DNV·GL

Bladed aerofoil data file format

This document outlines the file format for the aerofoil data. Aerofoil data defines the lift, drag and moment coefficient polars for a range of angles of attack. This document enables users to write a file such that it can be imported into the Bladed GUI via the Aerofoil window. The file is in ASCII human readable format.

The first 7 lines are key value pairs.

Each line should be written as follows:

The key and the value are tab separated. A carriage return and new line need to be specified at the end of each line.

Key word	Value	Unit	Data type
REFNUM	Name of foil data set.	-	String
ХА	Pitching moment centre from leading edge along chord line. Input is % of chord.	%	Double
THICK	Thickness of chord. Input is % of chord.	%	Double
REYN	Reynolds number.	Dimensionless	Double
DEPANG	Deployment angle.	Degrees	Double
NAPLHA	Number of data points defining lift, drag and moment coefficient polars.	-	Integer
NVALS	Number of coefficients defined.	-	Integer

Following the first 7 lines, the polar data should be written to the file. The data needs to be a 2d array with NALPHA rows and (NVALS + 1) columns. The array is defined as follows:

Column	1	2	3	4
Data	Angle of attack	Lift coefficient	Drag coefficient	Moment coefficient
Unit	Degrees	Dimensionless	Dimensionless	Dimensionless
Data type	Double	Double	Double	Double

Each row should be written to the file in the following manner:

Each row of data (angle of attack and coefficients) is written as a tab separated list of doubles. A carriage return and new line need to be specified at the end of each line.

Once all rows have been written, the final line should read: *ENDSECTION and is terminated by a carriage return and new line.*

An example of a file with all characters shown (tab separation, carriage return, new line) is provided below.

REFNUM \rightarrow demo GRIF XA \rightarrow 25.000000 GRIF THICK \rightarrow 50.000000 GRIF REYN \rightarrow 10000000.00000 GRIF DEPANG \rightarrow 5.000000 GRIF NALPHA \rightarrow 5 GRIF NVALS \rightarrow 3 GRIF $-180 \rightarrow -0.1 \rightarrow 0.03 \rightarrow -0.0$ GRIF $90.00 \rightarrow 0.271.2 \rightarrow 0.0$ GRIF $0 \rightarrow 0.275 \rightarrow 0.1 \rightarrow 0.0$ GRIF $180 \rightarrow -0.1 \rightarrow 0.03 \rightarrow -0.0$ GRIF ENDSECTION GRIF

DNV GL Headquarters, Veritasveien 1, P.O.Box 300, 1322 Høvik, Norway. Tel: +47 67 57 99 00. www.dnvgl.com