Engine Performance Application

Measure and predict the thermal, aerodynamics and thermodynamics performances of the aircraft engines

DynaWorks Application Note
Engine Performance

The Context

Ground or aeronautic vehicle program development consists of reaching some very specifics objectives, especially in engine performance. It has vital impact on the entire architecture and on the technological choices to be made for the final product.
During the development of a new engine, designers must find a compromise between performances and environmental factors (gas emissions, consumption, noise, etc.). To help them make the right decision they need a powerful data management and processing tool.

Benefits

- Data traceability and availability
- Multi platform: Unix/ Windows/Linux

Requirements

In face of such constraints, optimization of performance becomes more and more important in the design phase. Each engine manufacturer elaborates and validates methods based on the engine and components specifications. Then performance model results are compared with data acquired during qualification and acceptance tests.
These companies need an Information System which provides all means to collapse and provide the test results in order to control engine performance according to several input data depending on the type of engine.

- Internal combustion engine: efficiency, power, specific consumption, effective mean pressure, etc.
- Turbo engine: specific combustion, specific thrust, thrust, influence of speed, pressure and temperature parameters, etc.

Customers Profile

- Tests
- Engineering
- Maintenance

Industry/Market

- Aeronautics
- Space
- Automotive
- Energy
- Research

Objectives

- Manage models & tests data
- Predict performances
- Analyze results
- Computer aided tool to engine design

DynaWorks
An Intespace product line

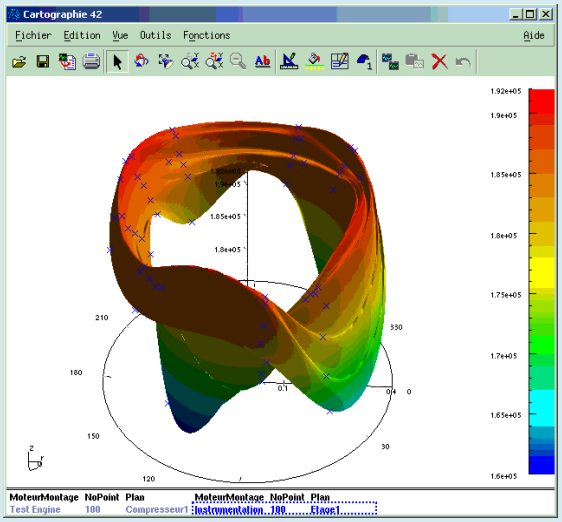
DynaWorks

Application Note

Engine Performance

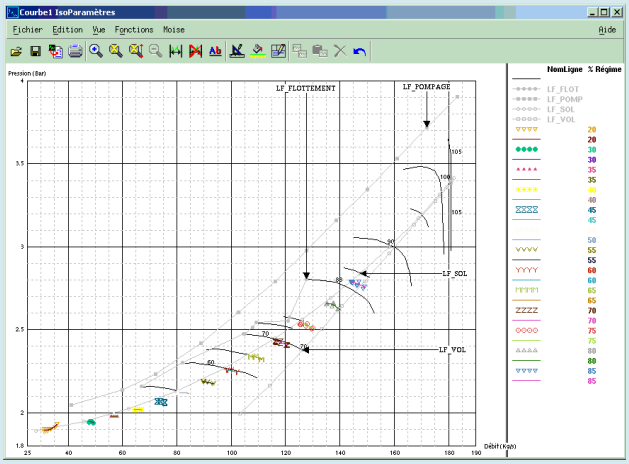
The Product Offer

DynaWorks features an advanced database management system and, unlike classic databases, is specially designed to handle technical data. It supports high-volume bases (over one billion records or 16 Gb per table). The database structure can be fully tailored to the company's specific skills requirements.
The 2D and 3D display tools let engineers and technicians visualize, immediately, data and results issued from design or tests according their needs and print high quality MS Word documents.
The design methods of each company can be developed directly within DynaWorks thanks to its built-in calculation tools and development kits.



The DynaWorks Solution

The database federates all data for each product from the earlier design to the production and maintenance phases. All the engine characteristics are collected during stabilized and transient phases. These characteristics are derived from data acquired during tests, calculations or maintenance controls. All the associated data such as test descriptions and their instrumentation, condition vectors, drawings or tests images are also stored into the database.



From this database, the designers can:

- Quickly find data according to predefined sorting criteria, identifiers and parameters included in an interval of values
- Visualize and compare data thanks to advanced 2D, 3D, array displaying capabilities: Parameters versus other parameters, transient versus time, iso-value, iso-engine, stabilized parameters according to engine geometry, parameters as the acquisition is running.
- Predict running parameters by procedures: Performance calculations and analysis of the effects of several external parameters (speed, altitude) or internal parameters (mechanic, geometrical and thermo dynamical characteristics) on the engine performances. This analysis is performed with proprietary algorithms provided by the manufacturer and these specific-skill processes are provided as standard libraries which can be shared by each user.
- Generate MS Word documents extracting data from DynaWorks.

Based on DynaWorks, this solution allows reducing the time cycle and frequency of engine tests by automating data reduction and giving immediate access to both raw and analyzed data in collaborative environment.

Europe

Intespace

2, rond-point Pierre Guillaumat - BP 64356
31029 TOULOUSE Cedex 4 - France
Tel: +33 (0) 5 61 28 11 11
www.dynaworks.com
Email: marketing@dynaworks.com

North America

EADS North America Test & Services
1861 Wiehle Avenue, Suite 310
Reston, VA 20190
United States of America
Tel: 1(703) 264 1080
www.ts.eads-na.com
Email: salesus@dynaworks.com

Asia

Mestime Information Technology Co. Ltd
Room 202, Huizhong Building; No.1,
Shangdi 7th street, Haidian District, Beijing, P.R.C
100085 Beijing - China
Tel: +86-10-82897169
Mobile: +86-13-801030932
Fax: +86-10-82897207
Email: salesasia@dynaworks.com