EMA Correlation

The **Correlation** tab compares the mode shapes you measured (EMA) with the mode shapes predicted by a finite element analysis (FEA) model. It answers two questions:

- **Do the shapes match?** EDM calculates the Modal Assurance Criterion (MAC) between every EMA mode and every FEA mode.
- **Do the frequencies match?** EDM pairs each EMA mode with the FEA mode closest in frequency and shows the difference in %.

Use this tab to validate an FEA model against test data, or to find which test mode corresponds to which predicted mode.

Fix Me! **Screenshot:** The full Correlation tab, with the shape selectors, MAC table, frequency error row and parameter tables on the left, and the 3D animation view on the right.

The tab has two panes:

Shape- the import and calculation buttons, the shape selectors, the MAC table, the frequency error, and the mode and DOF tables for both shapes.

Animation- a 3D view where you can animate the EMA and FEA mode shapes.

NOTE: The Correlation tab requires the correlation option on your license. You cannot use this tab while a test is running.

Workflow

1. Calculate and save an EMA shape (see the Stability Diagram page).
2. **Import** the FEA geometry and the FEA mode shapes.
3. Choose the **EMA shape** and the **FEA shape**.
4. Use **Modal mapping** to match the FEA nodes to the EMA test points.
5. Click **Calculate MAC**, and review the MAC table and the frequency errors.
6. Use **Display MAC chart** and the animations to check the results.

Importing FEA Data

Click **Import** and choose what to import:

Model- Imports the FEA geometry (mesh). Supported files are `.xml`, `.unv`, and `.nas`.

Mode shape- Imports the FEA mode shapes from a Universal File (`.unv`) with mode shape records (dataset 55). If the file also contains the geometry, it is imported too, and you do not need to import the model separately.

From:
https://help.go-ci.com/ - **Crystal Instruments Help**

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