

## Filament Winding Software

### New Filament Winding Software made by Roth Composite Machinery and mefex

- > Designed to optimize your winding process
- > Combines manufacturing and simulation
- > Created by industry experts with key focus on usability

### Details

- > Input of any laminate structure and any number of layers
- > Import of an existing liner design
- > Winding of single layers
- > Preselection of different types of machines (4- or 5-axis filament winding machines, axis designations adjustable)
- > Visualization of the delivery head
- > Transitional layers can be created
- > Selection and visualization of possible pattern numbers
- > Selectable export of path data (free fiber length, delivered fiber lengths, fiber speeds, axis positions, etc.)
- > Adjustment of input units (mm/inch and degree/radian)
- > Generating G-codes for individual layers
- > G-code for additional axes, e. g. CNC control values for fiber storage
- > Adding of M-Codes
- > Automatic generation and export of one main program that includes all layers and M-codes

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### Your key advantages

- > Tailor-made for Roth winders
- > Highly user-friendly graphical interface
- > Easy menu navigation for fluent workflow
- > Unlimited number of layers
- > Maximum efficiency in process designing
- > Advanced calculation algorithm
- > Perfect accuracy of fiber delivery
- > Easy transfer of the “digital twin” to the machine
- > Highest service and support level
- > Continuous updates and upgrades available

**NEW**

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## Material

- > Design and calculation of materials for product structure
- > Input of elastic material properties
- > Calculation of material properties for the individual layers
- > Specification of winding data for the selected material
- > Adjustable material slip behavior in the winding process

## Laminate

- > Creation of the laminate structure
- > Generating the laminate ply by ply
- > Manually adjustable winding surface (constant thickness)
- > Burst pressure calculation for cylindrical areas
- > Proposal for pattern numbers

## Liner

- > Creation of axially symmetrical mandrels/liners
- > Import of x-r-coordinates
- > Generation of simple fitting geometries
- > 2D and 3D visualization of the liner

## Transition layers

- > Automatic calculation and manually adjustable
- > Visualization of the winding



**Advanced Filament Winding  
Software created in cooperation  
between Roth and mefex**

## Delivery head trajectory

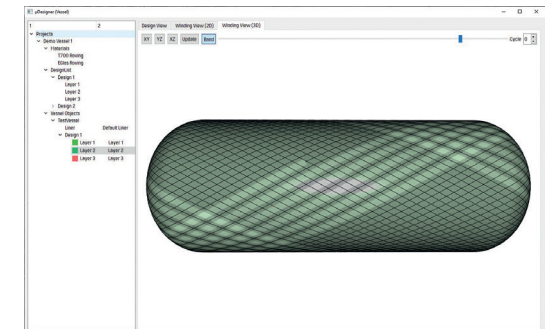
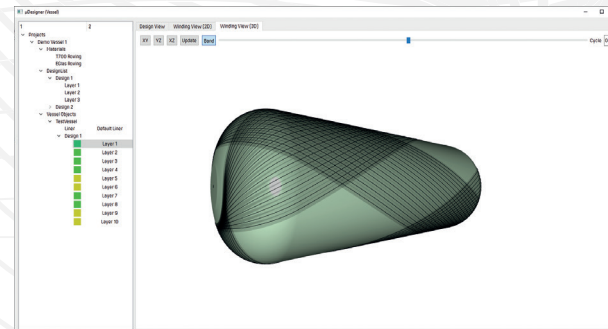
- > Visualization of the delivery head path and movement
- > Options for smoothing the delivery head motion

## Delivery head accuracy

- > Accuracy of the layup vs. calculation
- > Pole opening
- > Fiber angle in cylindrical areas

## Machine code

- > Creating machine codes layer-wise (degrees/mm)
- > Export of the main program, including all layers
- > Pre and post commands for each layer (M-functions)
- > Manually adjustable



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