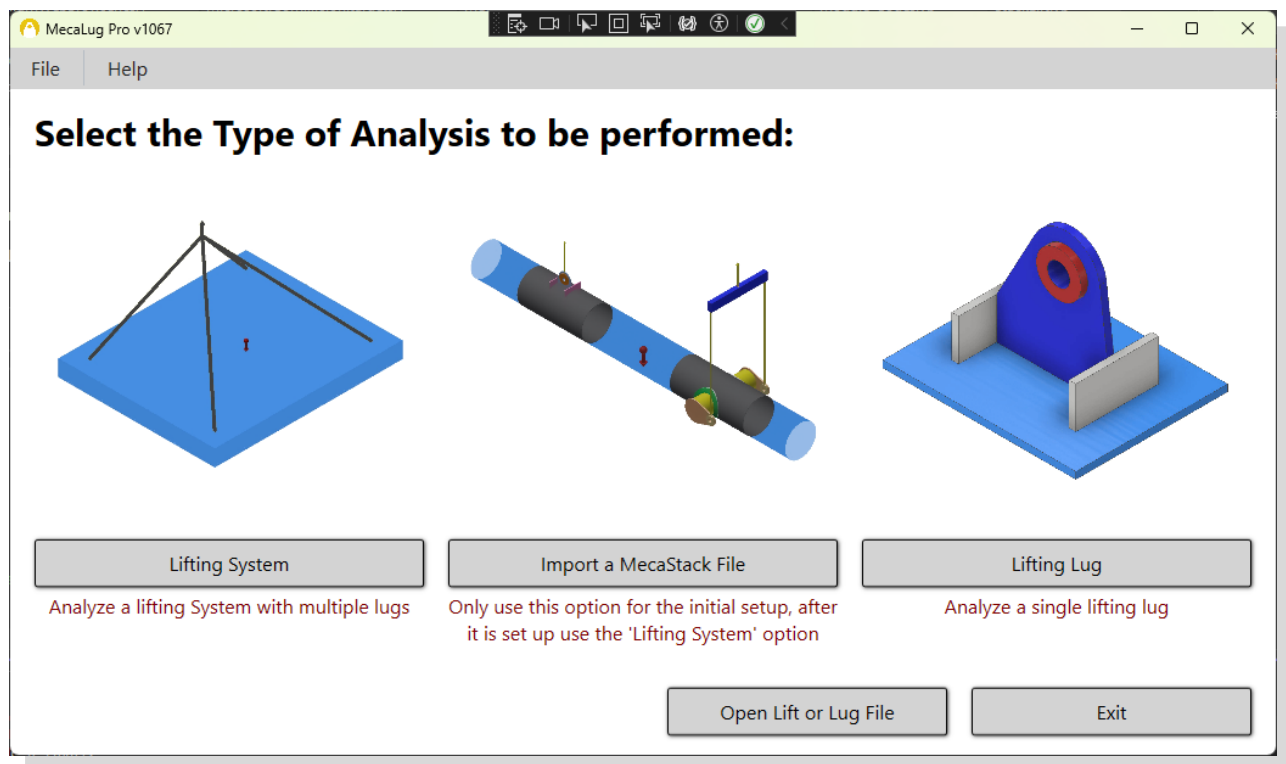# MecaLug
Software

Summary

All structural design is important but verifying that the lifting lugs are adequate to lift a piece of heavy equipment may be one of the most import things an Engineer can design. The failure of a lifting lug could very likely put human life in danger in the event of a failure. Imagine being on site during an important lift, as an Engineer you want the piece of mind to know that those lifting lugs you designed will DEFINITELY lift the equipment safely. Therefore, Meca has developed the MecaLug Software, which is an easy to use software package to design lifting lugs.

The program was developed with the flexibility to handle the design of a single lug where you know the loads acting on the lug, or it allows you to analyze common systems in which you need to determine the loads acting on each lifting sling.

Design Standard

The MecaLug Program follows the ASME BTH-1 "Design of Below–The-Hook Lifting Devices." This is a widely used design standard for designing lifting devices and provides a solid reference that the designer can use with confidence to produce a safe design.

MecaLug Software comes in two different versions of the Lifting Lug Design. There is a Standard (Std) and a Pro version. Both the Standard and Pro versions of the MecaLug will allow the user to design a single lifting lug. The User has a variety of different lug configurations that can be chosen to suit their specific needs. There are countless different lifting lugs used by companies and so it's not feasible to include every possibility, however we have focused on the most common types of lugs that are used industry wide:

When modeling the lifting lug the user specifies the following:

- Lug Geometry

- Cheek Plate Dimensions
  (if applicable)

- Attachment Dimensions
  (i.e. cylindrical shell, beam, etc.)

- Shackle Selection

- Material Properties

- Loads acting in the X, Y, and Z direction on the lug.
 (multiple load cases may be entered)
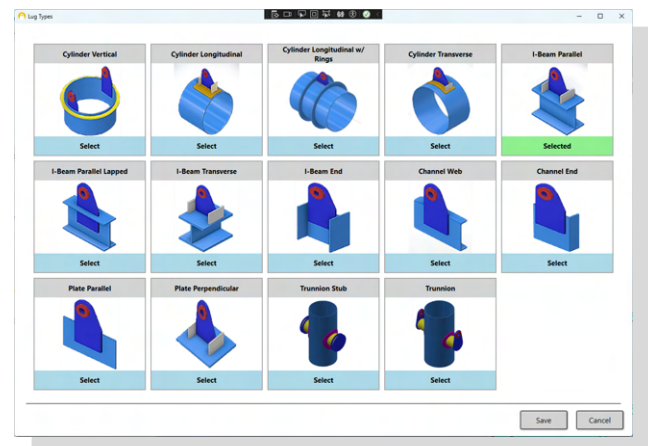
The user can quickly determine Pass vs Fail by using our simple system where Green is Passing and Red is Failing. You can quickly survey the output and determine the problematic areas. After the design is final, you can then pick and choose which information will be used in the final report. Our output system is the same in all of our software packages.

Cylindrical Shells

There are lifting lugs attached to structures and lifting lugs attached to cylindrical shells in a few different configurations. In the case of lugs attached to cylindrical shells the local stresses from the lug acting on the cylindrical shell are of concern. MecaLug adopts the use of ring analysis as well as local stress per WRC 537 (also known as WRC 107) to calculate the local stesses on the cylindrical shell.

As the data for the lifting lug or system is entered, a 3- dimensional representation is shown on the screen based upon the user entered parameters. This gives a quick check of all values entered to make sure they look correct.
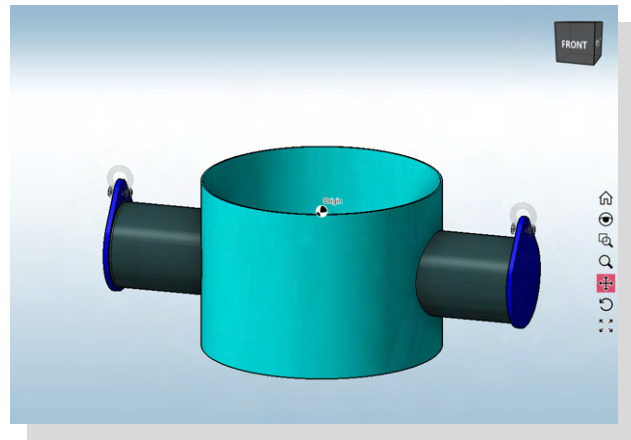
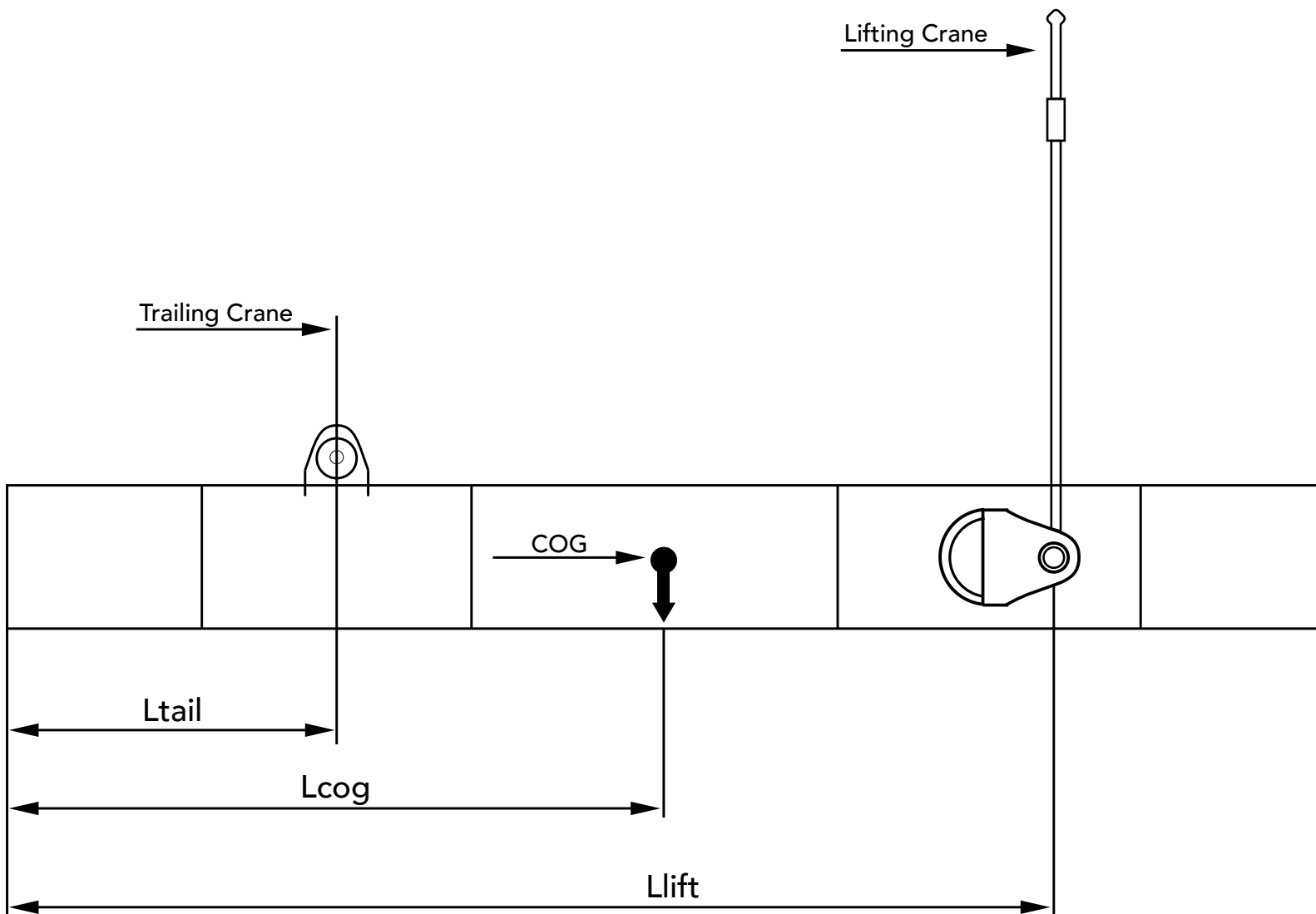# Lifting System Analysis
(Pro Version)

When you have 2 or more lifting points, finding the load acting on each lifting sling can be challenging. This is where the Pro version of MecaLug can make life simpler. It allows you to pick one of several standard lifting systems, and then simply enter the dimensions that are appropriate for your situation.

The user gets a report with the same easy to understand system where Green is Passing and Red is Failing. The output has a complete summary of the loads in each cable, at each crane point and acting on the lugs. The user may then choose what output is to be included in the final report, just as it was done with the single Lug Analysis.
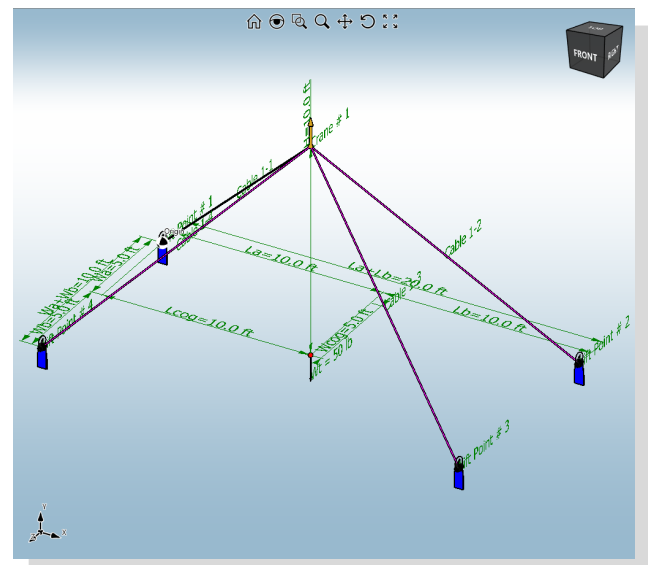
Stack/Vessel

There are special problems that occur when a stack, vessel or tower are lifted. The structures usually start in the horizontal position, and then they are rotated 90 degrees to the vertical position. MecaLug has provisions to analyze the structure at each increment of the lift, and calculate the loads acting on the Lifting Lugs, trunnions or tailing lugs at each of these increments. This will allow the designer to quickly determine which angle is most severe for the lifting.

Compare Versions of Meca Lug

Features	Standard Version	Pro Version
Single Lifting Lug Analysis	✓	✓
Lug Shackle Checks	✓	✓
ASME BTH-1 Calculations	✓	✓
Lifting Trunnion Analysis	✓	✓
Complete Lifting System		✓
Calculate Crane Reactions		✓
Calculate Cable Loads		✓