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# Digital manufacturing

## Digital manufacturing – Saving money by design

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### Eco-efficiency for the Marine Industry Fact Sheet

#### Do you want to

- shorten time to production?
- improve productivity?
- improve resource management?
- reduce rework?
- increase efficiency?
- reduce waste production?

Digital manufacturing is a technique using integrated software that assists in product design, planning, resource management and supply chain management.

#### More efficient product design—virtual testing avoids costly mistakes

Software is now available that enables designers to develop detailed specifications by scanning and importing conceptual hard-copy sketches or three dimensional mock-up models. Conceptual models useful during product development and marketing to customers can also be developed.

Detailed two dimensional design drawings from standard design packages can now be converted into three dimensional models and linked to the design of manufacturing equipment, structural tests, use-simulations and tests for ergonomics, health, safety and lighting. This testing reduces the amount of rework that is required and minimises changes to design during manufacture. Software systems are also available to ensure that changes in design are reflected in other aspects of the manufacturing process, such as process planning, resource management and supply chain management.

#### Emerging digital manufacturing technologies

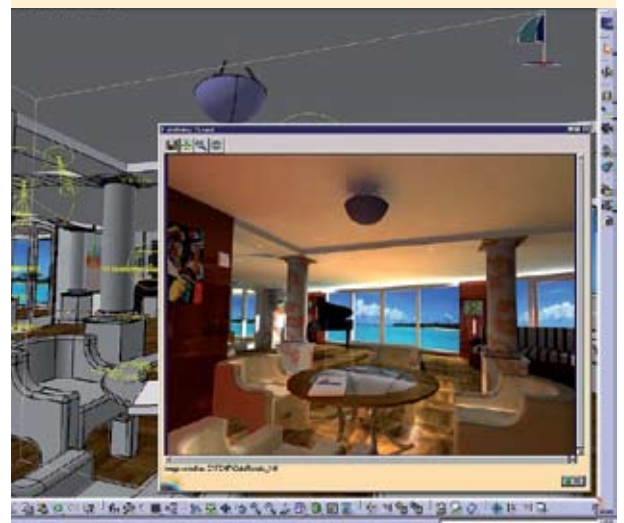
The Queensland Department of State Development, Trade and Innovation has released a Technology Roadmap for Recreational Boat Builders that provides useful information on emerging digital manufacturing technologies. Contact the Marine Industries Sectoral Development Team at [www.sdi.qld.gov.au](http://www.sdi.qld.gov.au) for more information.

#### Case study: Hydrolift—total digital design <sup>[1]</sup>

Norwegian pleasure boat builder Hydrolift uses digital manufacturing software for advanced surfacing, full digital mock-up, precise visualisations, ergonomics and full mechanical system modelling. The same three dimensional data set provides the base for specialised marine and aerodynamic analyses, milling and cutting machine design and mould and part manufacture.

‘[Digital manufacturing] is an important backbone in our design house philosophy, in which we go from ideas through design, tool production, prototyping and mass production as one complete delivery.’

- Bård Eker, Managing Director and owner of Hydrolift.



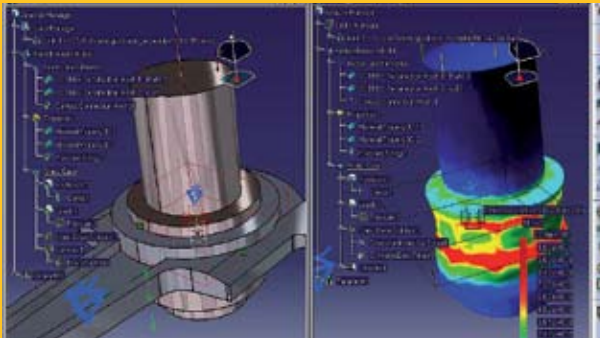
*A visualisation of a boat interior helps design better products and impresses clients <sup>[2]</sup>*

### Case study: Bénéteau Group—encouraging collaborative approaches to design<sup>[3]</sup>

French sailboat builder Bénéteau Group uses web-based product design and lifecycle management software to develop boats in a collaborative workspace. By linking data between different design divisions and re-using valuable product designs, the company optimises its production processes over the entire lifecycle of the boat.

‘Our customers are very demanding about performance and comfort, so we must constantly innovate and offer increasingly sophisticated products with multiple options and configurations,’ said Paul Rampini, Vice President, Bénéteau shipyard.

Shipbuilding-specific modules enable the company to model complex shapes, as well as optimise composite structures and space allocation. Design functions allow the study of the impact of potential design changes, and planning modules allow collaboration between different members of the group, with managers, architects, engineers and suppliers sharing all product information.



Structural testing optimises raw material use<sup>[2]</sup>

*There are software purchase and training costs associated with digital manufacturing but, by avoiding rework and improving efficiency, these costs will usually be recovered many times over*

#### For further information

Ecobiz can assist you to reduce costs and improve eco-efficiency in your business Call 1300 369 388 for further information.

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### Designing an efficient factory – process planning and resource management

Using product design information, it is now possible to plan manufacturing processes more efficiently. Factory layouts, production sequences and work schedules can now be tested prior to manufacturing. ‘Virtual’ work schedules are able to incorporate important issues such as planning targets, equipment availability and worker availability. These factors, together with options for factory layout and production sequencing, can then be used for testing various planning scenarios and to ensure that the most efficient option is selected. Work schedules may then be used to automatically generate operating instructions for individual employees or work stations. Changes in one part of process planning are automatically updated in other parts of the system.



*Trials of new technology give employees a chance to<sup>[4]</sup> become familiar with them and ensure that promised gains are realised*

### Improve your purchasing power with better supply chain management

Having design software linked to production schedules and equipment use allows production managers to better coordinate suppliers, compare supplier options and give better information to customers.

### Implementing digital manufacturing at your site

Implementing digital manufacturing techniques requires knowledge and training before efficiency gains are realised. If you are unsure where to begin, contact an expert in digital manufacturing.

#### References

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