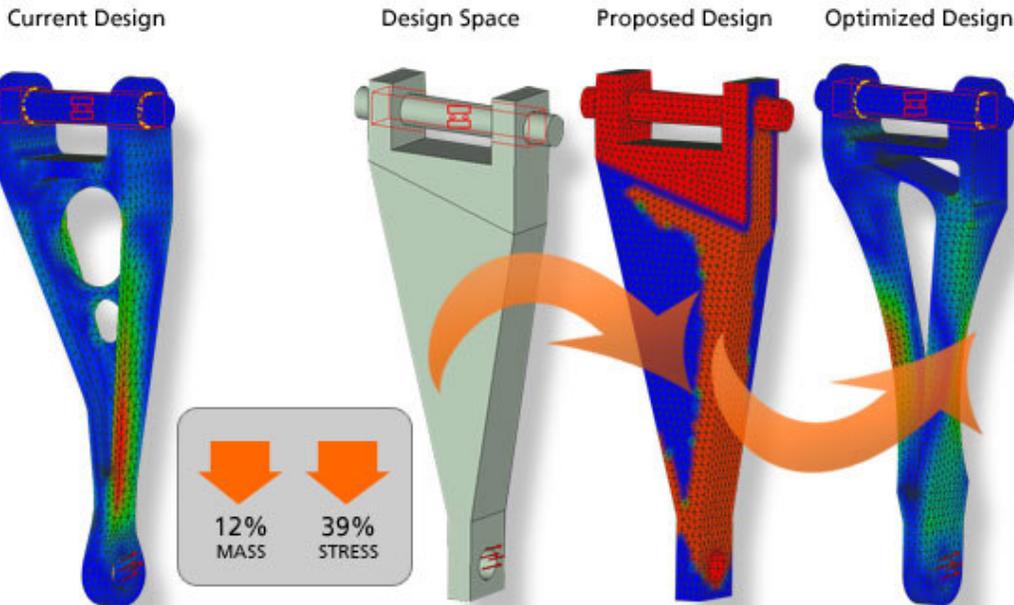


CATOPO[®] Version 2.0

Topology optimization, solution for fast design of lightweight parts with high stiffness



With the new release of **CATOPO 2.0** you have the possibility to perform both a topology optimization and a FEM-computation of your single parts or assemblies.

Due to its user-friendliness, **CATOPO 2.0** is not only suitable for the design engineer. The CAE-engineer also benefits from it due to the reduced modeling time as well as the numerous FEM-analysis techniques.

1. FEM-calculation of single parts

The embedded LC-Solver is versatilely applicable: for static calculations, modal analysis and topology optimization. Due to its modern algorithms, the LCSolver belongs to the fastest solvers available on the world market.

2. FEM-calculation of assemblies

The possible contact surfaces are being automatically recognized by **CATOPO**. Thereby the modeling of the assembly is 10 to 20 times faster than the modeling with the other programs available on the market. The time saved thereby makes **CATOPO 2.0** a profitable acquisition for any company.

3. Topology optimization

The more complex the loading of the part, the more difficult it is to find its optimal design. Often this is only possible after trying out several prototypes and performing costly tests.

There are powerful programs for some time now that are able to solve this task. Due to their complexity, however, they are only suitable for expertise use.

CATOPO 2.0 now offers the design engineer the possibility to develop lightweight, rigid and durable parts himself. He has to define restraints, loads and available package space as a CATIA solid. As a result, the program calculates the optimal design proposal by simultaneously taking into account the respective manufacturing restrictions.

4. Catopo 2.0 advantages

Easy operation:

The operation of **CATOPO 2.0** is similar to that of the CATIA-modules GPS and GAS. The designer defines restraints, loads and package space directly on the geometry. Thus the usage of **CATOPO 2.0** can be mastered within a day, even by users without experience in FEM-calculations.

TOPOLOGICA SOLUTIONS

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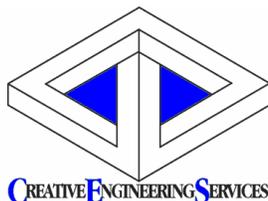
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Partners:



Solver variety:

CATOPO 2.0 works with the three most powerful topology optimization solvers: OptiStruct from Altair Engineering, TOSCA from FE-Design and PERMAS-TOPO from INTES. Moreover, due to its own solver, **CATOPO 2.0** can be used even by users with no access to any other solver.

Results in CATIA V5:

The new calculated form is being smoothed and can be immediately visually proof-tested. In order to make the designing easier, cross-section curves are being created, which can be saved in the CATIA model.

Rapid Prototyping:

In order to enable the designer to control the optimization process, a STL-data set is being automatically created after each iteration. Thus the engineer can evaluate the design proposal more effectively.

Implementing:

CATOPO 2.0 is being developed with the CAA-routines of CATIA V5 and therefore can directly access CATPart, CATProduct and CATAnalysis documents. The calculation is being performed with one of the following established optimization tools: from FE-Design TOSCA with Nastran, PERMAS or ABAQUS, from Intes PERMAS-TOPO or from Altair OptiStruct. Since **CATOPO 2.0** can be licensed using the license manager FlexLM, the software can be installed network-based. At present it operates under MS-Windows and IBM-AIX.

Support/Training:

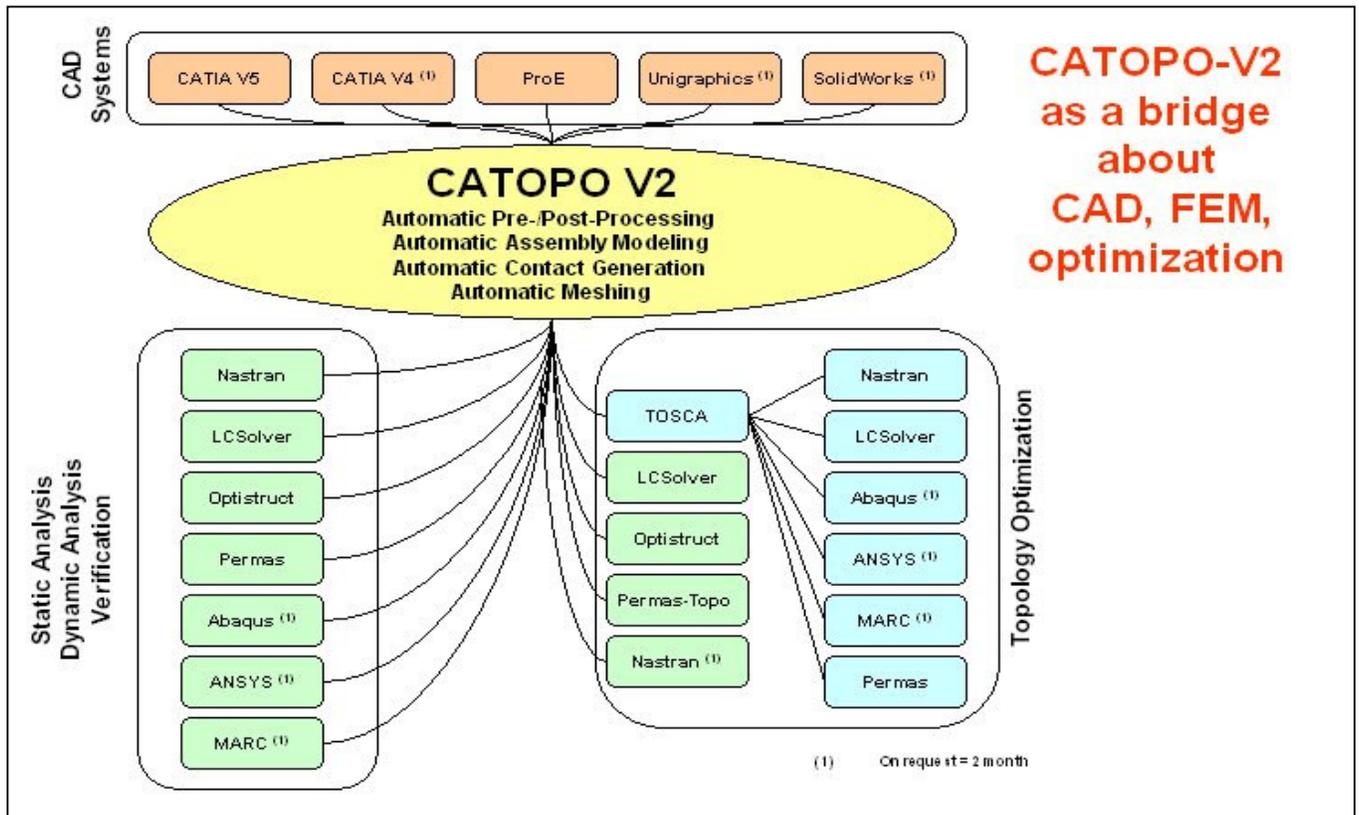
For design engineers, who are familiar with the modules GPS and GAS in CATIA-V5, only one day training is sufficient to master the product. In order to understand, how **CATOPO 2.0** works, one needs to be familiar with the basics of the technical mechanics. Therefore we offer a one or two days training "Technical mechanics". A telephone hotline is available as well.

Advantages:

CATOPO 2.0 provides the design engineer with detailed design proposals. Even in the complicated, overlapping load cases, the optimization process is able to find a proposal for the optimal solution. This leads to significant time savings in the design process. Often the optimal solution is found upon first trial. In most cases the designer is able to obtain a part, which has both a higher stiffness and a smaller mass.

Stiffness verification:

CATOPO 2.0 is able to perform a static or a dynamic verification before and after the optimization. Thus **CATOPO 2.0** is the first software product, which supports both the optimization and the strength durability analysis. All implemented solvers can be used for stiffness and dynamic verification.



Partners:

