckx tries to work with as little paper as possible. Engineers currently place measurements and tolerances on drawings but plan to do this in 3D in the future using the NX 3D annotation capability for Product and Manufacturing Information (PMI).

Every modified machine must be certified before it is put into service. Luyckx must submit information such as construction data and calculations for stability and lifting capacity to the testing agencies. Teamcenter facilitates this process by providing a single source for all product data, even that generated by proprietary applications. “Part of this data is generated in applications developed by ourselves using our own calculation methods,” Meeus says. “Teamcenter proves very useful, as we are able to provide the inspectors with all the data at the push of a button.”

The Starfish project illustrates the cycle time advantage of the NX-Teamcenter solution. The Starfish is a special excavator designed to conduct expansion projects in

seaports and to lay down pipelines. “Little from the original Hitachi excavator can be recognized in this complex machine,” says Meeus. Worth noting is the fact that the Starfish can work in five meters (16 feet) of water and under all sorts of weather conditions. The machine works with a standard excavating arm but the whole superstructure (engine, pumps and cabin) is lifted above the water surface in a scissor configuration. The frame was also

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Solutions/Services

NX
NX Nastran
www.siemens.com/nx
Teamcenter
www.siemens.com/teamcenter

Customer's primary business

Luyckx specializes in distributing and servicing machinery for civil engineering, goods handling and agricultural applications.
www.luyckx-web.be

Customer location

Brecht
Belgium

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adapted to ensure stability regardless of circumstances. Meeus notes, "We spent six months developing the Starfish, which we would have never been able to achieve without our NX and Teamcenter environment. As a result, it took twelve months to turn the original idea into a working machine."

According to Meeus, Luyckx has the flexibility of a small organization combined with the potential of a large company. "For us NX, with all its possibilities, is the ideal

design environment to develop products almost paper-free, and to rapidly make them ready for production. In addition, NX Nastran gives us the certainty that the design does what it is supposed to do, while NX CAM ensures that the manufactured product complies with the design. With Teamcenter we are always sure to have the correct data at any given time in the product lifecycle. This is an invaluable combination."

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