



3DCaliper

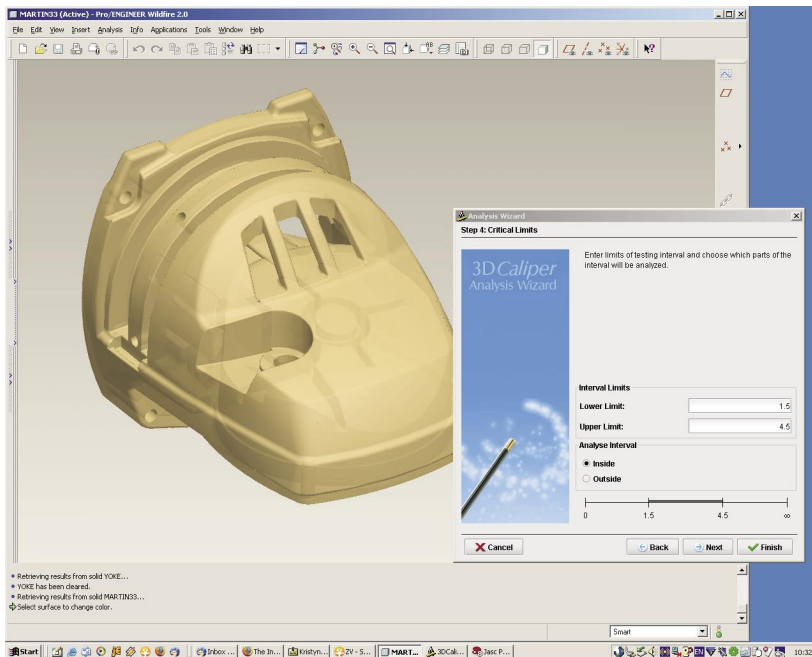
Optimizing product and manufacturing through automated analysis of 3D geometry

3DCaliper is a product development tool that promotes efficient designing through automated analysis of 3D CAD geometries concerning correct wall thicknesses and minimum distances. Wall thickness is a key factor for quality and manufacturing, especially for products manufactured with casting procedures. Permissible distances between tool components as well as assembly parts can also be ensured. 3DCaliper is independent of CAD format used; furthermore, both volume and surface geometries can be examined.

shortened drastically. Integrating 3DCaliper's analysis as a fundamental component in the development process contributes substantially and permanently to achieving time and cost goals, which are of great importance to the responsible project manager.

Product quality and manufacturing optimization for design

In product development, 3DCaliper makes it possible for the user to deal promptly with product quality and



3DCaliper addresses technical designers, tool developers, manufacturers, and project managers. Thanks to 3DCaliper, technical designers are sure their products meet qualitative and functional requirements and do not cause any manufacturing problems. Tool developers and manufacturers, who implement 3DCaliper to check component distances in tool moulds, find it is possible to change casting assemblies earlier. Also the frequency of changing the tool itself is reduced. Thus, the development process can be

manufacturing optimization before design modifications become costly and time intensive. By examining complex CAD models for wall thickness, tool changes are avoided and waste is minimized.

Due to the CAD model's fast and accurate measurements, potential problem areas can be recognized and when necessary modifications made.

With 3DCaliper's wall thickness measurement, filling of the mould and

Functionality

- Check geometry right in the 3D CAD model.
- User-defined accuracy.
- Interactive and detailed results produced.
- Colored representation of measurement results.
- Directly integrated in Pro/ENGINEER.
- Applicable with CAD systems such as CATIA and Inventor by importing geometry via STEP from IGES.

Benefits

- High performance 3D CAD geometry analysis saves time and produces more accurate results.
- Automated examination of part and tool mould speeds up necessary testing procedures, avoids errors, and makes production of prototypes obsolete.
- Quality- and manufacturing-relevant criteria are addressed in the preliminary development stage, which shortens design and manufacturing cycles.
- Manufacturing waste is avoided.
- Faster market availability due to clear time and cost savings.
- No cost-intensive training, because it is easy to learn and use. Users can start analysis procedure within a few minutes.

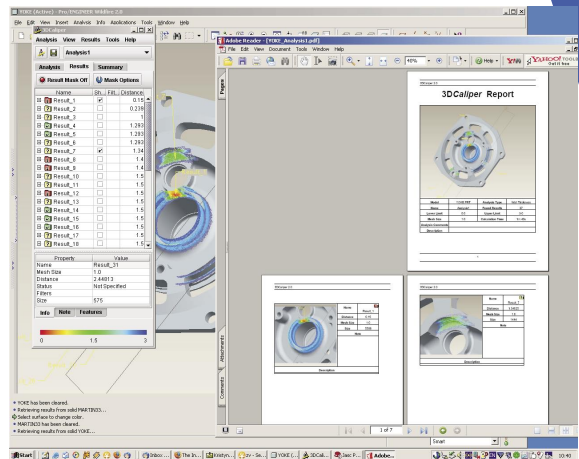
part quality can be inspected. Even if the mould may be filled, a wall that is too thin can lead to premature breakdown or results falling short of desired quality standard. Walls that are too thick can lead to cooling problems, so that shrinkage or holes can develop. Where walls are too thick, material consumption and cooling times increase, both leading to higher manufacturing costs. With 3DCaliper's distance measurement, user can check the tool for observing minimum distances between mould, cores, and sliders.

3DCaliper analyzes surface distances directly in the CAD model and highlights critical areas in graduated colors. These areas are depicted in three-dimensions, independent of the minimum distance orientation. Neither cuts must be located nor triangulated models exported, which saves time and provides more accurate results.

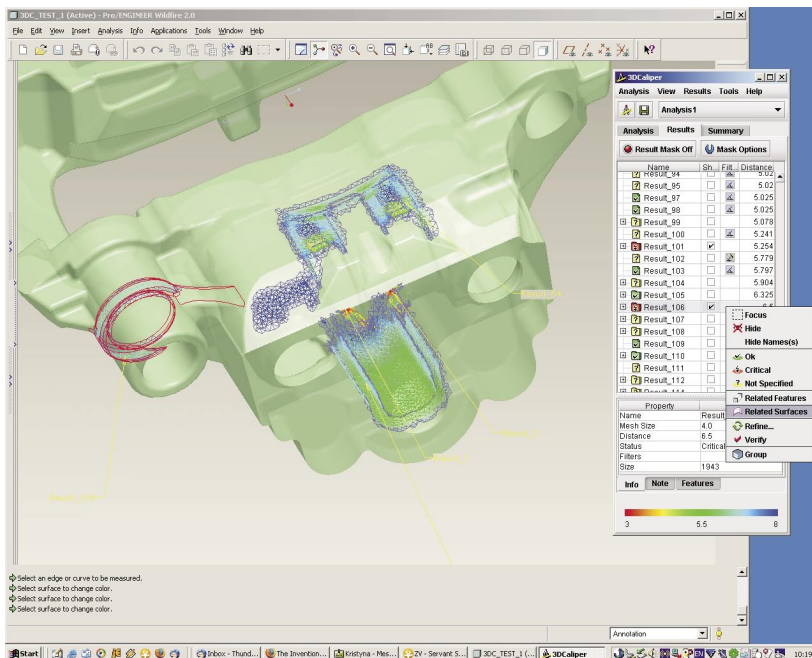
Quality-oriented part and tool design

Part and tool designers can examine their data before milling a tool. Then, if costs of a change are still

is based on the following mathematical procedures: A ball with the diameter to be checked is moved between walls or surfaces of the model and continuously examined for collision. This computation can be accomplished with extremely high accuracy. Thereby, the user can set the accuracy of the measuring point distance and make refinements in relevant areas. It is also possible



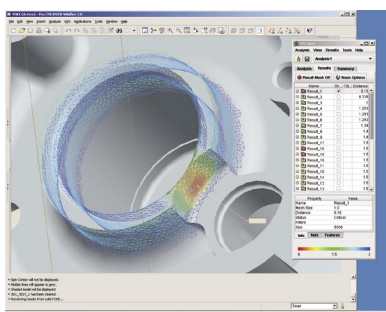
areas more easily. 3DCaliper makes it possible to document geometry investigations conducted. The user can add notes to the report and individual results as well as determine the status of the evidence.



minimal, check for observance of quality criteria. 3DCaliper offers automatic investigation of 3D CAD models and its output of detailed results enables process orientated design of parts and tools.

Method of analysis

3DCaliper's wall thickness or distance analysis in 3D CAD models



to select only certain parts of the model for analysis. With 3DCaliper, the user can also carry out, display, and compare several analyses per model. Analysis time, even for complex casting models, takes just a few minutes. Even engine blocks can be computed in less than one hour.

Representation of Results

3DCaliper generates a graphic report. By clicking the mouse, appropriate areas in the model can be represented in color. Representation of the results on the model can be adjusted quickly by fading in/out individual sections. Results can be sorted according to distances and uninteresting evidence can be filtered out in order to find problem

For further information

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