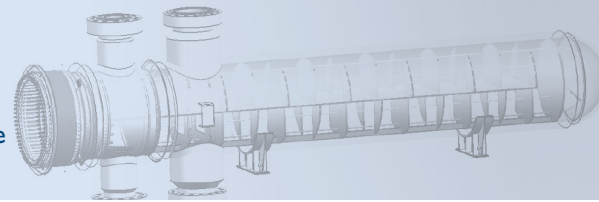
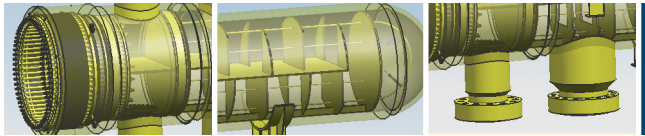


## International growth demands an advanced design solution

Substantial labor savings come from drawing automation and knowledge re-use



LARSEN & TOUBRO LIMITED, HEAVY ENGINEERING DIVISION



www.ugs.com

### Business challenges

Increase revenues from international sales to 30 percent

Ensure timely delivery of orders

### Keys to success

Creating 3D assembly models using knowledge-based engineering capabilities

Performing design checks in software earlier in the product cycle

Exploiting knowledge capture and re-use

### Results

Assembly drawings that took three days are now done in two hours

Sets of manufacturing drawings that formerly took one month are done in two days

16 man-months of labor saved in one year on manufacturing drawings

### Indian leader goes international

Larsen & Toubro Limited (L&T) is a technology-driven engineering and construction organization and one of the largest companies in India's private sector. While the company's Heavy Engineering Division (HED) accounts for approximately 35 percent of its sales, L&T has additional interests in construction and information technology. L&T's international customers include Shell, Chevron, Exxon Mobil, QAFCO, RASGAS, Halliburton, UHDE, KBR, Petronaz, Bechtel etc.

A strong, customer-focused approach and a constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business for seven decades. L&T has an international presence with a global network of offices. A focus on international business over the last few years has seen overseas earnings growing to 18 percent of total revenue. The goal is to increase that amount to 30 percent.

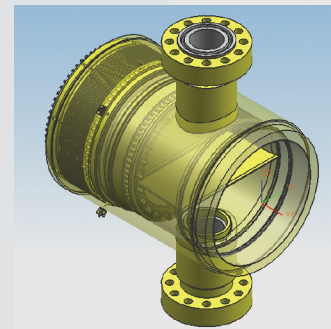
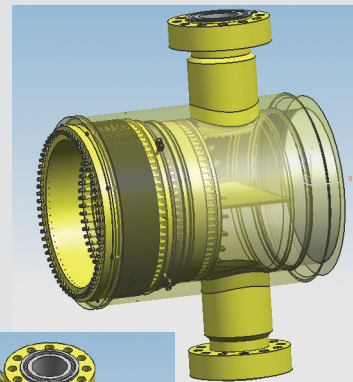
### Hindered by 2D

Previously L&T used AutoCAD to create 2D assembly and detail drawings for proposals and manufacturing. In the company's Heat Exchanger Division it used to take on average 15 days for two people to generate and check a set of six manufacturing drawings. The limitation of the 2D process was that the design flaws were detected only when detailed drafting was done.

The shortcomings of the 2D process prompted L&T to look at other options for drawing generation. The company made a few initial attempts to address the issue but the solution could not be adapted to L&T's requirements. In addition to automating the drawing process, L&T wanted to capture and reuse the design knowledge of senior engineers.

### Liberated by knowledge-based 3D

L&T undertook an extensive and thorough evaluation process to adopt suitable software for automating its engineering processes. The evaluation and benchmarking took about seven months, after which L&T decided to implement NX™ software for all knowledge-based engineering projects across HED.



**Solutions/Services**

NX

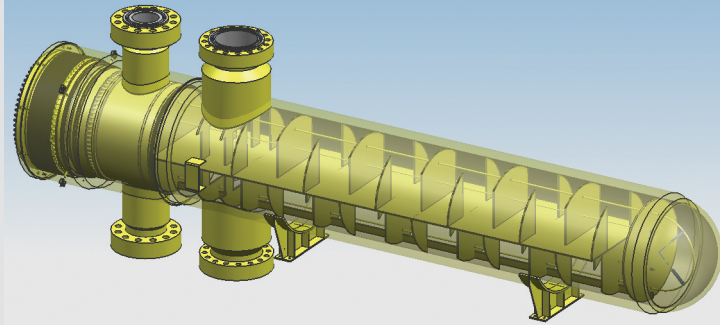
**Client's primary business**

Larsen & Toubro Limited is India's largest engineering and construction company.  
[www.larsentoubro.com](http://www.larsentoubro.com)

**Client location**

Mumbai  
 India

NX was the software of choice for L&T because of its inherent ability to embed engineering knowledge in 3D CAD models. This is done by means of functionality such as Knowledge Fusion, Design Logic, equations and expressions. Having design knowledge embedded in the models reduces checking time and enables senior engineers to address more serious development work.



A joint team was formed to perform a pilot project on one of L&T's special type of high pressure exchangers under the guidance of A.K. Modi, head-project management, Fertilizer Petrochemical Equipment and Heat Exchangers, L&T. Team members included Amit Karambelkar and Mohan Iyer, both of L&T and Amit Bhatia of UGS. The team worked for six months on the pilot project, automating the process of creating 2D manufacturing drawings and Bill Of Materials (BOM) from intelligent 3D models using NX knowledge-based engineering capabilities.

**Verified by the business impact**

By automating the process of creating assembly drawings, the cycle time has been reduced from three to four days to two to three hours. This translates in savings of four man-days on every project. For the Heat Exchanger Division this adds up to a savings of approximately 120 man-days in a year.

The automation of manufacturing drawings has been similarly effective. Sets of drawings that formerly took one man-month are now done in two to three days, saving one man-month on every project. In the Heat Exchanger Division there were 16 such projects last year. This process has been tested on five live projects and has come out with a 100 percent success rate.

This success has prompted L&T to expand its use of UGS software. According to L&T's Heavy Engineering Division, NX is the software of choice for all of its future CAD needs.

► **Contact UGS**

Americas 800 498 5351  
 Europe +44 (0) 1276 702000  
 Asia-Pacific 852 2230 3333  
[www.ugs.com](http://www.ugs.com)

