

Highlights

- Checks for fatigue issues throughout a structure and across multiple joint types
- Identifies and classifies weld lines across an entire structure
- Provides a consistent and efficient method to run a full weld line verification process

Ideal for Organizations that:

- Have products with many weld lines and want to understand their influence on product performance
- Need to perform weld line certifications
- Want to allow the engineer to focus on the interpretation and understanding of critical results

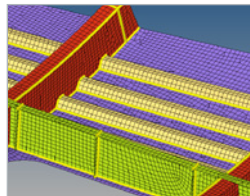
Weld Certification Director

Automating the Weld Verification Process

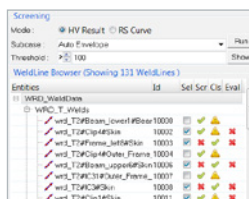
Altair's Weld Certification Director (WCD) is a combination of a base software with customer specific additions and integrated services that allows engineers to accelerate the time taken to identify and analyze the performance of weld lines against mechanical requirements. Fully integrated in the HyperWorks environment, this intuitive solution provides an automated approach to determine weld line fatigue performance and identify areas of concern in the early stages of design.

The WCD enables engineers to focus their efforts on interpreting results data rather than the mechanics of setting up models which may contain thousands of weld lines. The solution automatically identifies weld lines across multiple joint types, enabling engineers to quickly run a complete evaluation of all the weld lines in a structure and to check for potential performance issues. These verifications can be done based on standard regulations or customer specific methods.

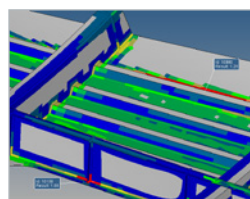
The Weld Certification Director Workflow



Preparation - The first step involves identifying which weld lines are required for evaluation. The user chooses the solver to be used in the analysis and the regulation that it will be measured against.



Screening - The user can identify the critical weld lines by screening the model based on a simplified method with only a few user inputs. The results will be displayed as contour plots along with details of each line in the weld line browser.



Evaluation - After screening, the engineer can define all required properties such as weld type, notch type, material, evaluation distance and so on. The final results will be displayed as a contour plot together with annotations of the most critical weld lines. Reporting is an option and can be added based on customer requirements.

Key Features

Capabilities:

- **Automatic Weld Line Identification and Weld Line Organization**
Marks all weld lines in the model and organizes them in specific components and assemblies
- **Show & Modify Weld Line Locations**
Review and change weld line location in graphics area
- **Weld Line Browser**
Lists all weld lines from current model. Isolates, shows or hides weld lines
- **Weld Line Property Definition**
Regulation dependent parameter definition and parameter naming
- **Automatic Load Case Envelop**
Builds envelop loadcases automatically
- **Screening**
Two screening modes allow fast and easy detection of critical weld lines
- **Evaluation Based on Selected Regulation**
Provides common regulations; additional regulations or customer specific methods can be embedded
- **Contour Plots of Results**
Contour plots color weld lines and attached elements based on verification results
- **Marking of Critical Weld Lines**
Sets annotations automatically on critical weld lines
- **Batch Mode**
Allows user to run the weld line verification automatically after the simulation process
- **Open Architecture**
Supports common regulations, including FKM; architecture enables embedding of new or customer-specific methods; public/documented APIs provided

- **Embedded into HyperWorks**
Embedded into HyperWorks with specific interfaces that guide the user through the process. Includes sections dedicated to screening, browsing weld lines and to the weld line classification process.

Allows full access to the HyperWorks core functions making it possible to add additional notes, zoom in or zoom out, create result tables, derive results etc.

- **Pre-Processing Integration**
Includes a module for HyperMesh to support the engineers during weld line preparation including weld line identification or property definition.

Identifies weld lines and mark these them with 1D elements; weld lines, weld line locations and weld line properties can be checked and modified.

- **Supporting Connection Types**
Supports weld lines modeled by node-node connections. The solution can be enhanced by adding other connection types such as those based on CWELD, RBE or contact definitions as necessary.

Deployment:

Altair's team will work with you to understand its unique operating practices to ensure that WCD meets requirements. Our experts support the following tasks:

- **Evaluate** current methods for modeling and simulating weld lines
- **Align** the automation solution base module accordingly
- **Provide** quick start focused support and periodic checkpoint assessments to ensure a successful user experience



The Weld Certification Director can be applied across multiple industry but has proved particularly useful in the bus, truck, rail, marine, off-highway and energy sectors



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