

Volute design by CFturbo®

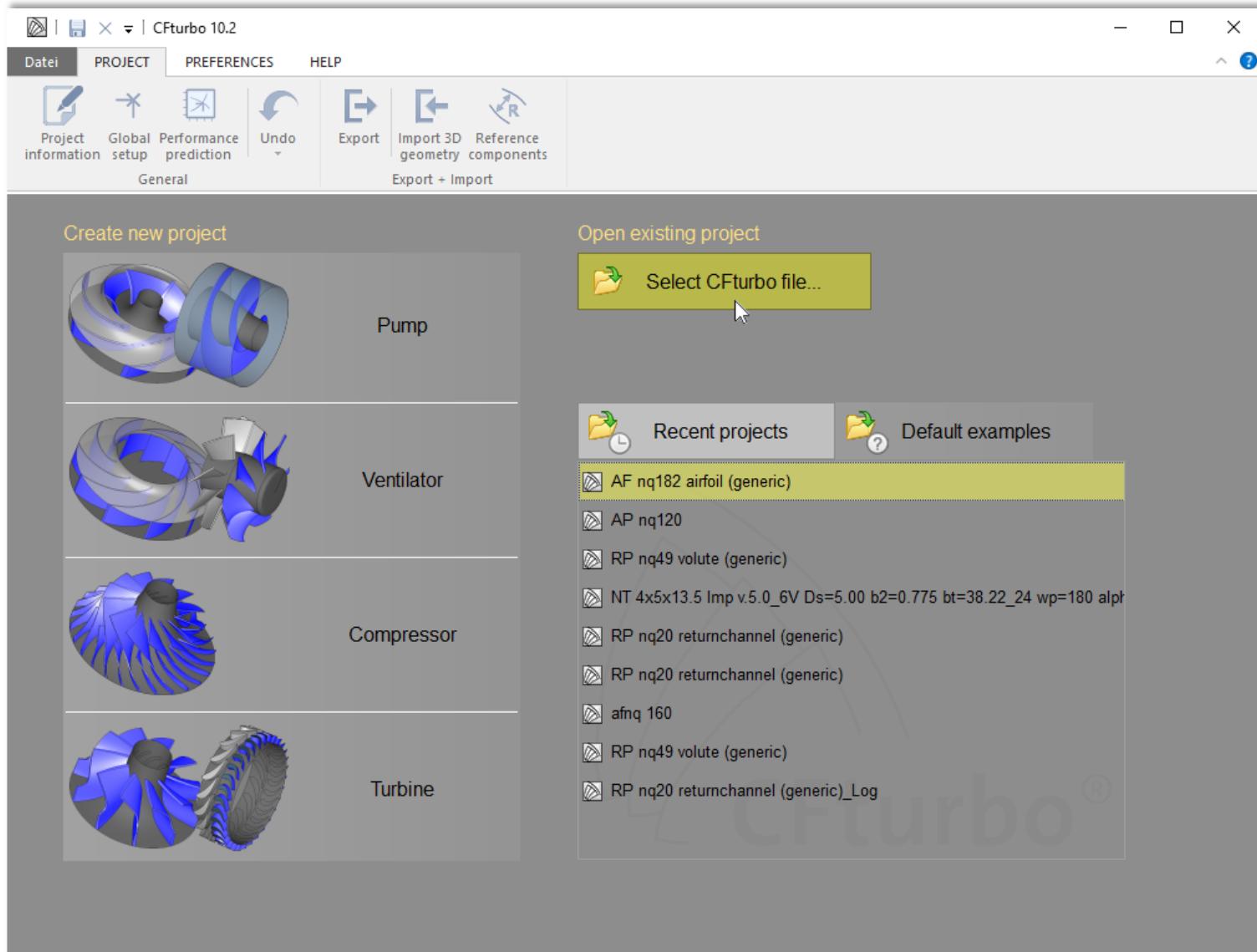
7 steps to design
a volute



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Dresden/Munich, Germany
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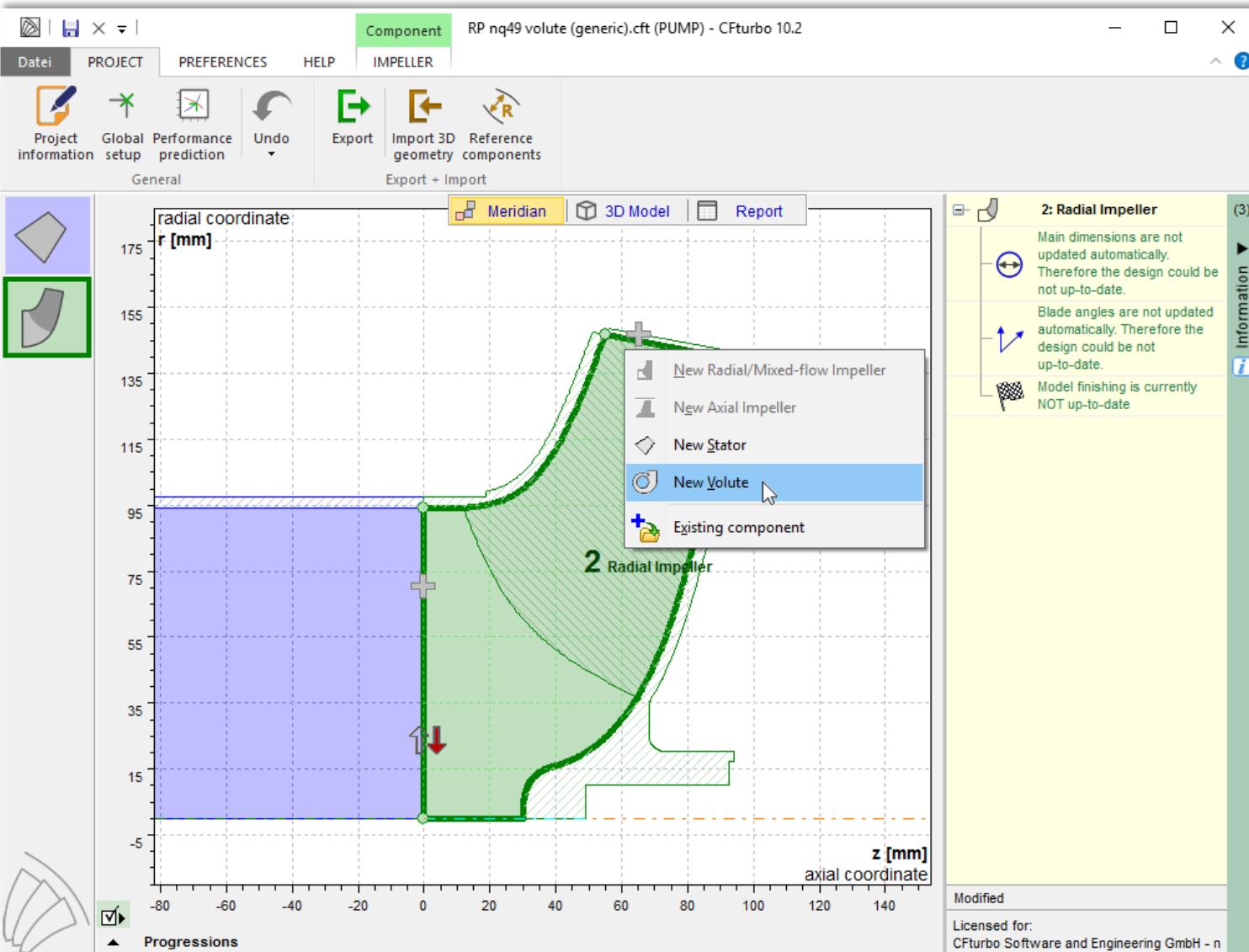
1 Load impeller

Select impeller CFT-file (or define inlet values in Global Setup)



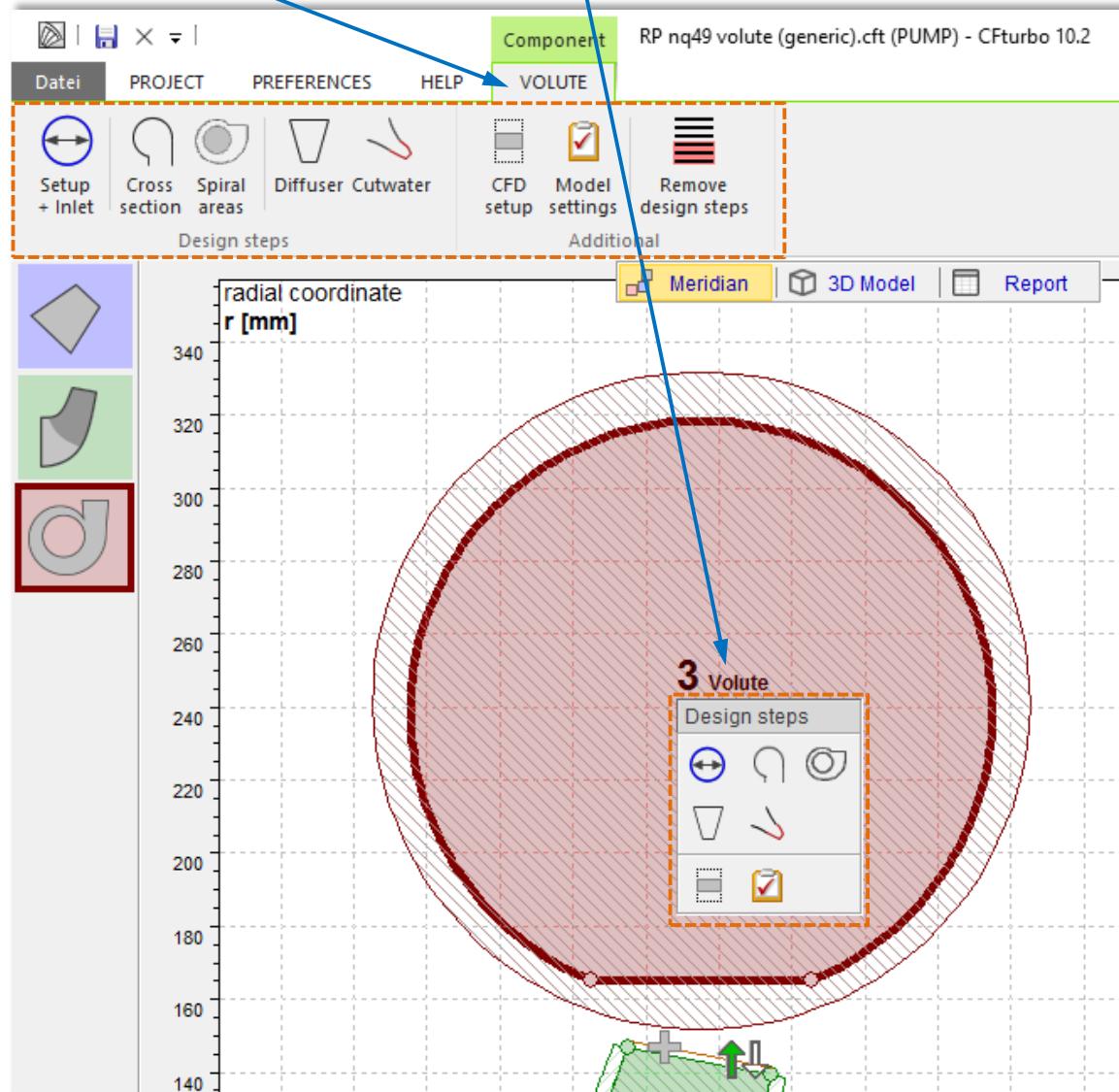
2 Add volute

Select New Volute at impeller outlet



How to access the single design steps?

Use Volute menu or components toolbar inside the Meridian shape



3 Inlet definition

a) Global values definition

Setup & Inlet X

1 Setup **2 Inlet details**



Volute type

Single volute
 Double volute

Design flow rate

Volumetric efficiency η_v %
Flow factor F_Q

Spiral inlet

Inlet diameter d_{in} mm $d_2 = 286$ mm
Inlet width b_{in} mm $b_2 = 40$ mm
 Automatic update from interface

Values **Meridian**

	Qi	454 m³/h
Internal volume flow	Qi	454 m³/h
Ratio to previous component		
Spiral inlet diameter ratio	d-Ratio	1.15
Spiral inlet width ratio	b-Ratio	1.50
Spiral: inlet values		
Meridional velocity	cm	6.6515 ft/s
Circ. velocity	cu	37.978 ft/s
Velocity	c	38.556 ft/s
Flow angle	α	9.934 °
Static pressure	p	3.8446E5 Pa
Total pressure	pt	4.5339E5 Pa

Design steps   OK  Cancel  Help 

3 Inlet definition

b) Flexible inlet definition

Setup & Inlet

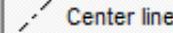
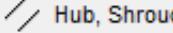
① Setup **② Inlet details**

Coupling to Upstream Outlet  In flow direction (Fixed by Upstream Outlet)

Inlet interface

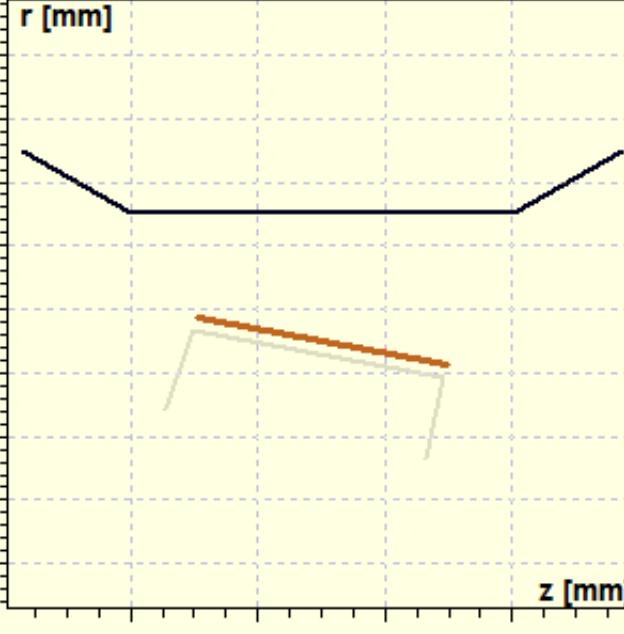
Hub	z 94.699	mm	r 141.3	mm
Shroud	z 55.66	mm	r 148.53	mm

Inlet

 Center line	 Hub, Shroud				
Offset	Δz 4.5357E-6	mm	Δr 20.087	mm	
Absolute	z 75.18	mm	r 165	mm	
	d_4/d_2 115.39	%	d 330.01	mm	
Width	b_4/b_2 150	%	b 60	mm	
Angle					γ 180

Values Meridian

Schematic sketch for illustration only Automatic fit view

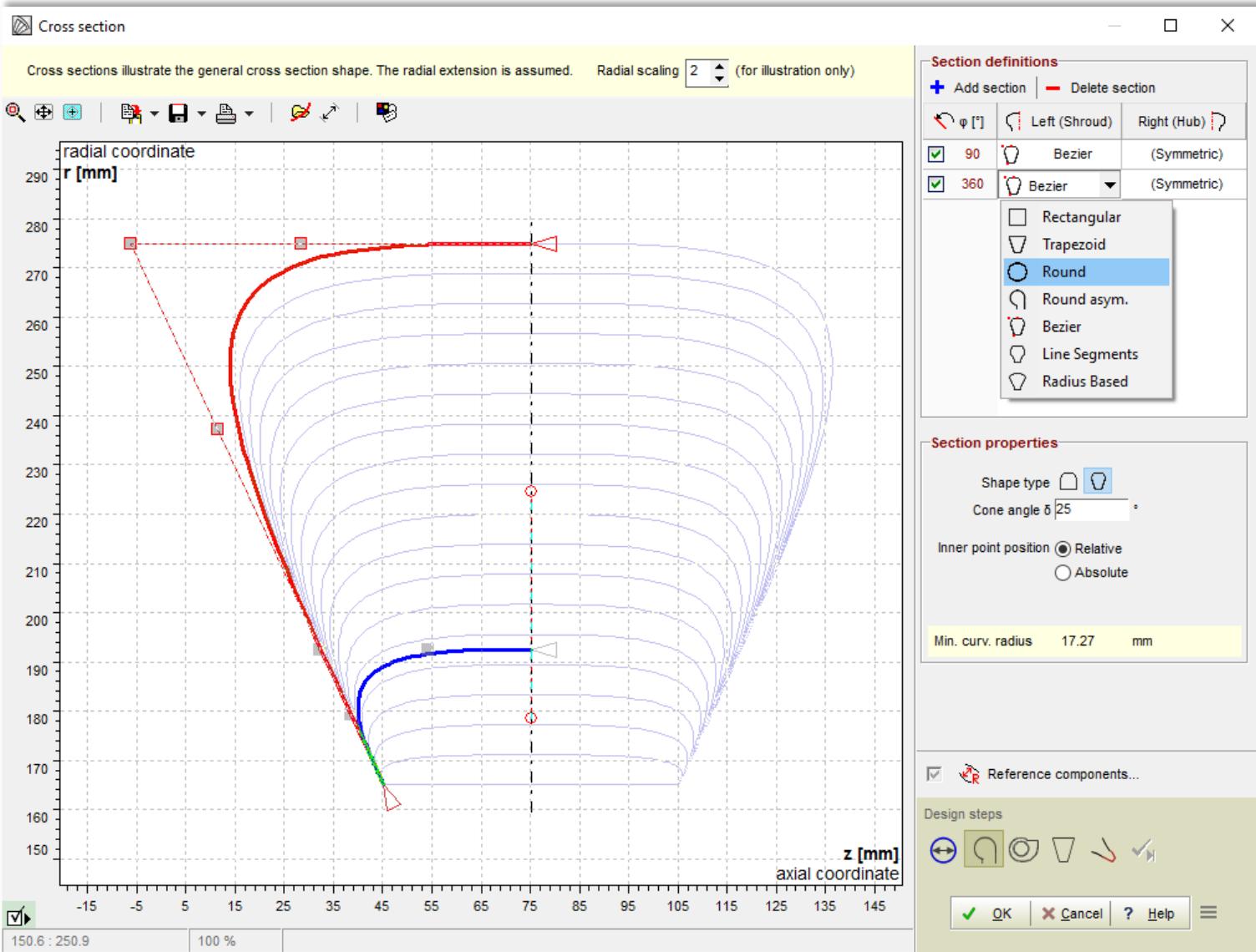


Design steps      

OK Cancel Help

4 Cross sections

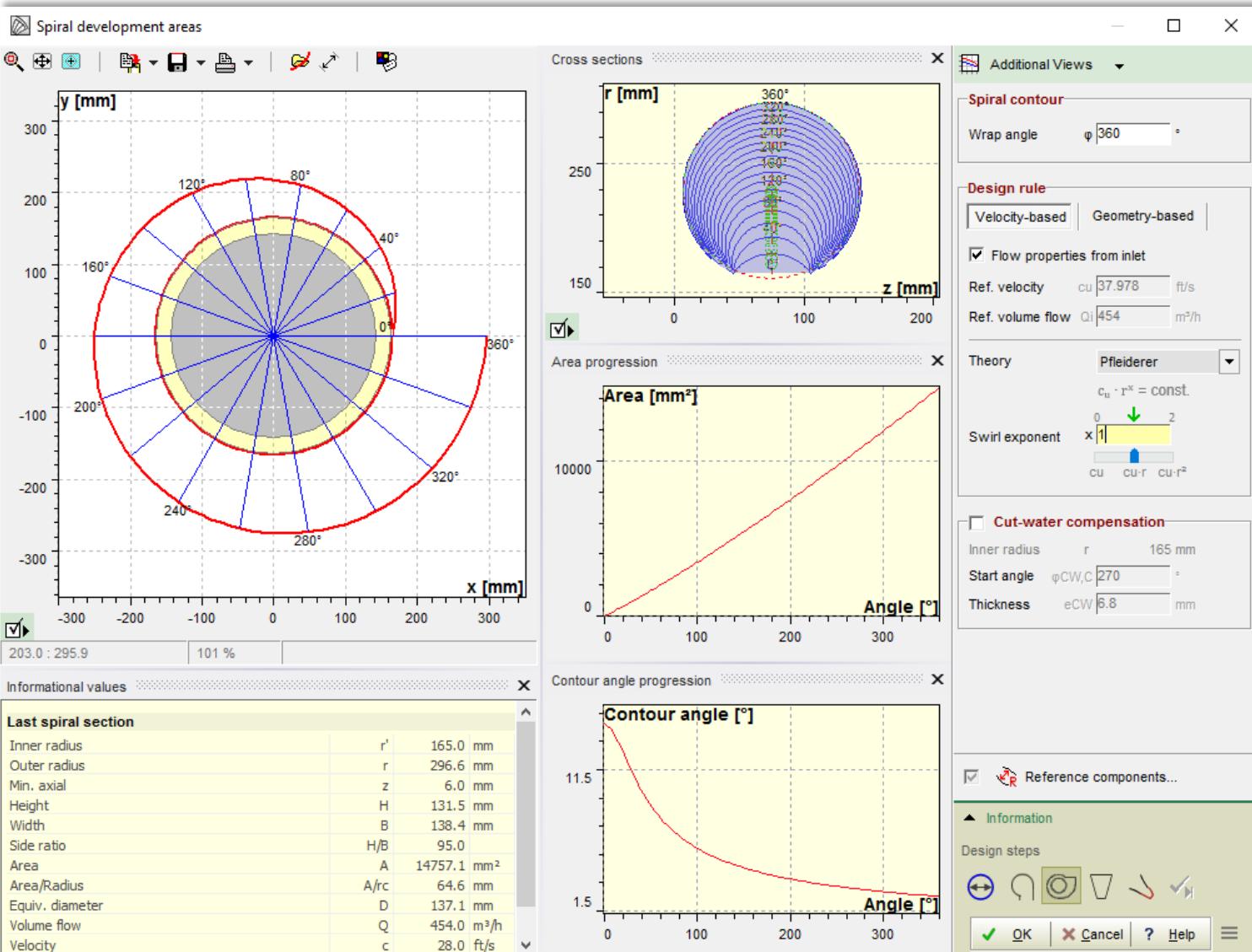
Various section types at any circumferential position



5 Spiral development areas



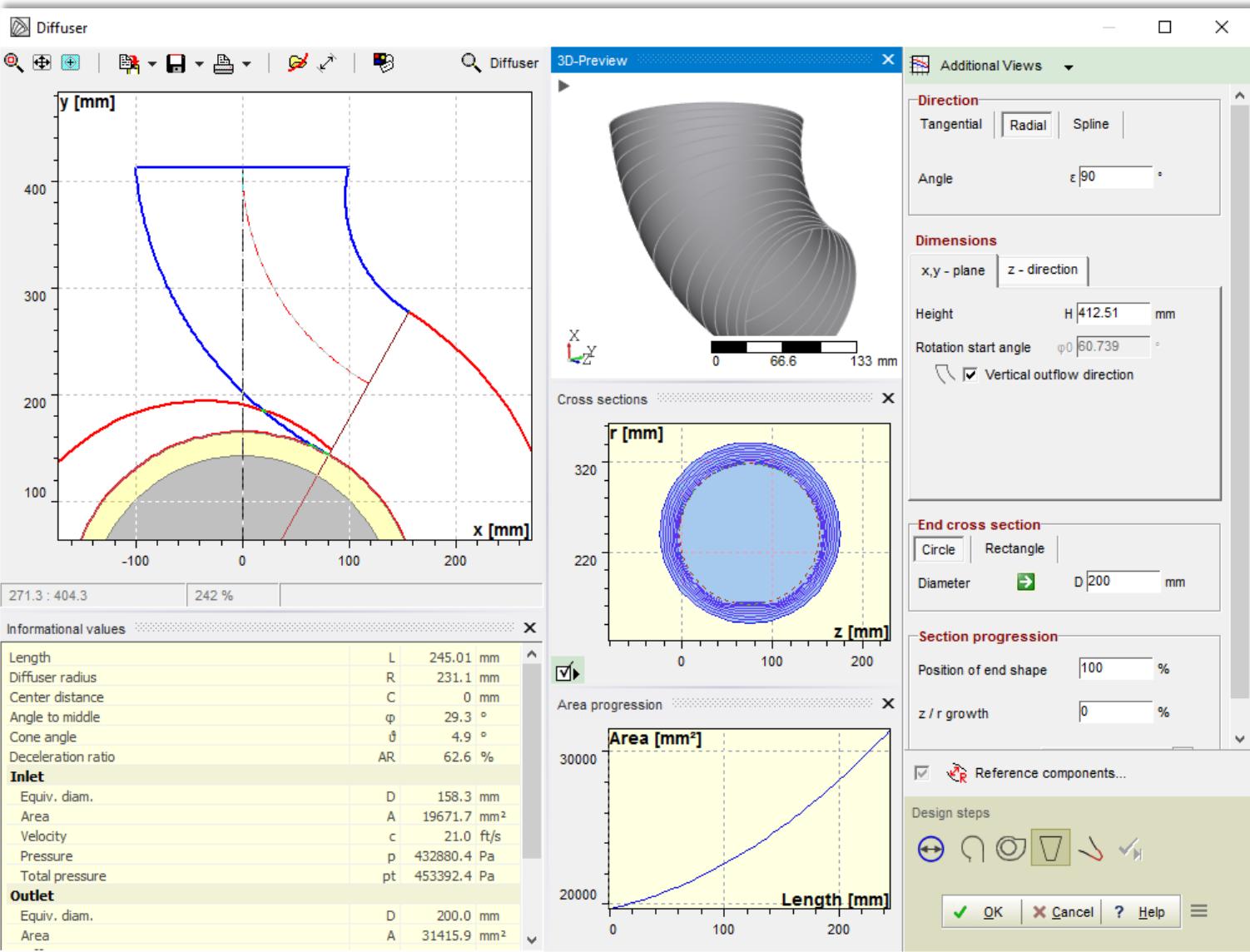
Calculation of all cross sections in circumferential direction



6 Diffuser



Several diffuser shapes and options



7 Cutwater



Simple or Fillet cutwater

Cut-water

Informational values

Inlet	
Equiv. diam.	D 158.3 mm
Area	A 19671.7 mm ²
Cutwater	
Equiv. diam.	D 167.5 mm
Area	A 22029.2 mm ²
Inner cutwater angle	aInn 9.7 °
Outer cutwater angle	aOut 37.4 °
Average cutwater angle	aAvg 22.6 °
Inner cutwater diameter	dInn 396.2 mm
Outer cutwater diameter	dOut 414.0 mm
Average cutwater diameter	dAvg 402.1 mm
Minimal cutwater diameter	dMin 396.0 mm

Outlet	
Equiv. diam.	D 180.0 mm
Area	A 25446.9 mm ²

Design mode

- Simple
- Fillet
- Sharp

Fillet radius R 5 mm

Diffuser base form factor 0.5

Spiral start position 26.2

Automatic

Surface transition Automatic

3D-Preview

Reference components...

Design steps

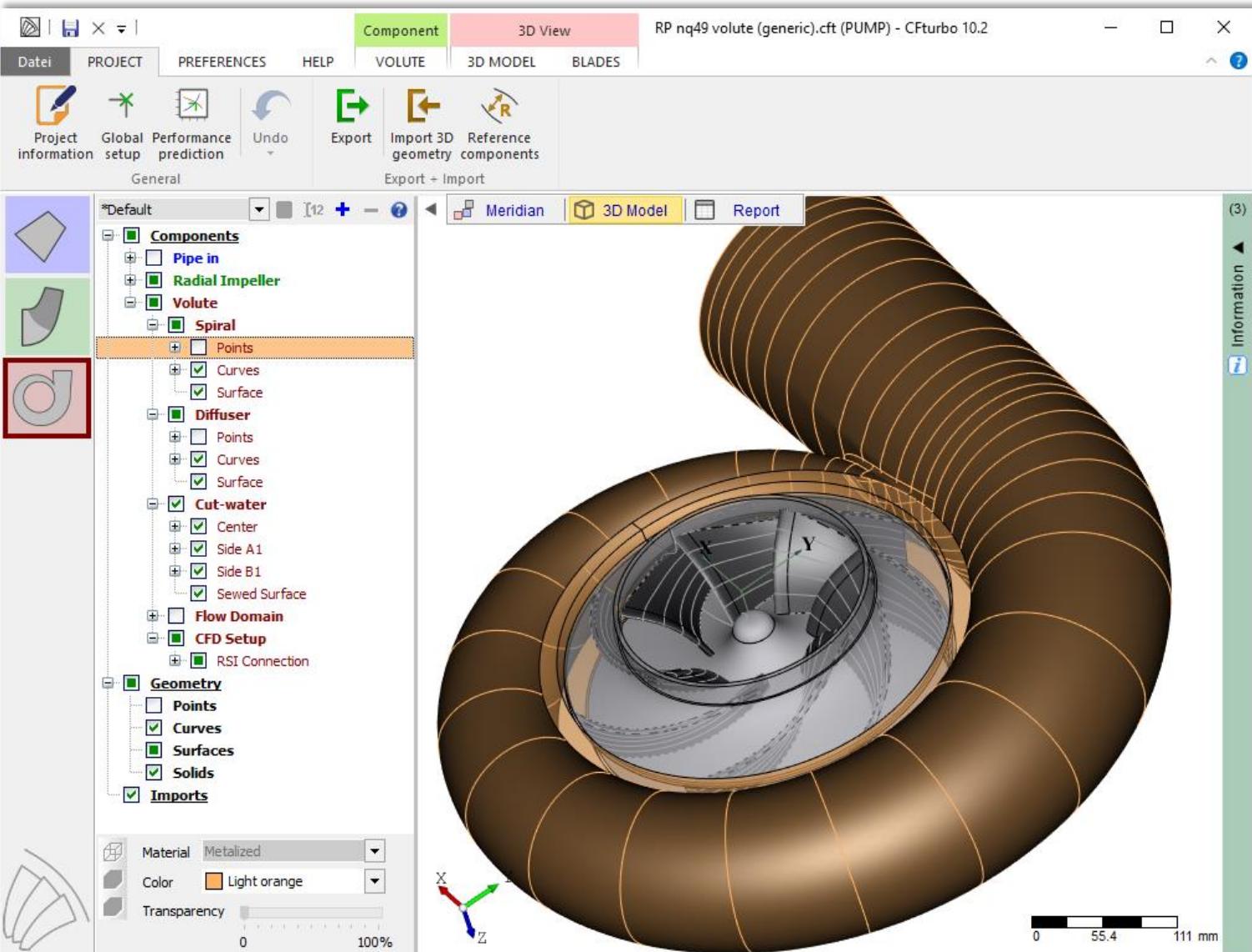
OK Cancel Help

10
12

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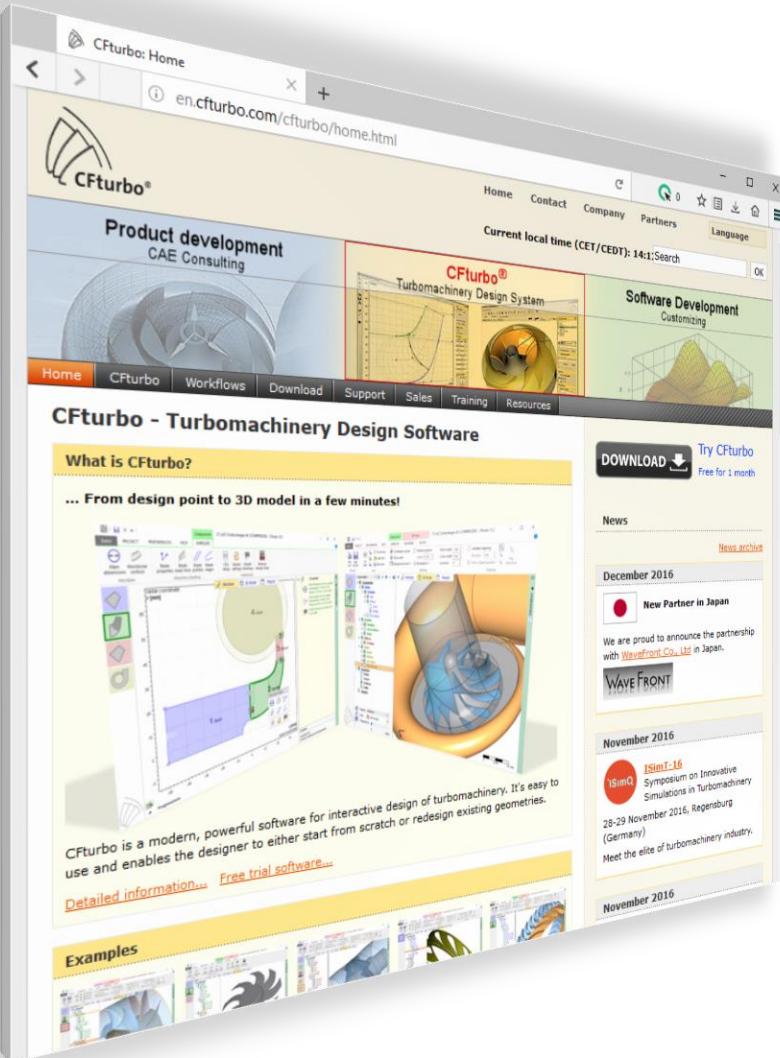
3D CAD model

Surface and solid modeling



More information

www.cfturbo.com



Download trial version!

