



Bharat Heavy Electrical Ltd. (BHEL)

Background

Bharat Heavy Electricals Limited (BHEL) is India's largest manufacturer of heavy electrical machinery. The US \$ 3.3 bn. company designs and manufacturers more than 150 products at 11 plants, including large hydro generators at Bhopal.

Hydro generators are large and complex systems, involving over 20,000 components (about 3500 types), and requiring over 4000 details drawings for manufacturing. Since hydro generators are always custom-built, this process of drawing generation takes over 10 months today. Also, in the last 50 years, a large assortment of design variations has been effected, creating long term problems of customer support.

Mission

Knowledge Engineering and Design Automation(Customised System Development) to effect manufacturing drawing creation cycle time reduction from 10 to 1 month. Integrate design & engineering with critical enterprise and downstream engineering processes.

Scope of Work

- (i) Rationalization and standardization of design variations
- (ii) Crashing of manufacturing drawing generation time
- (iii) Specified enterprise integration of the design/ engineering process

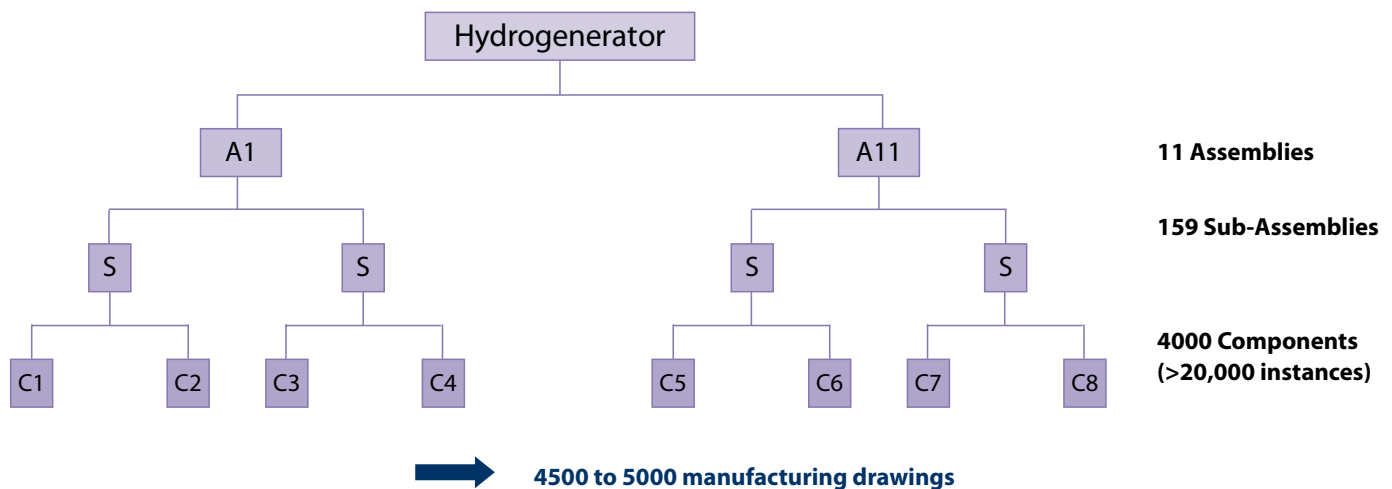
Adroitec Solution

To automate the design process, the individual parts were parametrically modelled.

The parts were then joined together digitally to create 3D subassemblies, most of them parametric in nature.

The final step involved generation of a fully assembled 3D model of the transformer and the automated generation of the 2D, fully dimensioned, manufacturing drawings as per BHEL standards.

The assemblies can now be generated through the data in an Excel sheet or direct input through specially designed input screens.



Value addition

Rationalization and standardization of design variations

Crashing of manufacturing drawing generation time.

Specified enterprise integration of the design/ engineering process

Benefits to client:

- High reduction in manufacturing drawing time
- Flexibility in assessing more design alternatives
- In-built accuracy eliminates checking / QA expenses
- Accurate and concurrent updation of Enterprise Systems