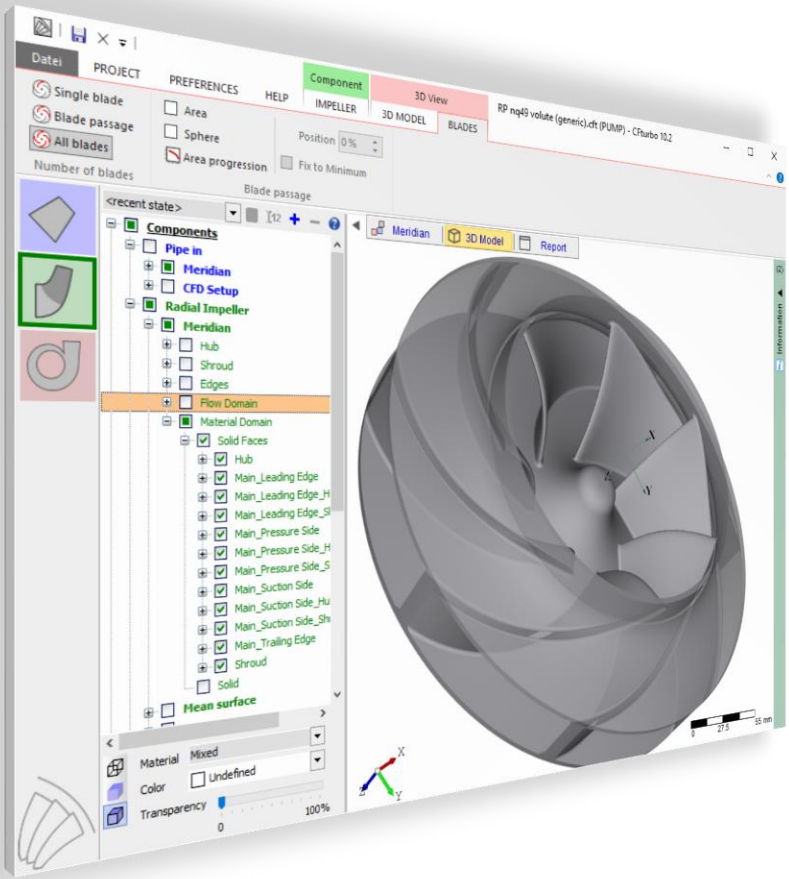

Radial Impeller design by **CFturbo®**

9 steps to design a radial impeller

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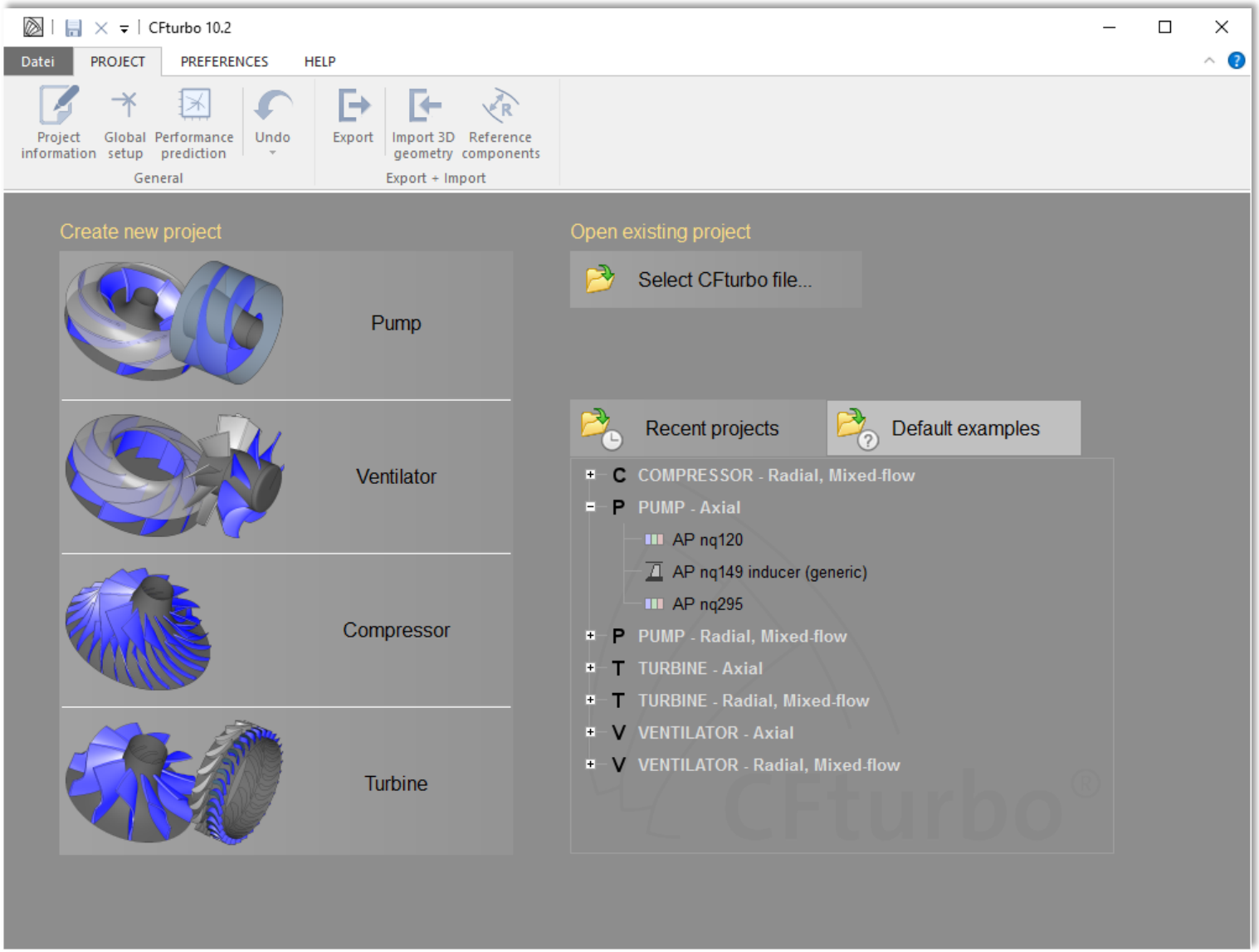
Dresden/Munich, Germany
www.cfturbo.com

1 Create new project

Select desired machine type



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2 Global Setup

Specify Design point values and fluid

Global setup (Pump)

Design point

Flow rate — Q 454 m³/h

Head — H 30 m

Revolutions — n 1770 /min

Fluid

Name: Water (20°C) — ρ

Inlet conditions

Total pressure — pt 1 bar

Optional

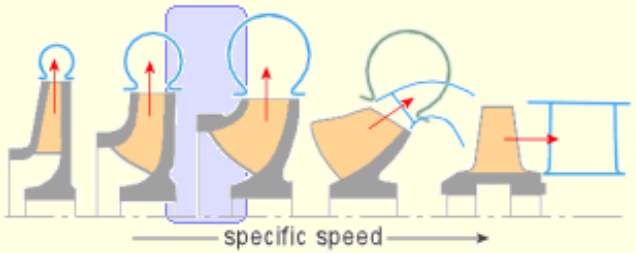
Direction of rotation (seen in neg. z-direction): (•) Right (clockwise) ( ) Left (counter-clockwise)

Additional Hydraulic efficiency — ηh+ 90 %

Pre-Swirl: by Flow angle | by Swirl number

$\delta_r = 1 - c_{us}/u_s$ — Hub 1, Shroud 1

General machine type: Radial (low pressure)



Specific speed (EU)	nq	49	
Specific work	Y	294.3	m²/s²
Power output	PQ	37.05	kW
Mass flow	m	125.88	kg/s
Total-to-total pressure difference	Δpt	2.9377	bar

OK | Cancel | Help

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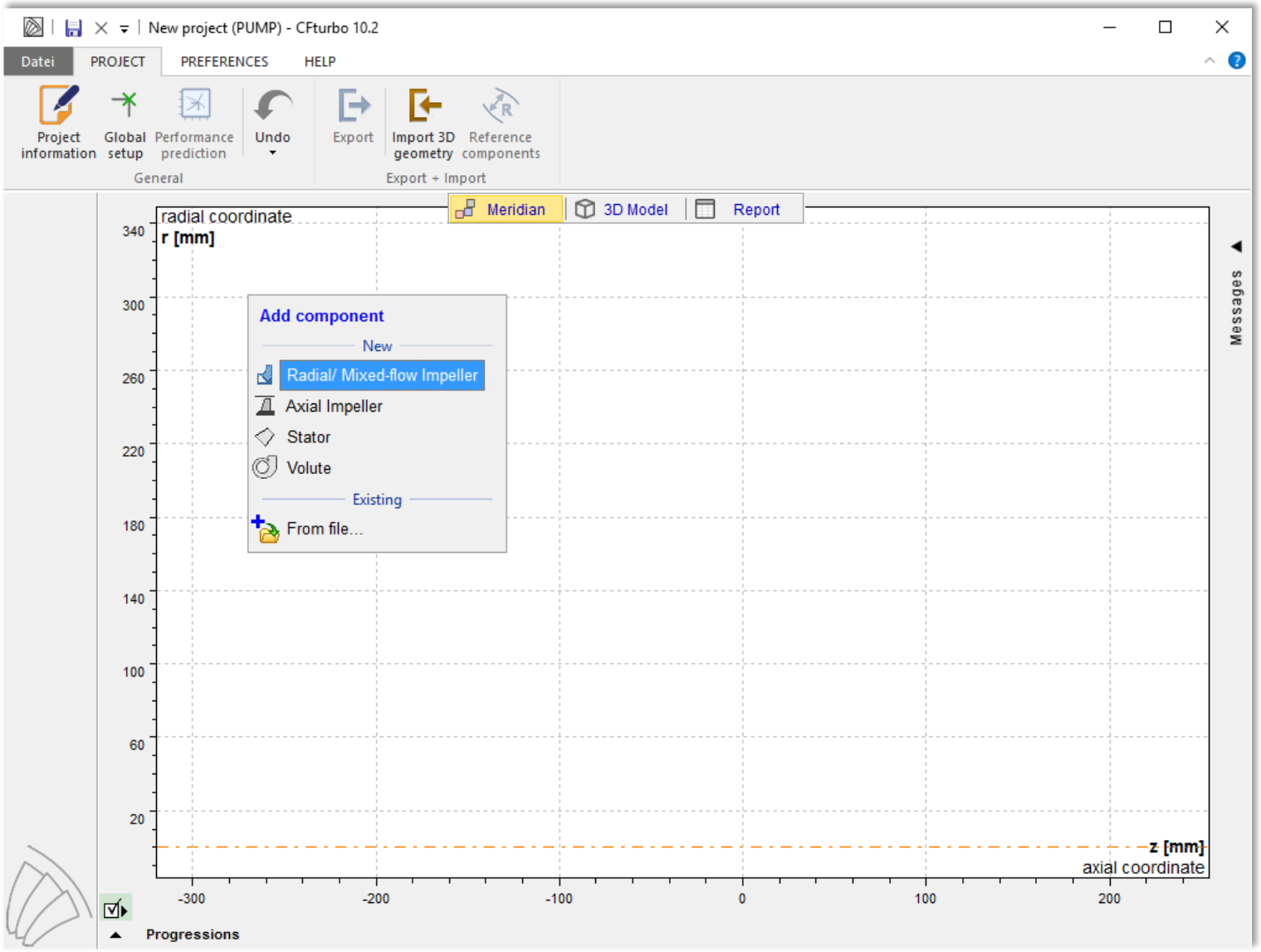
❸ Add impeller component

Select New Impeller in the diagram



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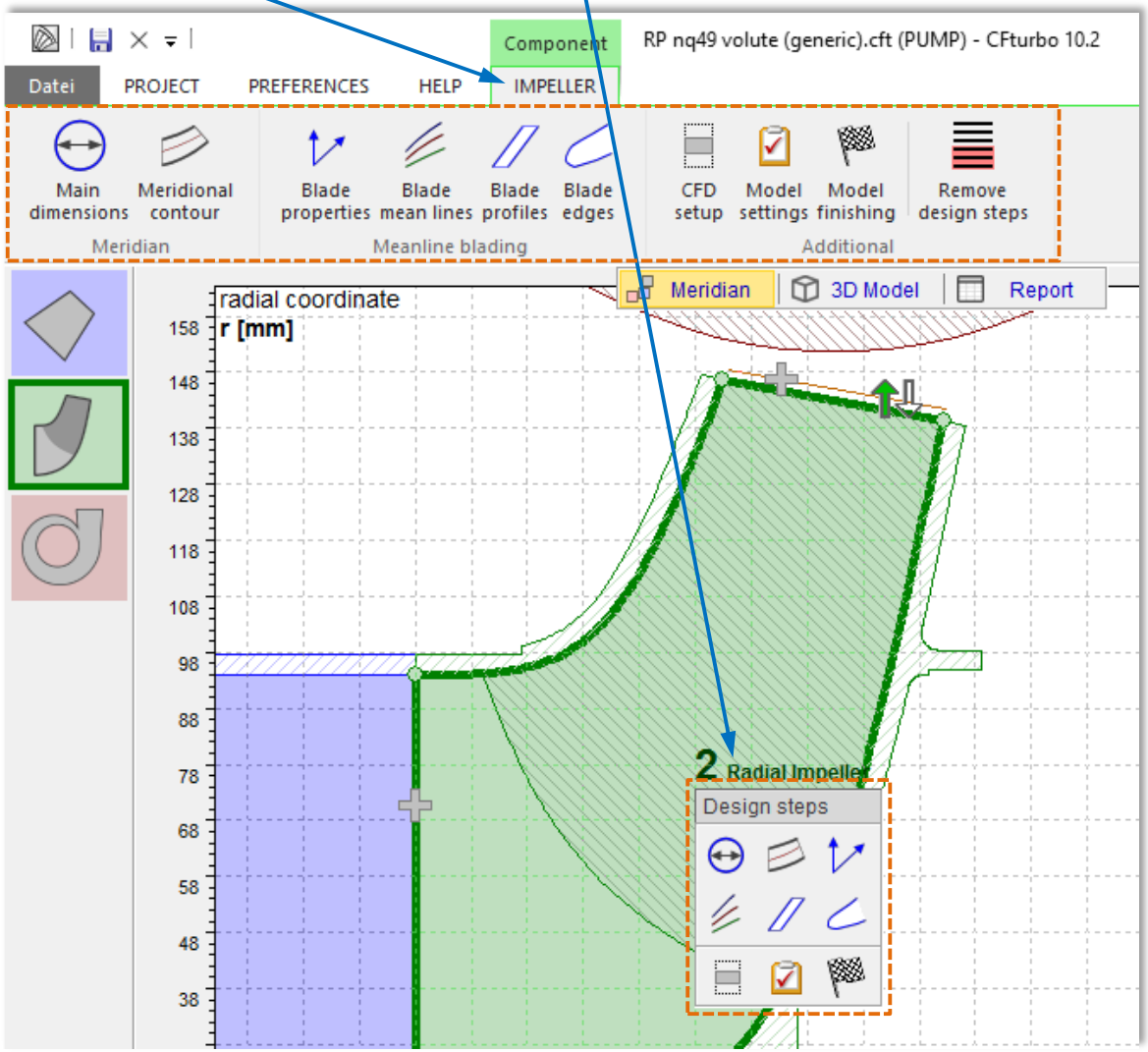
How to access the single design steps?

Use Impeller menu or components toolbar inside the Meridian shape



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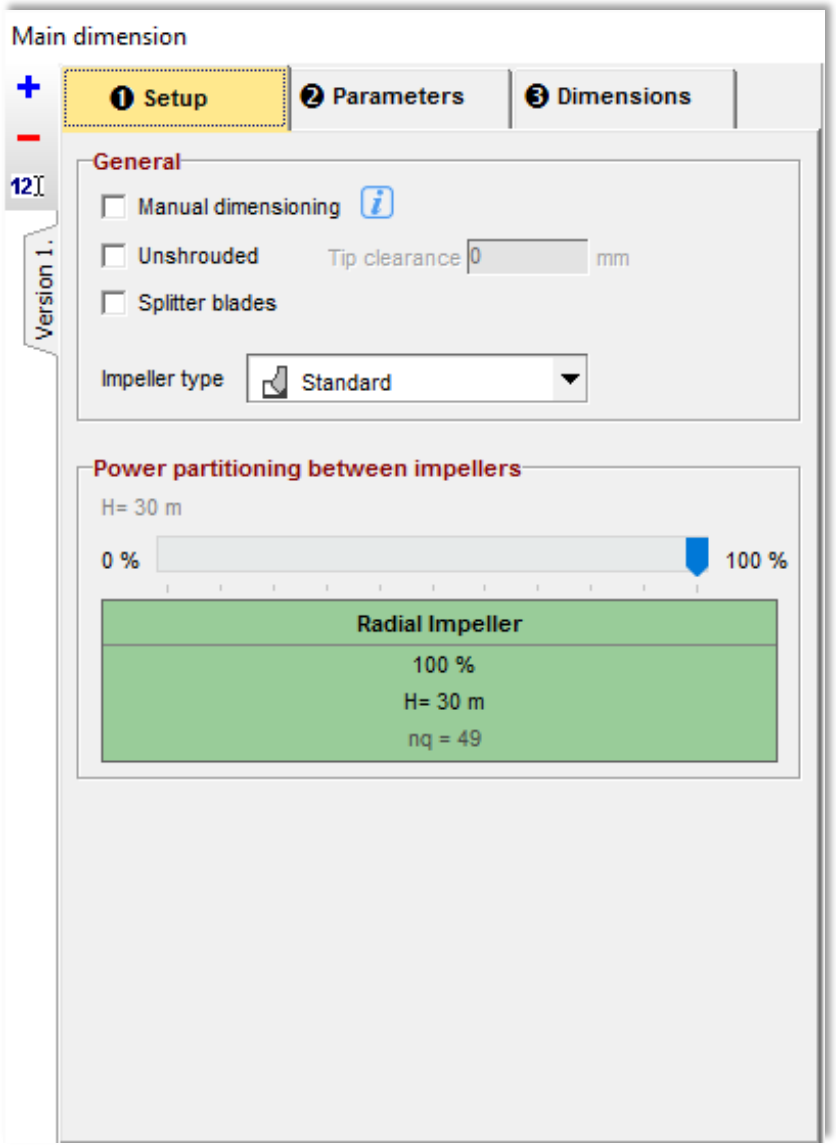
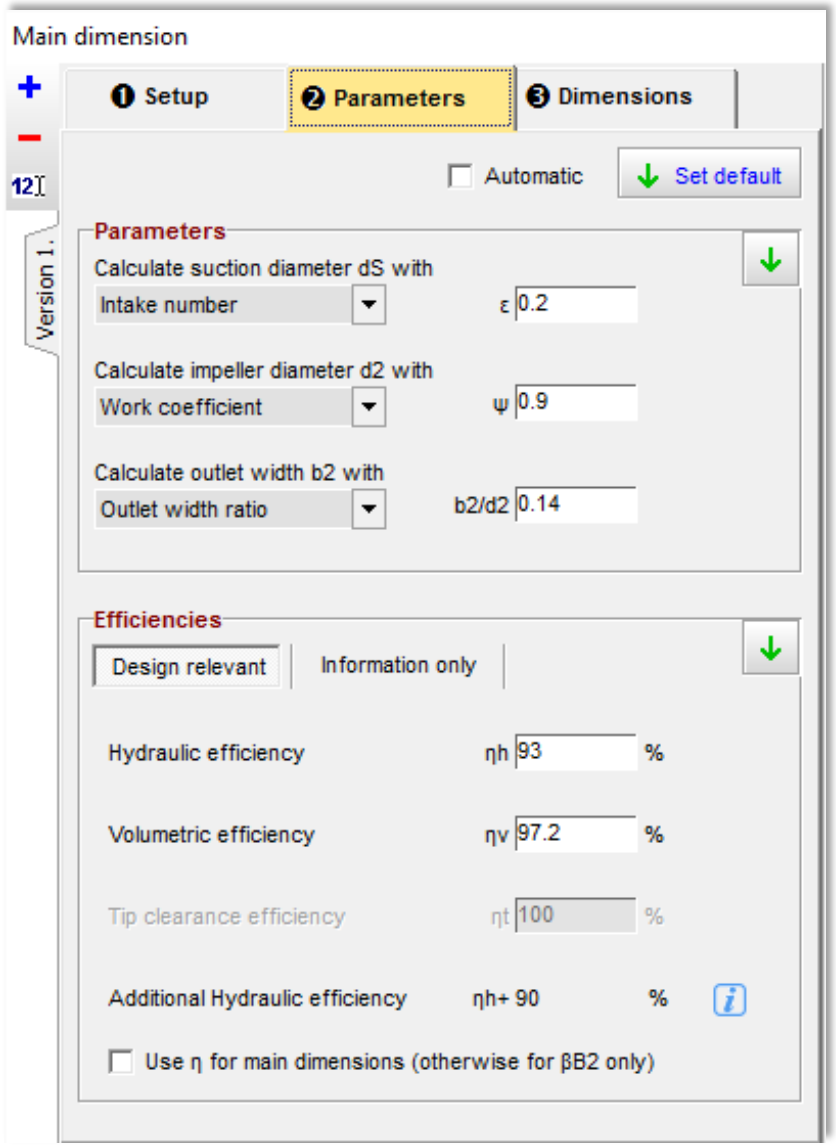
4 Main dimensions

a) General setup



b) Empirical parameters



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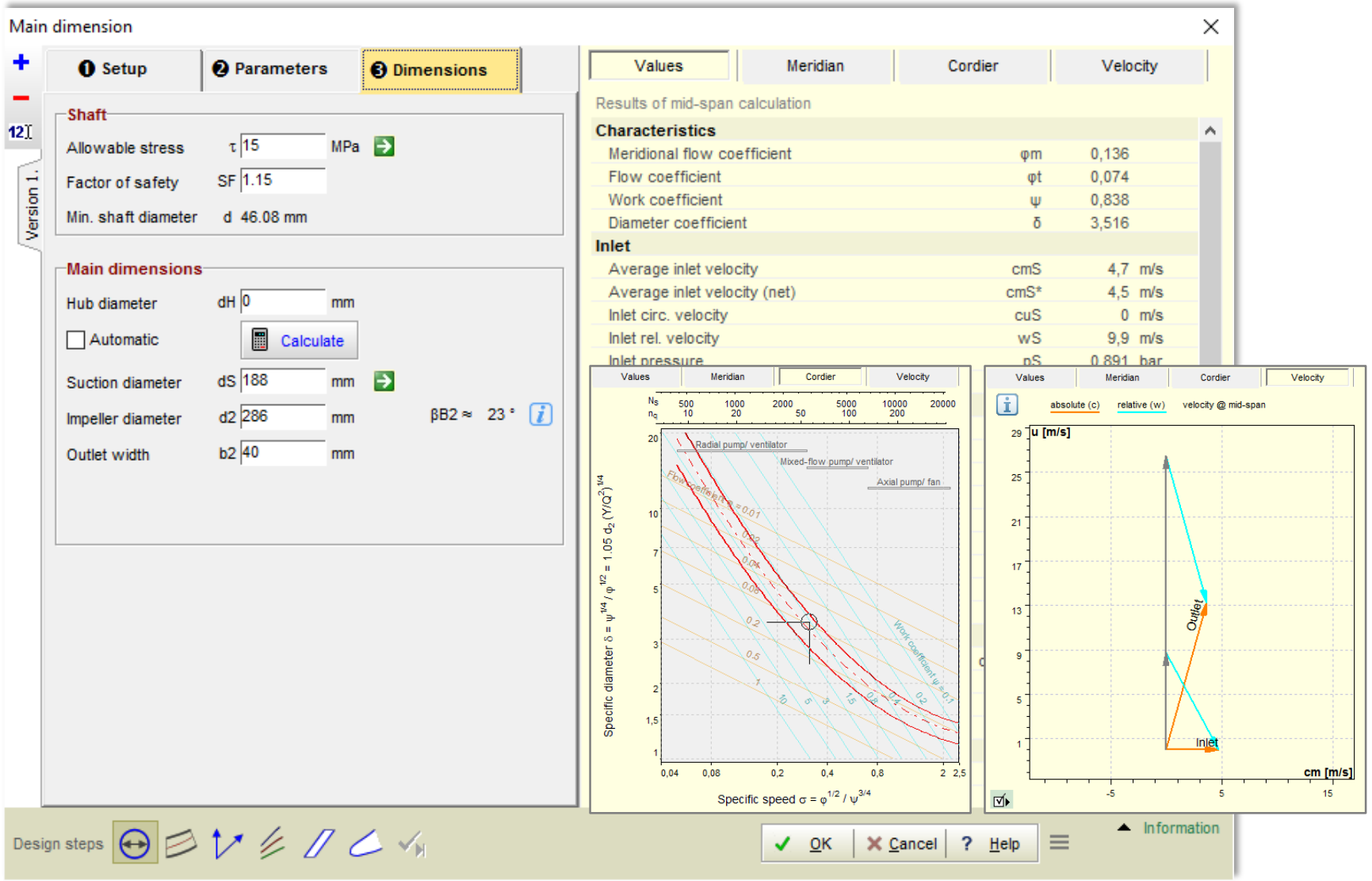
4 Main dimensions

c) Calculate/ adapt main dimensions



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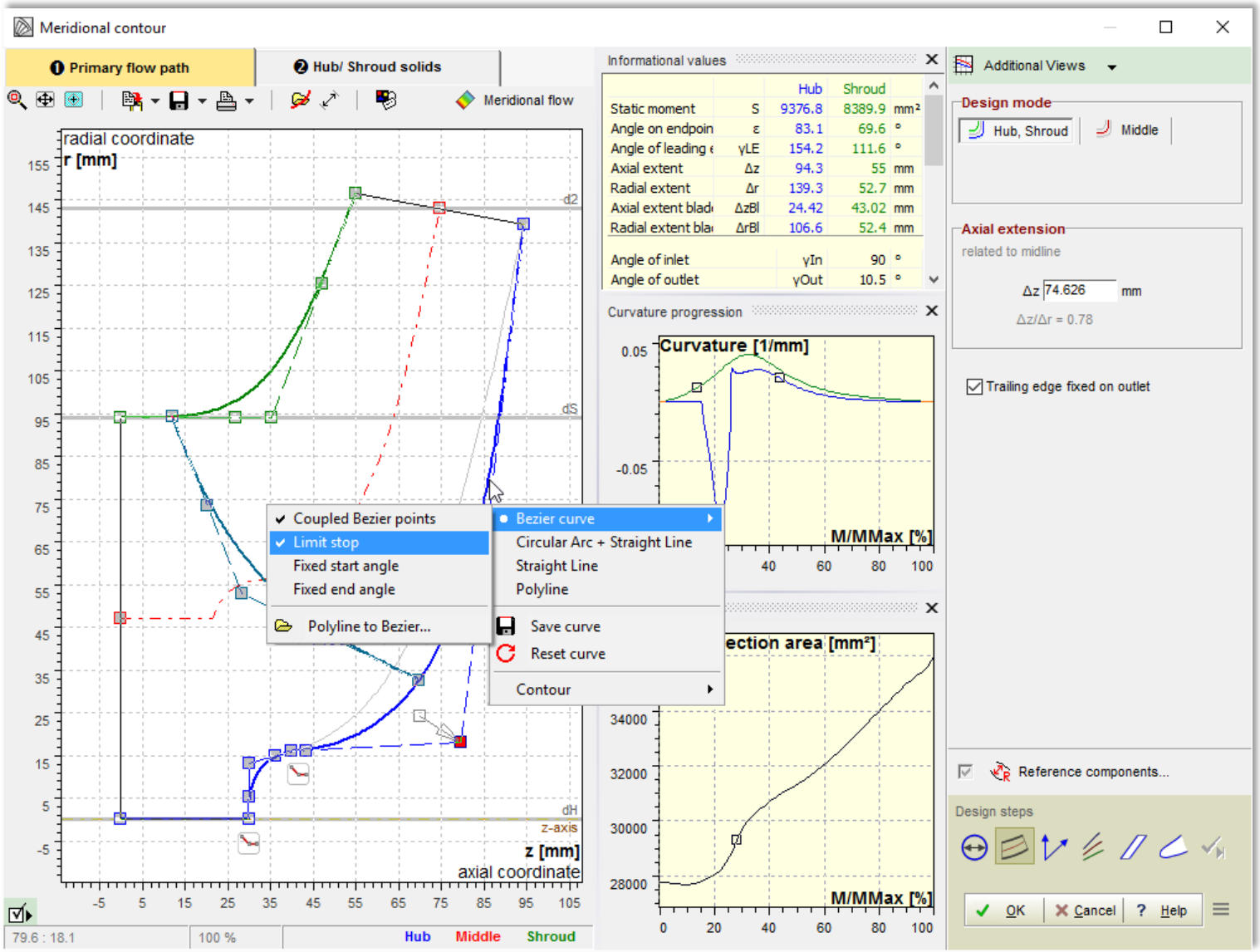
5 Meridional contour

Design hub, shroud, leading & trailing edge



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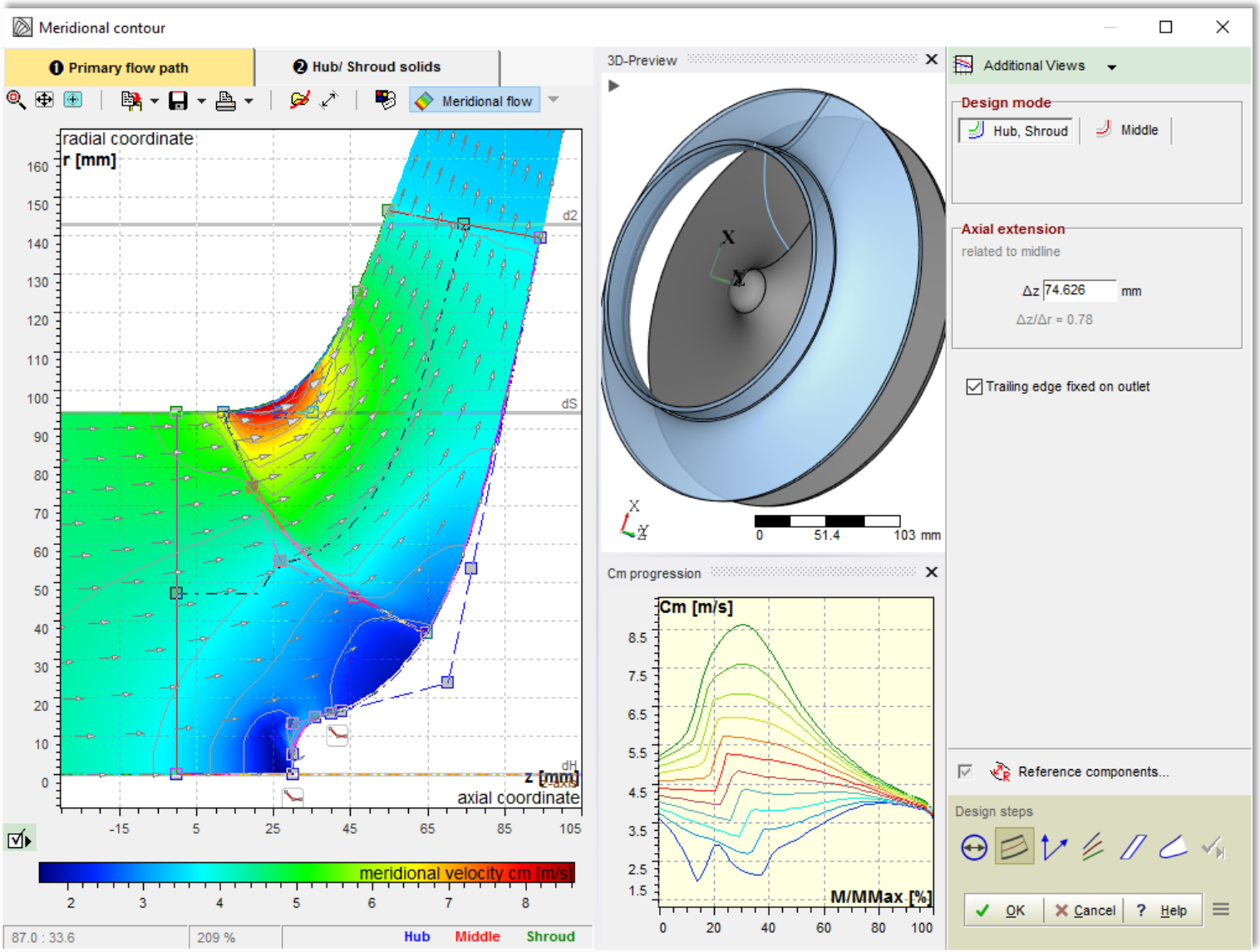
5 Meridional contour

Meridional flow calculation (2D, frictionless)



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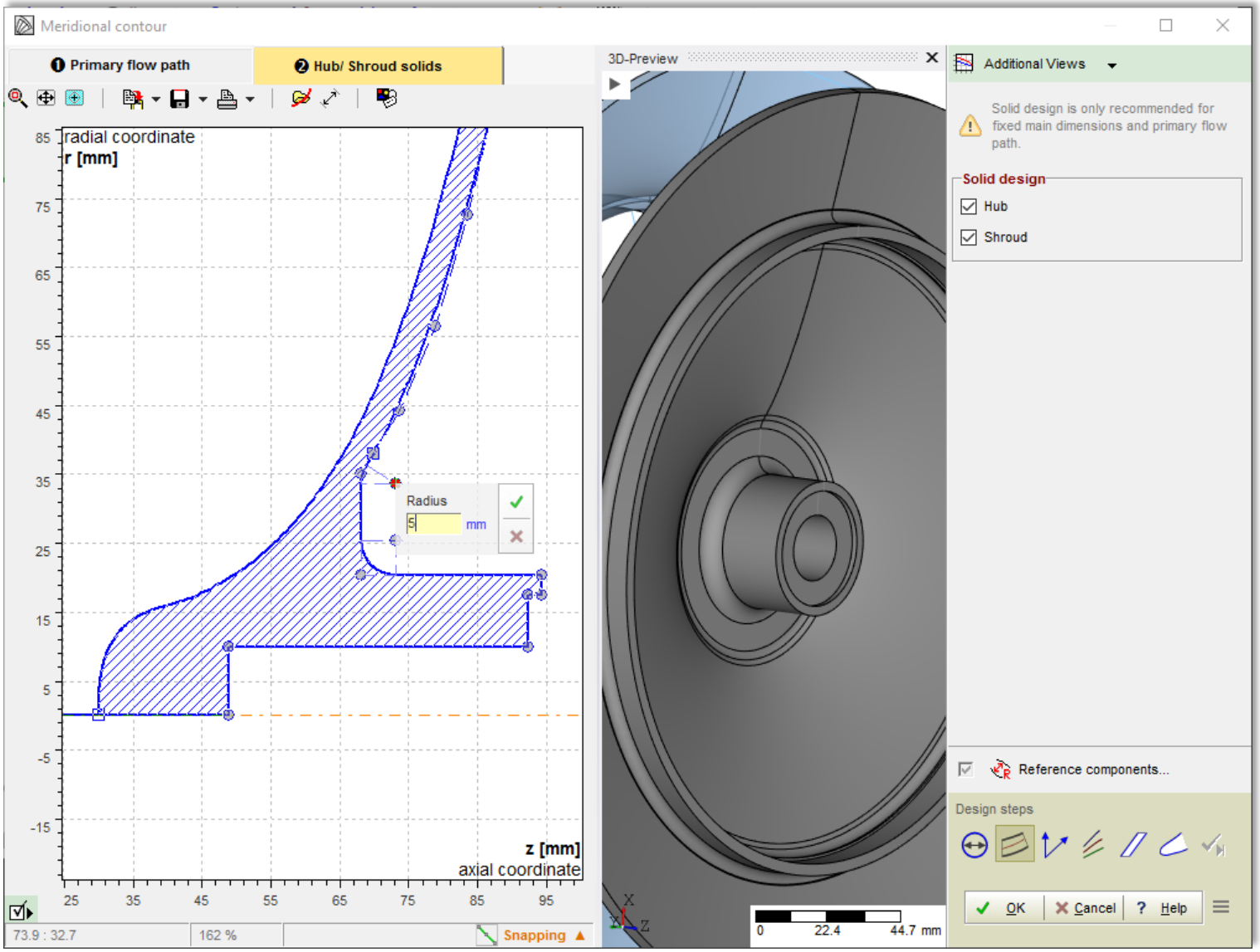
5 Meridional contour

Design hub & shroud solids optionally



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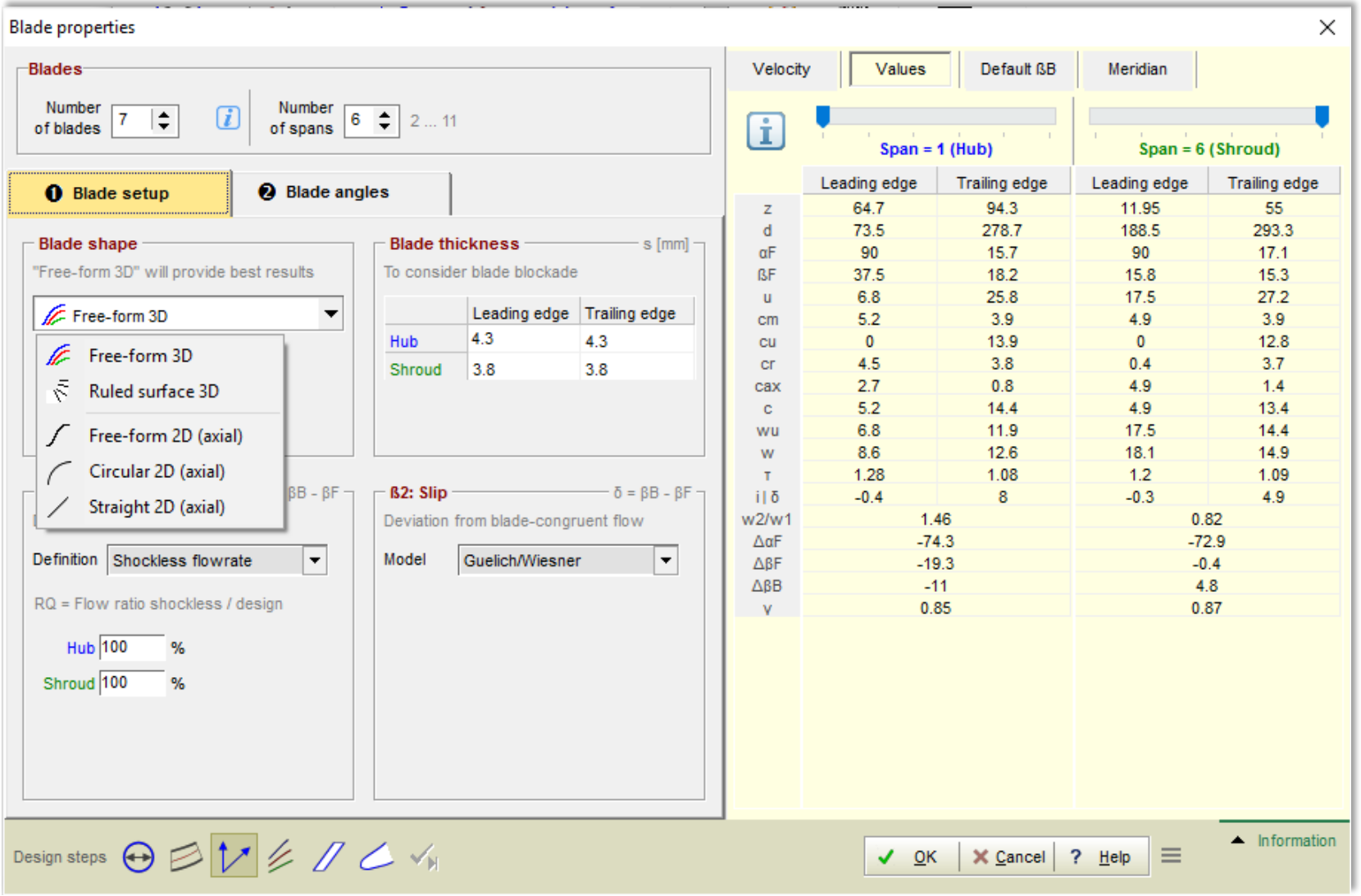
6 Blade properties

a) Blade setup



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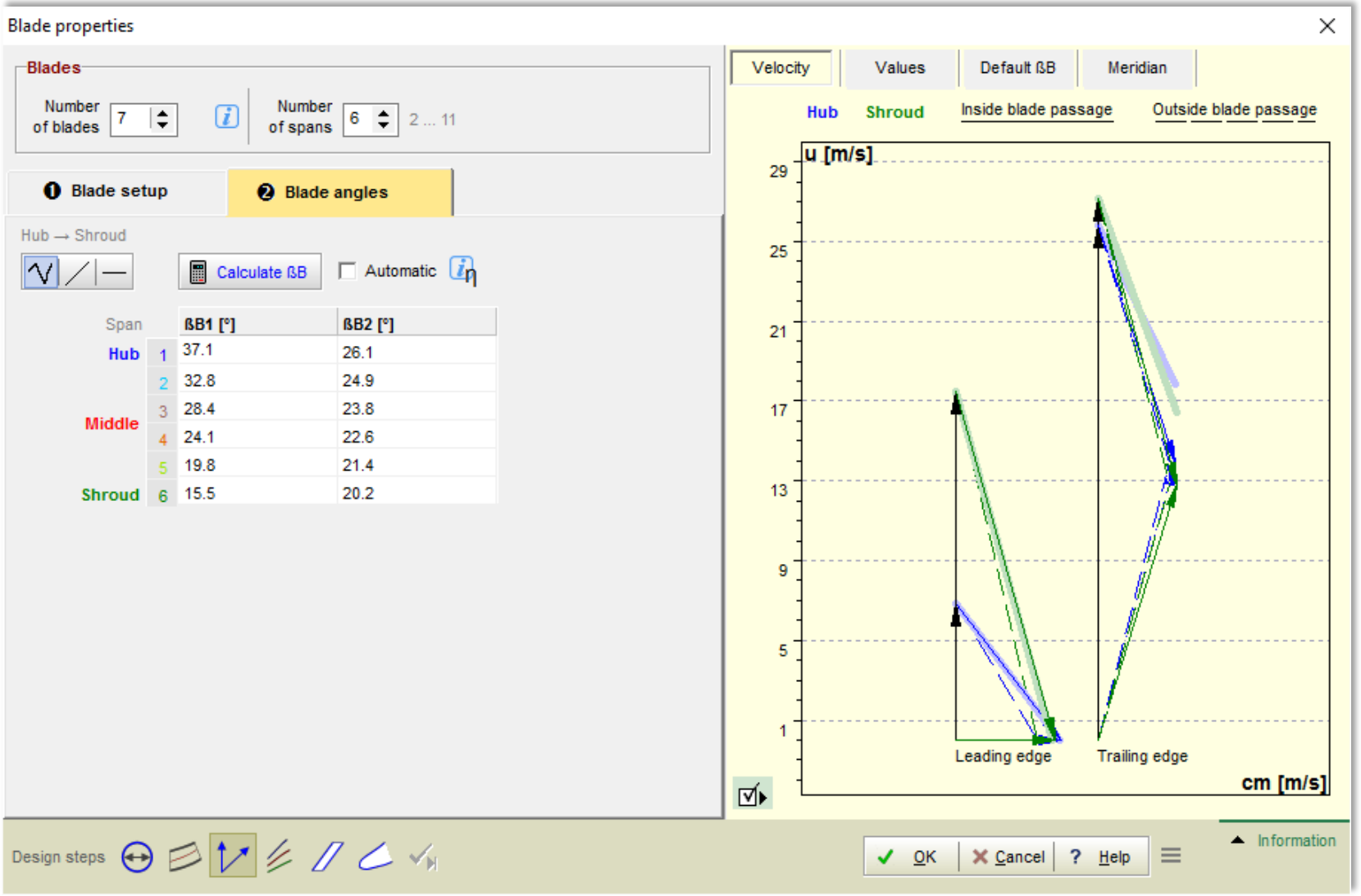
6 Blade properties

b) Blade angles, velocity triangles



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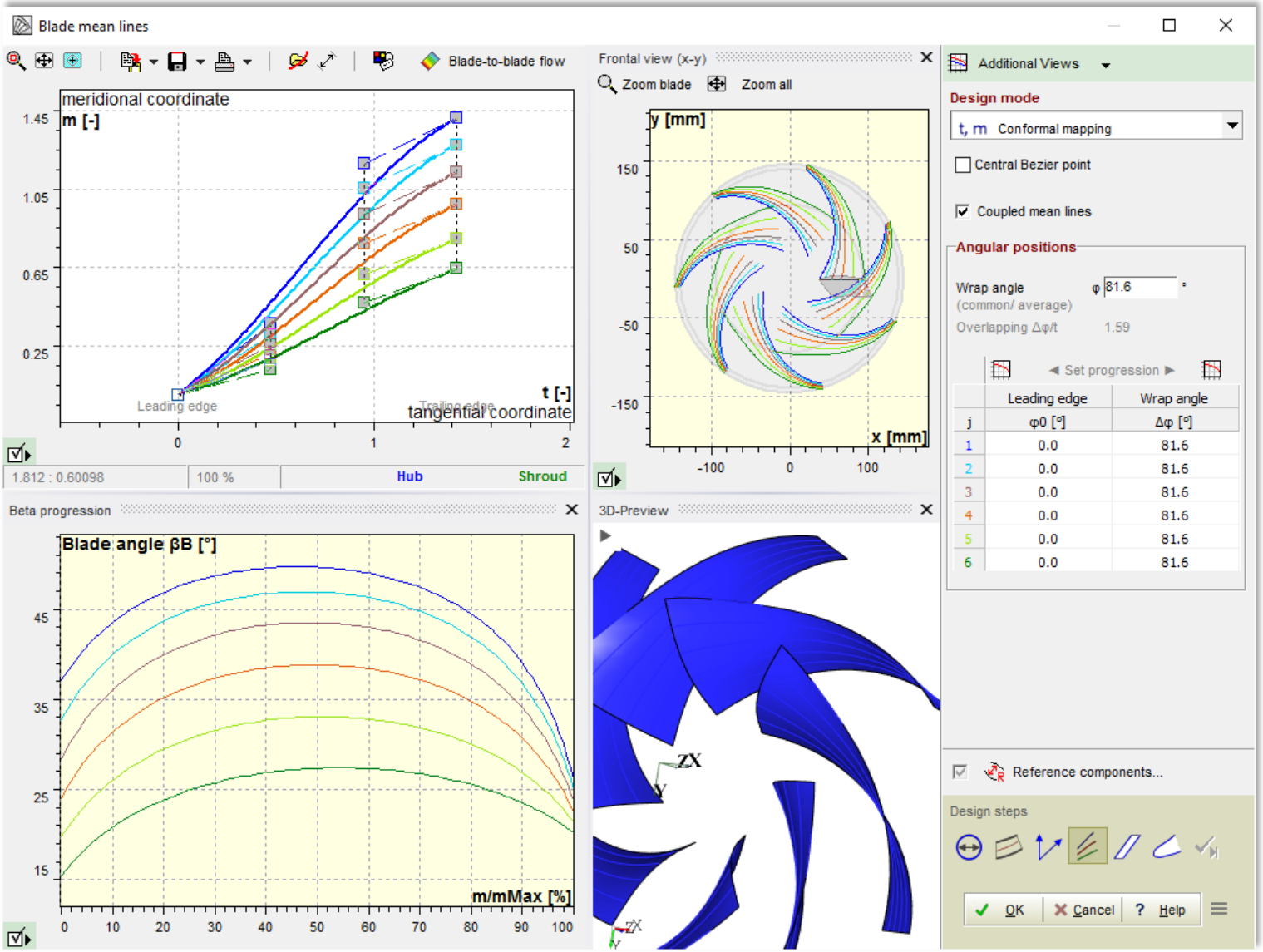
7 Blade mean lines

Mean line design on each span position



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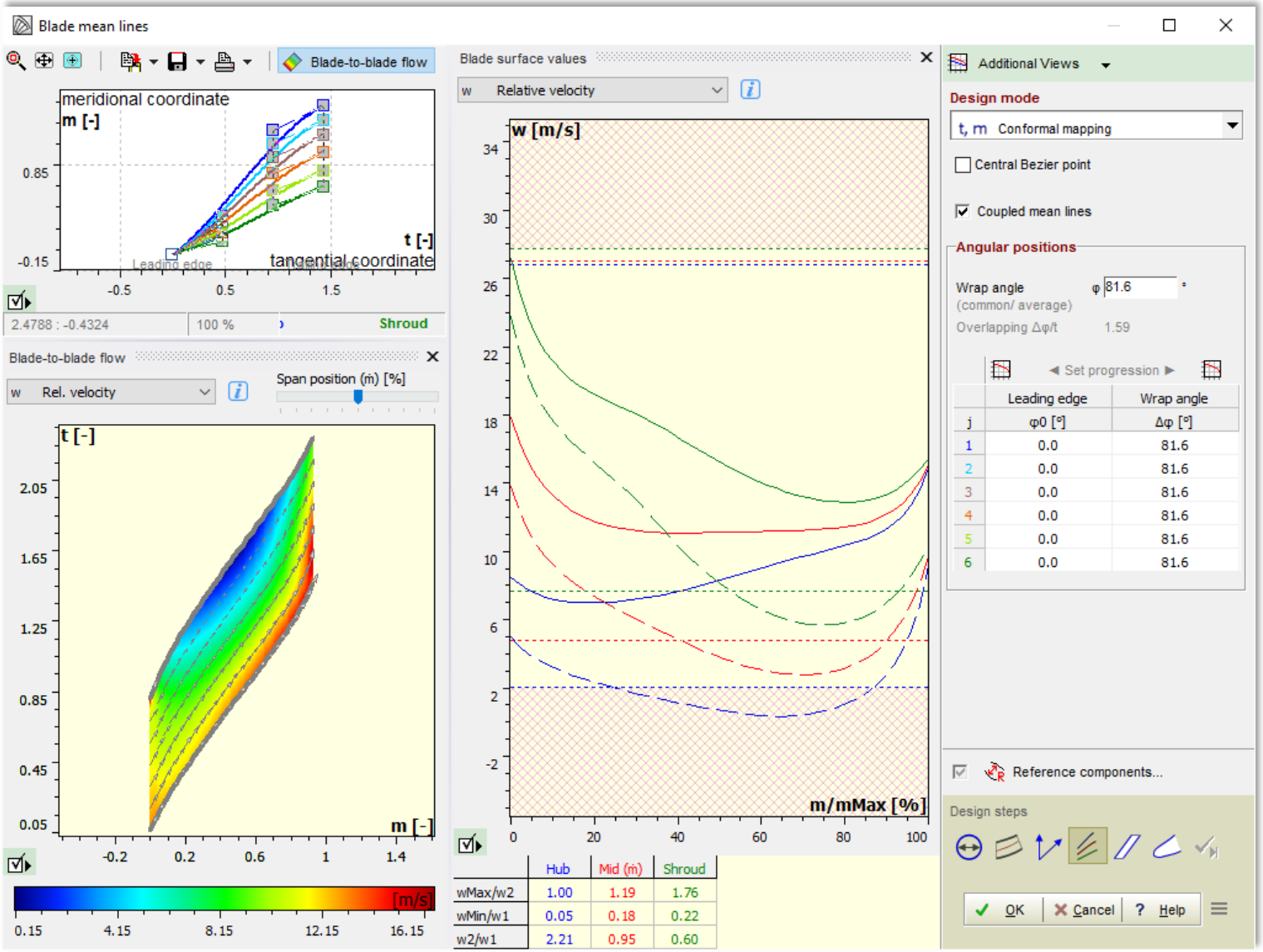
7 Blade mean lines

Blade-to-blade flow calculation (2D, frictionless)



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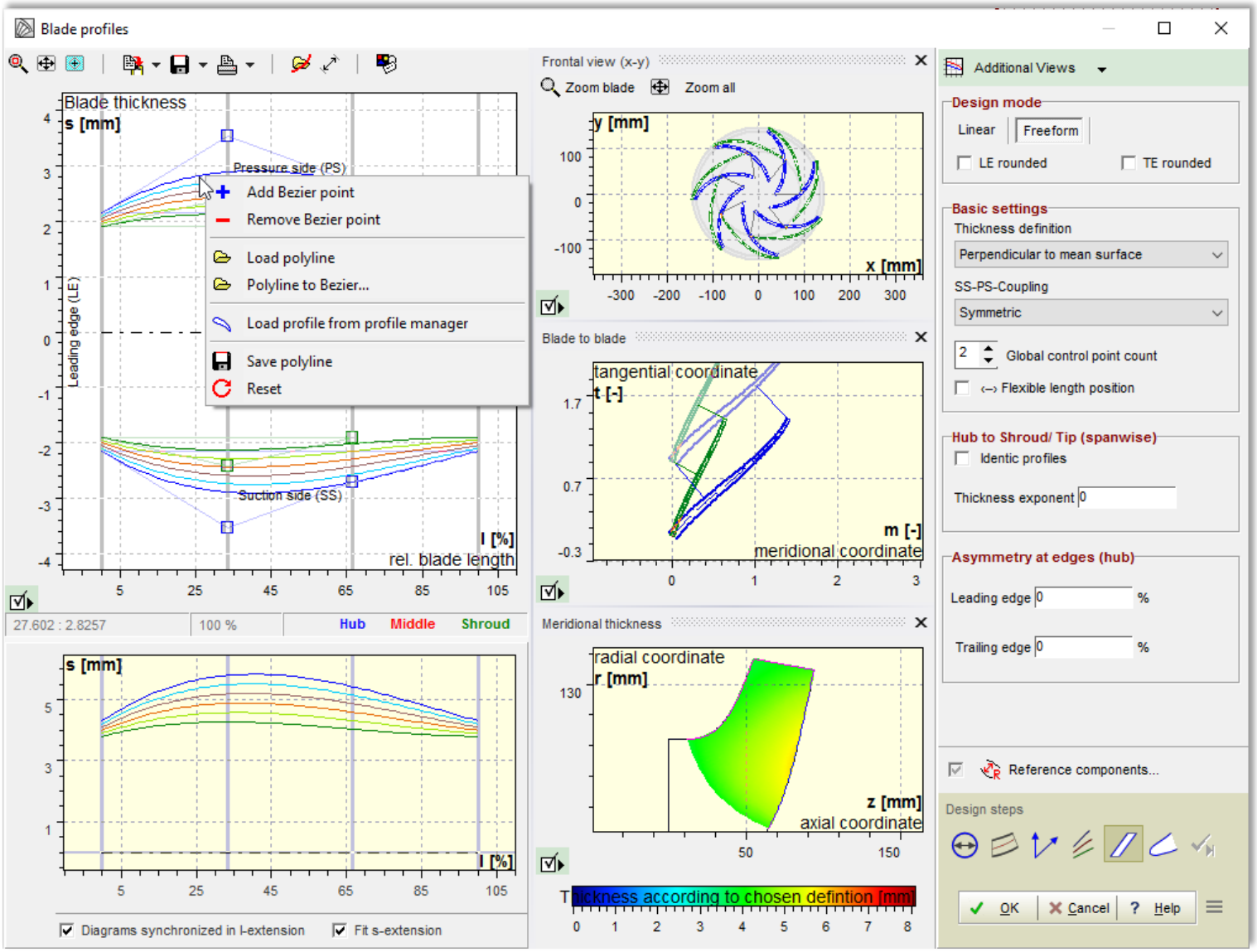
8 Blade profiles

Thickness distribution



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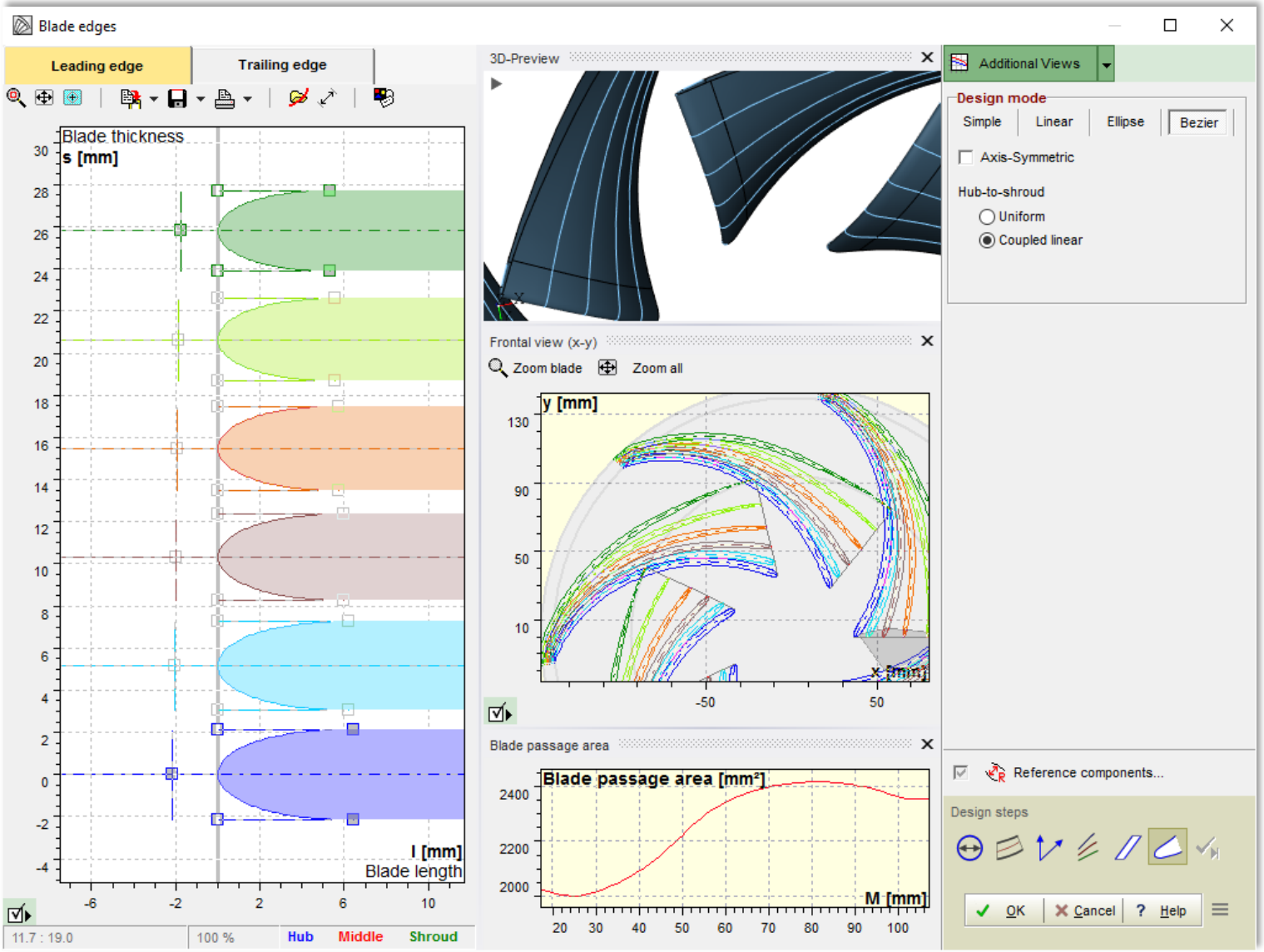
9 Blade edges

Round/ trim leading & trailing edge



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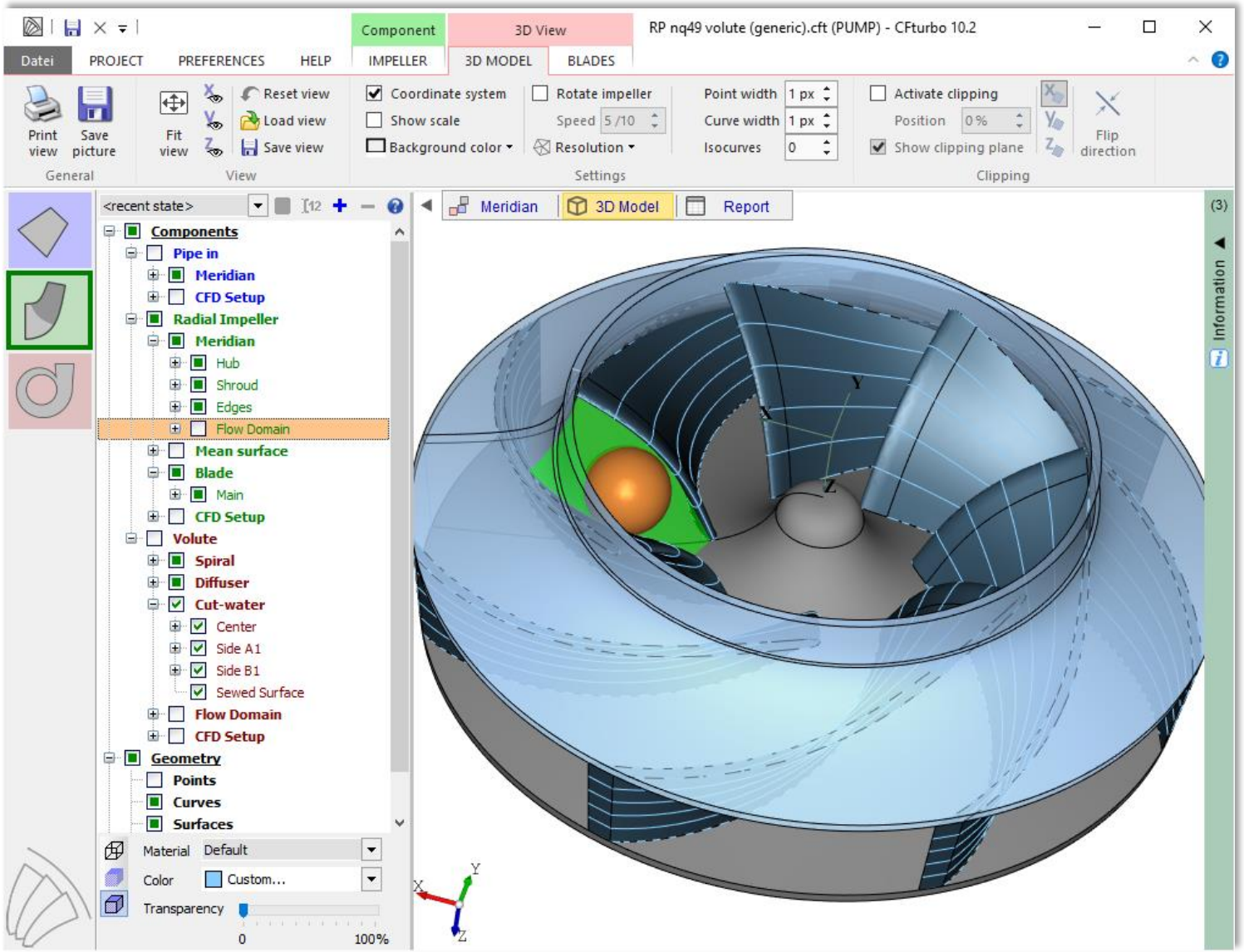
3D CAD model

Surface and solid modeling



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More information

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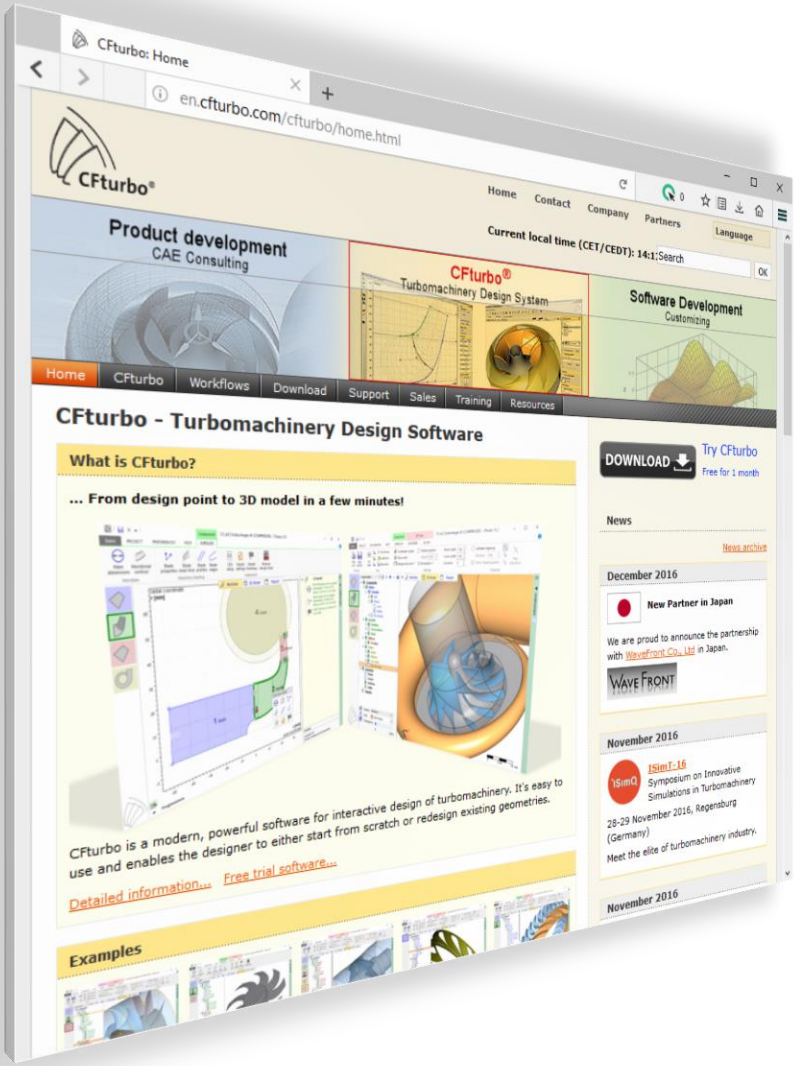

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