Furniture

Fermob
Modelled on beauty

Designing and manufacturing chairs meant to attract customers at the lowest cost: this is the challenge achieved by Fermob, which uses reverse parts engineering based on full-size models made by designers.

Serge Laibe, design office and industrialisation manager at Fermob, explains: *"Complex geometries designed by designers attract our customers. We have managed to industrialise their manufacturing thanks to reverse engineering. This technology is all the more relevant to us in that our complex-shaped furniture represents 10% of our production."*

30,000 points scanned per second

In order to carry out its reverse engineering operations, Fermob benefited from the work initiated by Cetim's Furniture trade commission *(commission professionnelle "Mobilier")*, comprised of industrialists, Unifa *(Union Nationale des Industries Françaises de l'Ameublement)* and FCBA *(Forest, Cellulose, Wood, Construction)* Technological Institute. The shapes of a chair prototype were scanned with self-positioned hand scanners and other scanners installed on polyarticulated arms.
These devices measure a point cloud on the surface of the object. These points are used to extrapolate the shape of the subject according to their distribution, based on the coordinate system of the arm or the position of the reflective patches stuck on the prototype. 20,000 to 30,000 points are scanned per second and forwarded to a display screen.

Optimising the design manufacture

The point cloud is then processed by surface reconstruction software in order to establish a polygonal model and then to generate a surface. The digitally defined subject is then exported to a CAD software: it can be modified, analysed and adapted to its environment and internal architecture.
Once the plans have been reviewed and edited, it is then possible to start optimising the manufacturing process at the lowest cost in accordance with the shapes previously defined by the designers.
Our study proved that the use of reverse engineering combined with manufacturing optimisation efforts offers significant productivity gains.

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OUR CUSTOMER

Corporate name
Fermob

Area of Activity
Designs and manufactures outdoor furniture: tables and chairs.

Workforce
195

Cetim's asset

**Cetim is an independent organisation with strong technical expertise and acknowledged experience in 3-dimensional measurements.
Cetim performs laser scanning, defect assessment and reverse engineering of all types of parts on various kinds of rigid and soft materials.**

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