

Bladed - Assigning Airfoils to Blade Sections

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Click 'Load' in the aerofoil screen below:

Aerofoil Database

Name

Comments

General data

Thickness to chord ratio

%

Reynolds Number

-

Pitching Moment Centre

%

Deployment Angle

deg

Include Pitching Moment

-

Yes

Load

New

Import...

Delete dataset

Save

View: All

From

deg

To

deg

View Data

α

C_L

C_D

C_M

Edit

Paste

Copy

Delete

Coefficients to add or edit

Angle of attack

α

deg

Lift Coefficient

C_L

-

Drag Coefficient

C_D

-

Pitch Coefficient

C_M

-

Add

Close

This shows all of the aerofoils available:

Load Aerodynamic Data

Available Files

Cylinder1
Cylinder2
demo_a
demo_cyl
DU21_A17
DU25_A17
DU30_A17
DU35_A17
DU40_A17
LS1m13r2
LS1m17r2
LS1m21r2
NACA64_A17

Filename

Comments

General

Thickness to chord ratio

%

Reynolds Number

-

Pitching Moment Centre

%

Deployment Angle

deg

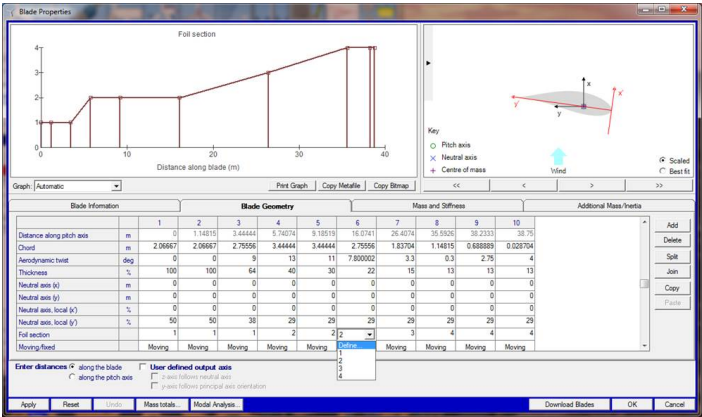
Pitching Moment

-

OK

Cancel

That's a total of 13 aerofoil sections available (although 3 of these appear to be just cylinders). The simplest way to use them is to go to 'define' at any blade station that you wish to change:



Then click 'New':

The screenshot shows the 'Define Aerofoil Sections' dialog box. The 'Blade Station' is set to 16.0741m, the 'Section Type' is 'Normal', and the 'Section Number' is 2. The 'New' button is highlighted. Below the input fields is a section titled 'Aerofoil Datasets For Interpolation' which includes a 'Reynolds Number Interpolation' table. The table has columns for 'Thickness/Chord Ratio' and 'Interpolation'. The 'Thickness/Chord Ratio' is set to 'LS1m21r2'. The 'Interpolation' column is highlighted in blue. The 'OK' and 'Cancel' buttons are at the bottom.

The screenshot shows the 'Define Aerofoil Sections' dialog box. The 'Blade Station' is set to 16.0741m, the 'Section Type' is 'Normal', and the 'Section Number' is 5. The 'New' button is highlighted. Below the input fields is a section titled 'Aerofoil Datasets For Interpolation' which includes a 'Reynolds Number Interpolation' table. The table has columns for 'Thickness/Chord Ratio' and 'Interpolation'. The 'Thickness/Chord Ratio' is set to 'LS1m21r2'. The 'Interpolation' column is highlighted in blue. The 'OK' and 'Cancel' buttons are at the bottom.

Double click in the blank white rectangle:

Aerofoil Dataset Selection

Selection Criteria

	Minimum	Greater than	Less than	Maximum	Selected
Reynolds Number					
Thickness/Chord Ratio					
Aileron Angle					

(none)

demo_cyl

LS1m21r2

LS1m13r2

LS1m17r2

Cylinder1

Cylinder2

demo_a

DU21_A17

OK

Cancel

Select an aerofoil section:

Aerofoil Dataset Selection

Selection Criteria

Reynolds Number					999
Thickness/Chord Ratio					99
Aileron Angle					0

Cylinder1

Cylinder2

demo_a

DU21_A17

DU25_A17

DU30_A17

DU35_A17

DU40_A17

NACA64_A17

OK

Cancel

Click OK:

Define Aerofoil Sections

Blade Station: 16.0741m

Section Type: Normal

Section Number: 5

New

Aerofoil Datasets For Interpolation

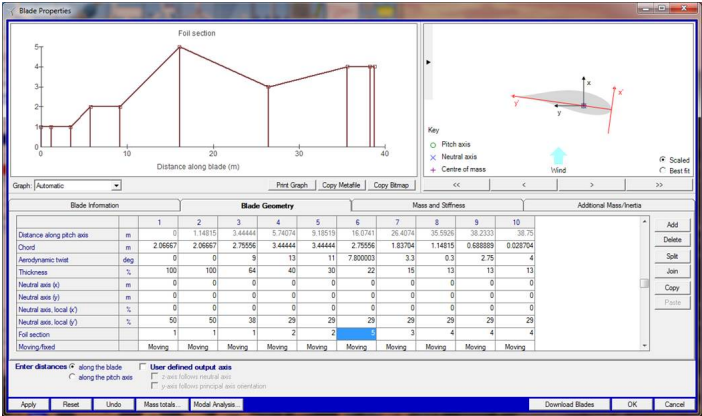
Reynolds Number Interpolation

Thickness/Chord Ratio	DU35_A17		
Interpolation			

OK

Cancel

Click OK again.



You can see that that blade station has now been changed to the newly defined blade section number 5.

Acknowledgement: Instructions courtesy of Mr. Alec Beardsell, GL Garrad Hassan.