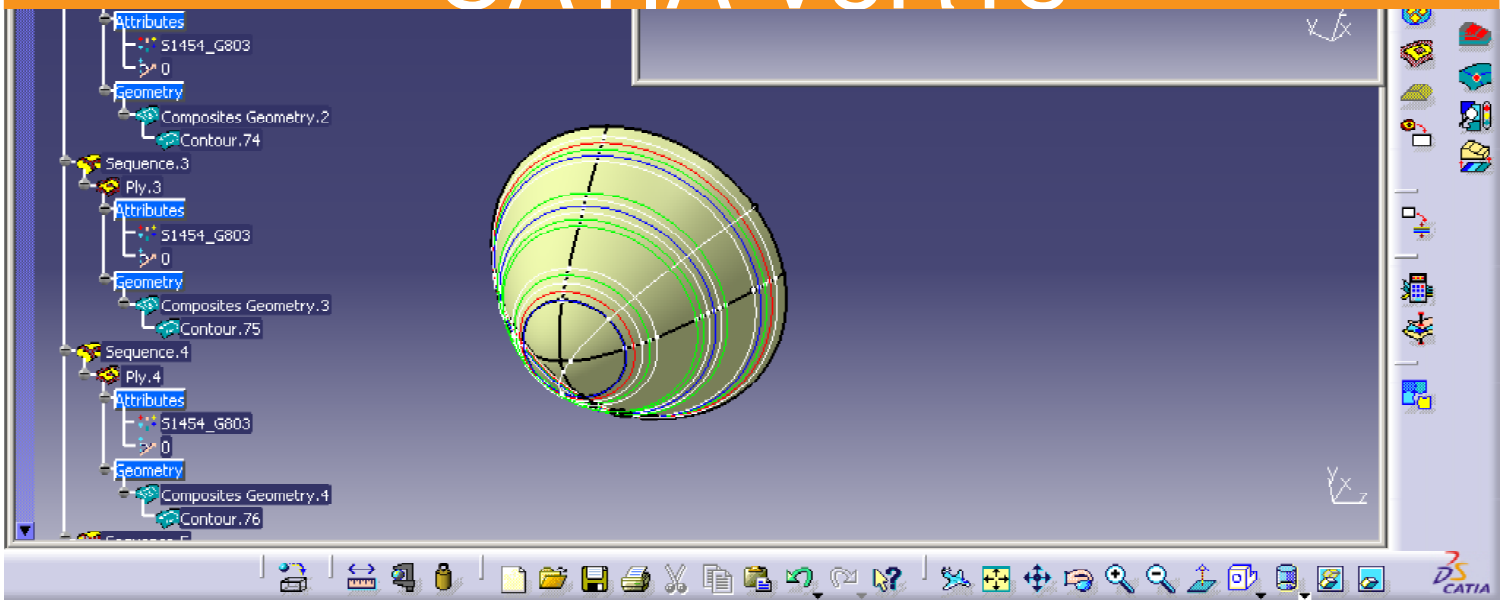
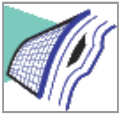


Mechanical Design

# CATIA - Composites Design 3 (CPD)

# CATIA V5R18





## Mechanical Design

# CATIA - Composites Design

Provides an all in one solution to cover the whole engineering to manufacturing design process of high quality composite parts

### Product overview

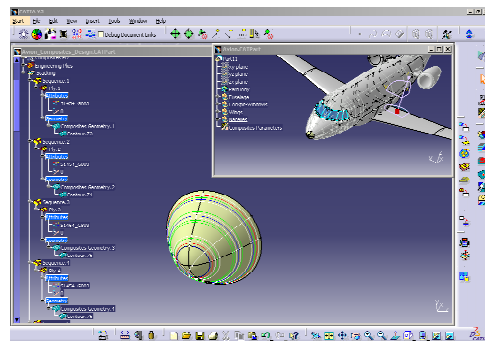
CATIA - Composites Design 3 (CPD) is an advanced composites process centric solution that allows manufacturers, from aerospace, automotive, shipbuilding or consumer goods companies, to reduce the time needed to design composites parts. It delivers tools to cover both the preliminary and detailed design phases while taking into account, even at the concept stage, the product's requirements for its manufacturability. Thanks to powerful synchronisation mechanisms CPD is the essential link between engineering design and physical manufacturing and allows manufacturing designers to closely collaborate with engineering designers. CATIA - Composites Design 3 (CPD) uniquely delivers a powerful composites design solution with all the advantages of the CATIA V5 architecture: native integration, pervasive knowledgware capabilities, and CATIA V5's ease-of-use.

### Product Highlights

#### PRELIMINARY DESIGN

- ❑ Easy-to-use zone (geometry and laminate) and transition zones modeling definition
- ❑ Solid and top surface generation from zones for early 3D representation
- ❑ Automatic ply generation including ply staggering with stacking rules

#### ENGINEERING DETAILED DESIGN



- ❑ Easy access to material properties and attributes
- ❑ Powerful ply modeling tools (dedicated ply modification 3D features),
- ❑ Exact solid generation from plies for digital mock-up review
- ❑ Complete Composites Inspection tools (for instance core sample and numerical analysis, plie table..)
- ❑ Producibility analysis tools embedding manufacturing constraints early in the design phase

#### MANUFACTURING DETAILED DESIGN

- ❑ Dedicated manufacturing part modeling capabilities such as manufacturing shell swapping and material excess definition 3D multisplice
- ❑ Accurate fiber behavior simulation
- ❑ Automatic flatten geometry creation
- ❑ Effective manufacturing export capabilities and automatic shopfloor documentation
- ❑ Powerful synchronization/collaboration mechanisms with engineering detailed design

## Product Key Customers Benefits

### Specification driven composites design

**approach...** CATIA - Composites Design 3, like every CATIA V5 product, but more specifically as a CATIA P3 solution, is a process-centric solution for designing composites parts. It delivers all the tools needed to ensure compliance with composites part design best practices. Based on CATIA's experience in the high-tech composites domain, as well as on the latest CAD V5 technologies, Composites Design 3 uniquely delivers an intuitive, specification-driven solution that helps the user concentrate on the design, not on the tool.

### Support of specific geometrical

**configurations...** Owing to their geometrical parameters, some composites parts require complex designs. CATIA - Composites Design 3 (CPD) can manage multi-part geometries, such as T-shaped parts, more easily than standard composites design solutions, such as CATIA V4, can. In addition, Composites Design 3 can speed-up ply generation with such techniques as self-overlapping plies, always taking into account the zone's or part's geometry.

### Manufacturing parameter management at the early stage of the design process...

Detailed productibility checking enables users to predict how composites materials will behave on complex surfaces. Users can visualize fiber orientations, predict manufacturing problems, such as wrinkles or bridges, and take corrective action in the initial stages of design, eliminating costly change orders and ensuring a producible part. Productibility checking is done directly from the CAD model to generate accurate flat patterns according to ply characteristics and fiber behavior.

### Powerful Synchronisation/Collaboration

#### Mechanisms with detailed design:

Ensuring true Associativity/consistency between design inputs and manufacturing outputs: Thanks to powerful synchronisation mechanisms CPD is the essential link

between engineering design and physical manufacturing and allows suppliers to closely collaborate with OEMs to the composite design process. Using CPD, Manufacturing Designers can work concurrently to the design detailed design phase and automatically take into account any design modification.

### Effective manufacturing export capabilities and strong partnerships to support all composites manufacturing processes:

Thanks to Dassault systemes' partnerships, CPD offers a complete integration with major production systems: such as Laser Projection to improve reproducibility and shorten the lay-up time, Nesting and Cutting of fabrics ,Resin Transfer Molding Simulation, Tape Laying Design and Programming, Fiber Placement Automation. This ensures that CPD can be used by any companies, whatever the manufacturing process and the machine provider are.

### Uniquely takes advantage of the CATIA V5 infrastructure and other applications...

Composites Design 3 is a unique CATIA V5 technology-based product that takes advantage of the power of the PPR (Product Process Resource) infrastructure. One example is the specific V5 relational design change management capabilities that use automatic updates to reduce the impact of changes to the design-to-manufacturing process. Another example is the ability to create and reuse rules instantiated in stacking sequences to take into account industrial standards and corporate know-how. Using CATIA V5's knowledgware capabilities in preliminary design permits the automatic update of a part in the engineering design phase for design change management purposes. This ability avoids the need to restart the full design phase, saving time and expense.

## ABOUT CATIA V5R18

CATIA is Dassault Systemes' PLM solution for digital product definition and simulation.

**[plm.3ds.com/CATIA](http://plm.3ds.com/CATIA)**

