

# Generative Design in Creo®

Creo Generative Topology Extension and Creo Generative Design Extension

## Harness the power of AI and deliver your best designs in less time

Generative design autonomously creates optimal CAD model designs from a set of requirements you specify. Both of Creo's generative design solutions help you deliver high-quality, lower-cost, ready-to-manufacture products, all within the Creo design environment. Choose to adapt the results or use them as a final design.

Let generative design bring you the benefits of digital transformation. When you can rapidly explore innovative designs, you're closer to cutting costs and improving quality and time-to-market. Faster exploration allows more in-depth examination of different combinations of materials and manufacturing processes, revealing solutions you may never have considered.

### Generative Topology Optimization (GTO)

GTO quickly generates optimized designs to meet your requirements and converts them into rich B-rep geometry so you can enjoy an uninterrupted parametric workflow. Since generative design is integrated into Creo, you don't need to import/export load cases and geometry.

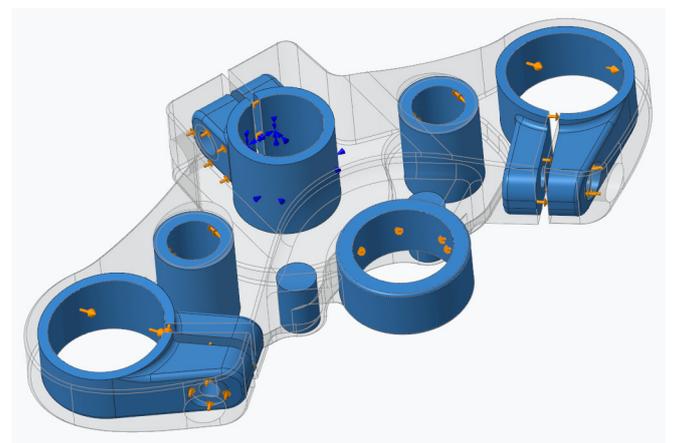
### Features and Benefits

- Seamless set-up for your scenario. Simply select design spaces, add your loads and constraints, then define the objectives, material, and manufacturing process for the scenario. Use the results as your final design or continue to iterate.
- Support for many common manufacturing requirements, from traditional to additive manufacturing.
- Ability to preview and interrogate optimized design along with simulation results.

- Interactive process where results dynamically update with your changes to geometry and setup.
- Automatic reconstruction of optimized results to rich B-rep geometry or tessellated model.
- Structural, Modal, and Thermal analysis.\*
- Enables junior design engineers to contribute earlier in the development process by using GTO to turn product requirements into manufacturable designs.

\*Thermal and modal analysis available in the Creo 7.0.4.0 maintenance release

## Simple Setup



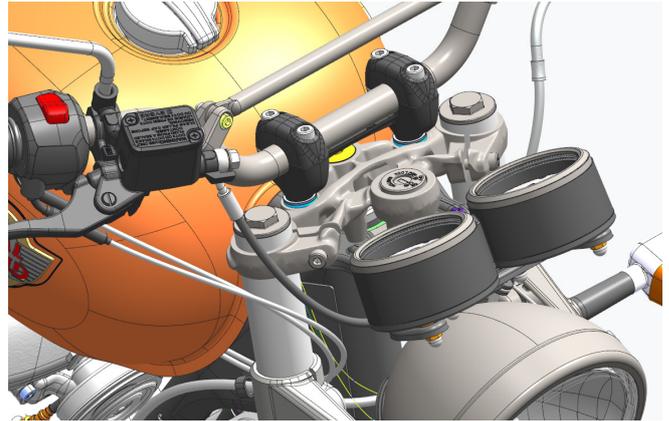
*Easily set up optimization by defining the design space, physics, loads and constraint goals, manufacturing process and materials.*

## Optimization Preview



*A converged solution that leverages a parting line constraint to support a casting manufacturing process.*

## Manufacturable Results



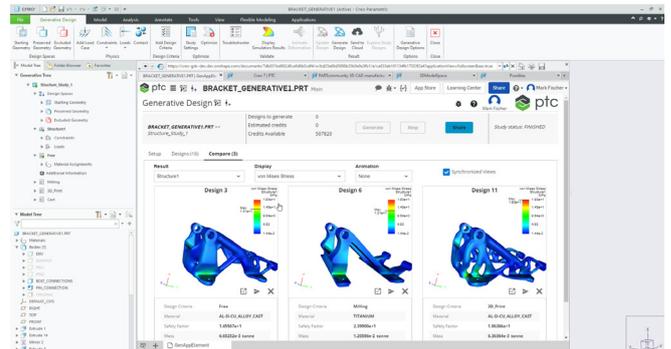
*Final component in the full assembly for a motorcycle*

## Creo Generative Design Extension (GDX)

When you want to consider many scenarios in parallel and quickly, turn to cloud-based GDX. GDX extends Creo's generative design capabilities by enabling analysis of multiple design studies simultaneously. Use the power of the cloud to develop innovative design options simultaneously based on your constraints and requirements. GDX automatically identifies the top options, including those you may not have considered.

### Features and Benefits

- Use the cloud to evaluate multiple scenarios with several materials and production methods. Specify your requirements and goals, and the AI-driven generative engine will automatically produce more manufacture-ready designs faster. GDX even highlights the top options.
- Set-up is easy, with commands consolidated in the familiar Creo UI ribbon, with context-sensitive menus.
- Enjoy increased innovation and productivity. You won't be constrained by "carry-over" geometry or established practices when your designs can be quickly generated and optimized to meet your requirements.
- Work with rich CAD output data in the familiar Creo design environment. Results can be represented either as tessellated geometry for additive manufacturing or reconstructed as full B-Rep CAD geometry for use in downstream processes.
- Design for additive manufacturing's ability to produce shapes not possible with traditional manufacturing processes.



*Alternative designs to consider*

Creo is the 3D CAD solution that helps you accelerate product innovation so you can build better products faster. Easy-to-learn Creo seamlessly takes you from the earliest phases of product design to manufacturing and beyond. You can combine powerful, proven functionality with new technologies such as generative design, augmented reality, real-time simulation, additive manufacturing and the IoT, to iterate faster, reduce costs and improve product quality. The world of product development moves quickly, and only Creo delivers the transformative tools you need to build competitive advantage and gain market share.