Materials and Structural Testing with state of the art Imaging Systems

Turn Measurements into Knowledge

Quality Assurance and inspection demands are massively increasing requiring not only more frequent materials and infrastructure tests but also any inspection reports generated from such tests to address the specific requirements of each application.

Materials and structural testing campaigns are routinely performed in a variety of industries and applications, each of which have their specific needs as it relates to data analysis and representation. In addition, legislators and certification authorities have more and more rigid requirements to the quality assurance procedures as well as the inspection reporting documentation.

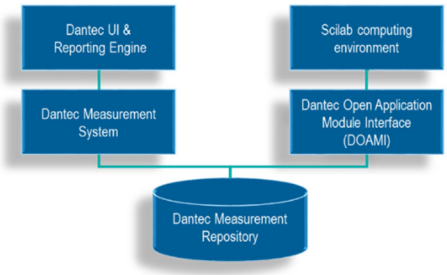
Addressing these changing demands requires a powerful solution that performs post-processing of measurement data relevant to the application and produces application specific inspection reports. At the same time, inspection service providers need to reduce their operating costs to remain competitive.

With recent advances in Imaging technologies, **full-field, non-contact optical techniques** are replacing traditional, labor-intensive measurement techniques, such as strain gauges, in many applications.

Dantec Dynamics' state-of-the-art optical Imaging solutions now include a range of easy-to-use post-processing modules based on application specific data analysis methods to address market requirements and customer demands. The existing modules can be further adapted and customized, and new customer specific modules can be created using the domain know-how of application experts. With the virtually unlimited flexibility, these post-processing modules make the generation of application specific reports a trivial and quick exercise, which for repeated measurements can even be automated.

Furthermore, application specific post-processing can often lead to gaining additional insights and knowledge from measurement data that may otherwise not have been captured.

In order to provide these functionalities and the option for further customization, Dantec Dynamics closely integrated **Scilab** software into their software platform. Scilab produces free and open-source software for numerical computation providing a **powerful computing environment for engineering and scientific applications**. This allows companies and universities with lower budgets to use the full power of modern analytical tools, including the Scilab's customization service option, without the prohibitive cost profile of similar commercial tools.



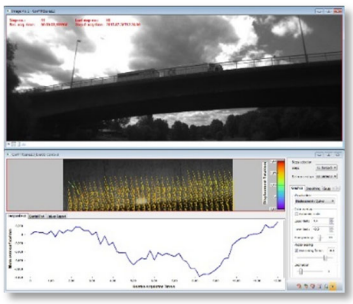
Open Application Module Interface (DOAMI)

Dantec Dynamics' Open Application Module Interface (DOAMI) is connected to the Dantec Dynamics measurement repository, which enables application specific modules to use the complete available measurement dataset. In comparison to the inbuilt reporting engine of the Dantec Dynamics software platform, Scilab modules can analyze, calculate and present data in a much more flexible way by using the Scilab functionality to the fullest extent to address the following areas:

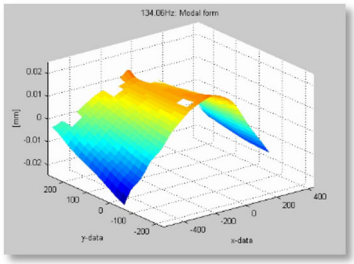
- **Mathematics & Simulation** - For usual engineering and science applications including mathematical operations and data analysis
- **2-D & 3-D Visualization** - Graphic functions to visualize, annotate and export data and in many ways to create and customize various types of plots and charts

- **Optimization** - Algorithms to solve constrained and unconstrained continuous and discrete optimization problems
- **Statistics** - Tools to perform data analysis and modeling
- **Control System Design & Analysis -** Standard algorithms and tools for control system study
- **Signal Processing** - Visualize, analyze and filter signals in time and frequency domains
- **Application Development** - Increase Scilab native functionalities and manage data exchanges with e.g. Dantec Dynamics' software platform

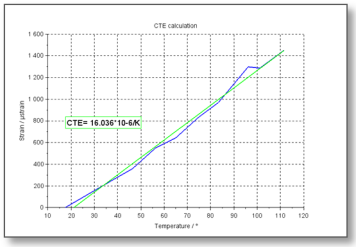
Application examples among many others are:



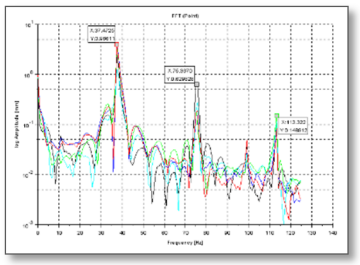
Bridge displacement under load of passing truck



Modal shape analysis of a composite panel



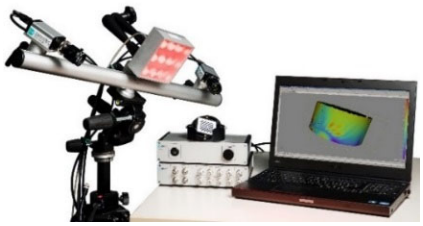
Thermal expansion coefficient (CTE) calculation



FFT analysis of a component vibration

Dantec Dynamics is a leading supplier of non-contact optical surface measurement technologies. Dantec Dynamics' Digital Image Correlation (DIC) solution measures shape, deformation, vibration and strain on almost any material and shape based on a 3D, full-field, non-contact optical technique. Its flexible design opens a wide range of applications from microscopic investigations up to large scale civil engineering measurements.

Scilab Enterprises is the publisher and professional services provider of Scilab. Industrial companies benefit directly from this expertise to get the solution best suited to their needs through a comprehensive range of support & development services in applied mathematics and signal processing.



Q-400 Digital Image Correlation System with two cameras and illumination option

For more information

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