ORBIS

Software Revision Notice

Release Version	5.0
Prior Version	4.2
Release Date	13-Apr-2025

Release Overview

Release V5.0 is a major version release that expands the capability of ORBIS by adding a new analytical tool (see the FEA Load Tool discussion below). V5.0 is also verified to run on OpenJDK from Amazon Corretto. Corretto 8, which has certified compatibility to Java 1.8, meets the minimum Java requirements. Corretto 21, which is the current LTS supported version, has been tested and verified. Amazon Corretto was selected due to its commitment to long-term support, and free licensing. Other open Java distributions have not been tested and may or may not be compatible. The official Oracle Java versions, 1.8 or greater, are still compatible.

The base code from V4.2 is substantially unchanged; with minor exceptions for bug fixes as outlined below and improved robustness for network license communication. Therefore, the core analytical functionality of V4.2 is maintained with this release and the new FEA Load Tool behaves like an add-on module.

The FEA Load Tool brings traditional finite element modelling and analysis capabilities. The objective of the tool is to recover internal bearing loads from an assembled structure subjected to various loading conditions. Internal bearing loads can then be used to analyze the bearings with the base ORBIS non-linear solver. Finite element solutions include static loads, gravitational loads, and base motion random vibrations. Modelling capabilities include point-to-point Timoshenko beam elements, point masses, non-structural mass, springs and multi-point constraints.

A typical workflow for the FEA Load Tool is as follows:
1. Bearing setups are completed within the main ORBIS software prior to using the FEA Load Tool. All bearing setups must be saved (i.e. *.jdh files created) to be accessible from the FEA Load Tool.
2. The FEA Load Tool is used to construct the assembly-level structural model containing the bearing systems defined in step 1.
3. The FEA Load Tool is run to solve the defined structural load cases, such as a base motion random vibration case, and recover bearing reaction forces at each defined bearing spring element.
4. The recovered spring element forces are transferred to the main ORBIS bearing model for non-linear bearing analysis (i.e. Hertzian contact stresses).

The above process, which uses a linear finite element solver and the non-linear bearing solver, is integrated to promote efficient workflow.

Compatibility

V5.0 is compatible with all V4.X run files. For compatibility with earlier versions, see the V4.0 release notice. Network license users will need to upgrade OrbisServer to version 2.0 (see separate release notice).

BUG Fixes

The following bug fixes have been implemented:
- System sketch in the results window is now un-linked from the main window system sketch. This prevents model changes from impacting the figure in active result windows.
- Film parameter lambda was misspelled in various locations in the results output and sensitivity data export headers.

- Network license logic and communication protocols have been revised to operate on OpenJDK Corretto and provide a more robust network connection. These changes should improve the user's experience with network licensing. Note these chances only impact network licensing and have no effect on the USB dongle licensing.