

Frequently Asked Questions

Overview

What is the STAR module for OpticStudio?

The Structural, Thermal, Analysis & Results (STAR) module for OpticStudio is designed to enable OpticStudio users to perform Structural, Thermal, Optical Performance (STOP) analysis inside of the OpticStudio environment. The STAR module provides design insights for users that need to understand how structural and thermal perturbations will impact the optical performance of their designs. Additionally, the STAR module includes a powerful API that automates workflows.

What problems does the STAR module solve?

Engineers that want to perform STOP analysis frequently must deal with complex and tedious issues such as coordinate system alignment between OpticStudio and Finite Element Analysis (FEA) software. Ensuring that the FEA data has been correctly placed on the optical surface, and enabling FEA results to be applied and correctly mapped to the optical model is essential. Performing this type of analysis typically requires team members to go back and forth to get the data to work and is a frequent cause of frustration and delays.

Engineers commonly spend hours, if not days, processing FEA results to a state where they can be used to assess the impact on the optical performance. Even at this point, if the processing is not good enough then parts of the process must be repeated until the residual error threshold it met. This method is often duplicated for different scenarios which significantly increases the analysis time.

What are the key benefits of using the STAR module?

With the STAR module for OpticStudio, users can:

- Improve accuracy of STOP analysis
 - The STAR module employs a numeric fit that preserves information in the FEA data and simplifies the FEA loading process with automatic fitting and data alignment checks.
- Streamline STOP analysis workflow
 - Seamlessly integrated into OpticStudio, the STAR module allows optical engineers of all experience levels to easily visualize and analyze the impact of structural and thermal factors within one solution.
- Reduce overall optics design time and eliminate costly prototype errors
 - Save time and material costs by simulating both the manufacturing and environmental conditions before creating a physical prototype.
- Improve optics performance based on STOP analysis
 - Bring better performing and more manufacturable products to market by unlocking new performance insights related to structural and thermal considerations.
- Accelerate design team collaboration
 - Built to work with existing tools, the STAR module accepts FEA data from all simulation packages so everyone on your team can take advantage of STOP analysis.

Is the STAR module part of OpticStudio?

The STAR module is integrated into OpticStudio but requires a separate license to use the specialized functions. Users that want to see the results and impact of structural and thermal loads on their optical system need to purchase a STAR module license.

Does STAR module use a separate license?

The STAR module uses its own license. If there is no active or enabled STAR license on the user's computer, the STAR tab will appear gray.

What versions of OpticStudio support the STAR module?

The STAR module will work for OpticStudio 21.2 and later.

To function, the STAR module requires an OpticStudio Professional or OpticStudio Premium subscription license.

Functionality

How does the STAR module improve workflows?

The STAR module focuses on three stages of the STOP analysis workflow:

- Get FEA data into OpticStudio
 - Accepts tab-delimited FEA data from any FEA package
 - Data alignment tools and visualizations
- Work with FEA data inside of OpticStudio
 - Directly integrated into OpticStudio
 - Uses the original optical design file
 - Performs automatic numeric fitting
- Assess new insights and help deliver better products
 - Uses familiar sequential surfaces, tools, and analyses

What does FEA mean?

Finite Element Analysis, or FEA, is an engineering discipline that is used to simulate the behavior of a part or assembly under loads and conditions that are similar to the real-world environment. Engineers use FEA software packages to perform the analysis. The results of the analysis are used in design iteration and experimentation while simultaneously reducing the number of physical prototypes needed for product development.

What FEA packages does STAR accept data from?

Data from any FEA package will work with the STAR module as long as the format of the text file is correct.

Functionality (cont.)

What FEA data does STAR work with?

The STAR module will accept a tab-delimited text file with numbers in the decimal format.

Note: The STAR module, like all Zemax products, does not support the “decimal comma” when loading data from text files.

Structural Deformations

Six columns in a tab-delimited format with columns in the following order:

[X position, Y position, Z position, dX, dY, dZ]

Temperature Profiles

Four columns in a tab-delimited format with columns in the following order:

[X position, Y position, Z position, T]

Does STAR work with both sequential and non-sequential designs?

Currently, the STAR module only works with sequential surfaces and analyses.

What validation tools are included in the STAR module?

Load FEA Data tool – Visualize the alignment of FEA datapoints to the assigned optical surface and ensure correct coordinate systems before performing a numeric fit

Alignment Check – After fitting, verify the alignment of the FEA data in the optical system during analysis

Fit Assessment – Visual representation of the quality of fit along the entire optical surface; see how good the fit is and where

Workflow

How does STAR improve the workflow between optical engineers and structural engineers?

The STAR module enables users to visualize the FEA datasets and optical surfaces at the same time, verifying alignment prior to fittings and evaluating results. In addition, STAR supports the conversion between local and global coordinate systems. This avoids the back-and-forth emails between the optical and structural engineer, requiring the data to be re-exported multiple times simply to get the FEA data aligned with the optical surfaces.

Who do I contact if I have more questions?

For questions, please email Sales@Zemax.com.