



Vista™ - Visual Turbomachinery Analysis

Preliminary design of centrifugal compressors: powerful, accurate, but simple to use

- 17 years of development of the fundamental algorithms ensure essentially simple and rugged operation.
 - Data requirements kept to a minimum so that the designer can move very quickly to an initial design.
 - Extremely short run-times allow many candidate designs to be assessed rapidly.
 - Built-in loss correlations obtain accurate efficiencies for each design, with informative graphical output guiding the user towards the optimum efficiency.
 - Choice of gas property models, including a full real gas model
 - Smooth data transfer for subsequent off-design performance prediction and throughflow analysis.
 - One-button launch of 3D geometry in ANSYS® BladeModeler™ from standalone Vista CCD
- or
- full integration of Vista CCD in ANSYS® BladeModeler™ within Workbench 11 and 12.
 - Continuing addition of new facilities and PCA's established fast-response user support.

Vista™ CCD - Centrifugal compressor preliminary design

Overview

Preliminary design, sometimes called 'sizing', remains an essential first step in the design of a new turbomachine. Despite immense progress in the applicability and accuracy of CFD systems, it is widely acknowledged that an incorrect preliminary design cannot be remedied by any amount of subsequent analysis of a more advanced type. However, used together, a good preliminary design method and advanced CFD can complement each other very effectively in the design process.

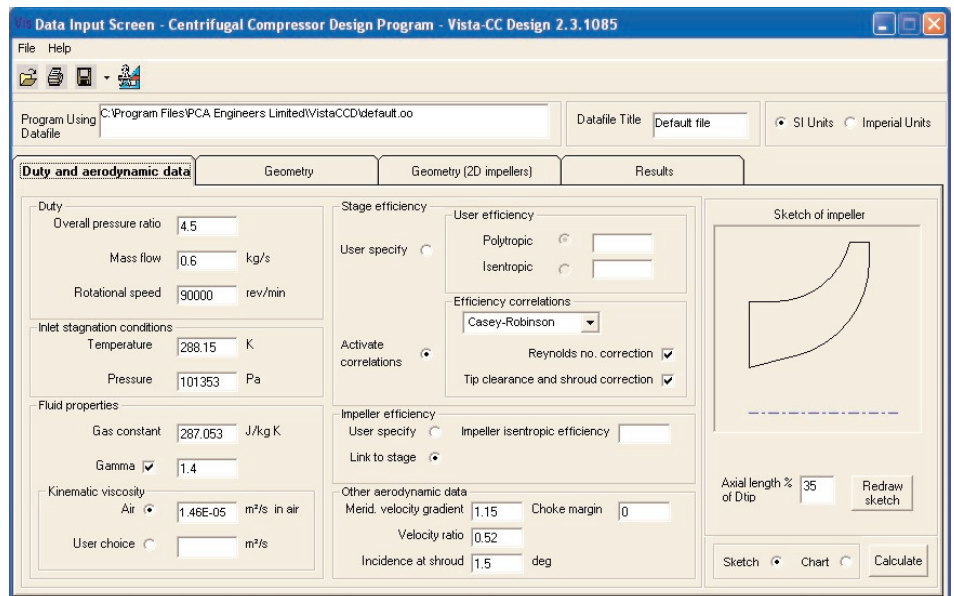


Fig. 1 Vista CCD user interface

For preliminary design of centrifugal compressors, PCA has developed over the past seventeen years Vista™ CCD, a simple yet powerful code which can allow the compressor designer to move from initial ideas about the compressor duty to a full 3D geometry launch in a few minutes.

Keeping it simple for the user

One of the aims of Vista CCD development has been to avoid imposing on the user an unnecessary overhead of data preparation. The scope of the code has thus been kept within bounds consistent with this approach, avoiding over-sophistication and the potentially frustrating data demands that this incurs. This is especially beneficial at the very beginning of a new design when the designer may know little more than the required pressure ratio and mass flow, a speed constraint, and perhaps one or two geometric constraints. There is also appropriate use of default data settings, which may be reliably used in

