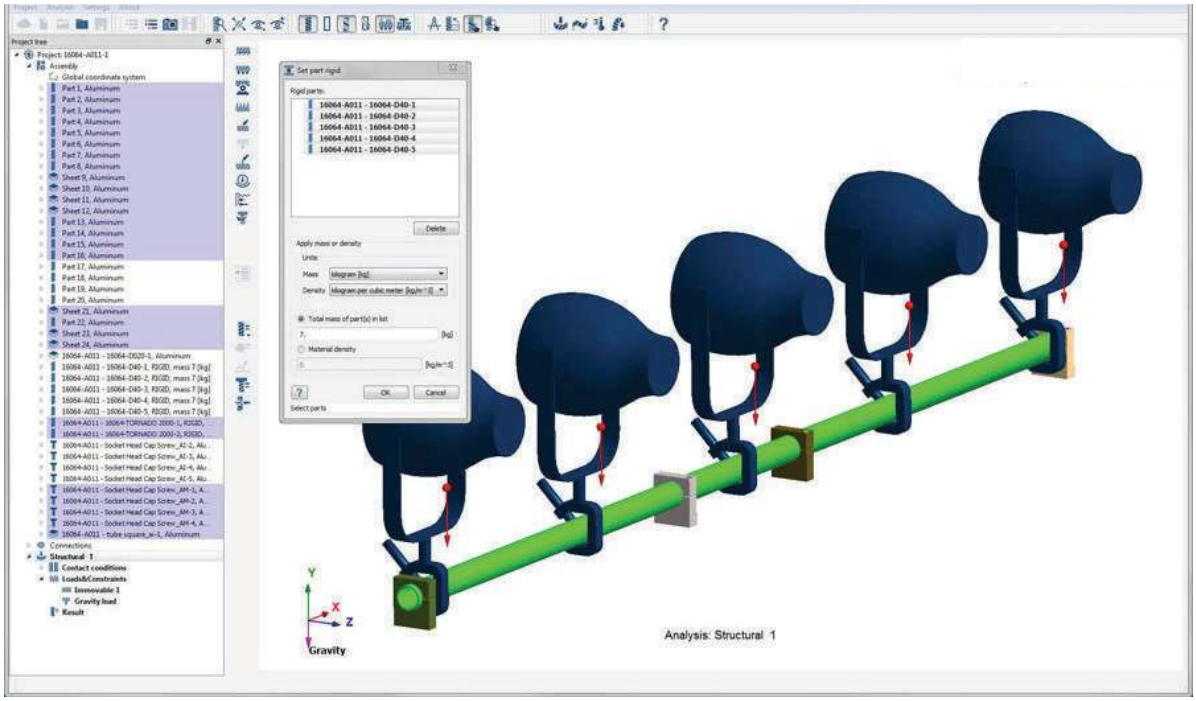
How Serapid Accounts for Supplier Parts in Altair SimSolid



Serapid designs systems for transfer of heavy loads based on their “rigid chain” technology. When they design support platforms, they are often provided with dummy geometry of parts from suppliers which are going to be installed on the platform. These geometries do not have contents – they are just skins of solids. Serapidneeds these dummies in order to properly size the platform and position the parts on it. Suppliers also provide them with the mass of the dummy parts. You can see an example of the dummies in the picture above. Dark blue solids are dummy geometries of supplier spot lights. Note, one lamp is represented by one solid part, though in reality it can be a complicated assembly of many parts.

When simulating the complete structure, they need to load it with weights of the installed devices. At first, one may think of using Remote Load functionality in Altair SimSolid™ for that. Weight of a spot light is applied in its COG which is a remote load application point. Therefore, you need to evaluate somehow COG of a spot light and then create the spots on the platform where the remote load will be brought to. In cases where many devices are installed, the application of the remote loads can take some time.

Serapid found a wonderful shortcut: Instead of Remote Load, they used the Rigid Part functionality in SimSolid. The idea of making a dummy geometry rigid works perfectly here. They do not care about stresses and deformations in the spot light itself – this is a supplier business. To make a part rigid, go to Assembly workbench, open the Rigid Part dialog from the toolbar, select the parts you want to make rigid and assign a mass to them. Do not forget to also apply Gravity in the Structural analysis workbench. That is all. SimSolid will automatically account for the gravity loads applied to the dummy parts and transfer the loads to the structure.

SERAPID
RIGID CHAIN TECHNOLOGY

Industry
Mechanical Equipment

Challenge
Loading complete structure simulation with weights of dummy geometry from supplier parts.

Altair Solution
Using Rigid Part functionality in SimSolid

Results
SimSolid automatically accounts for gravity loads applied to dummy parts and transfers the loads onto the structure

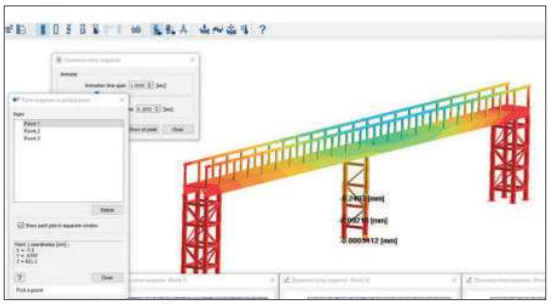
"When we are ordering tons and tons of the raw materials for our chains, a pound here and a pound there starts becoming important, so that's where we spend a lot of time trying to optimize our product. Applying SimSolid to this challenge in the long run will make us a lot of money."

Bob Adams
Engineering Manager
Serapid, Inc.

Lifting platform for high rise building maintenance

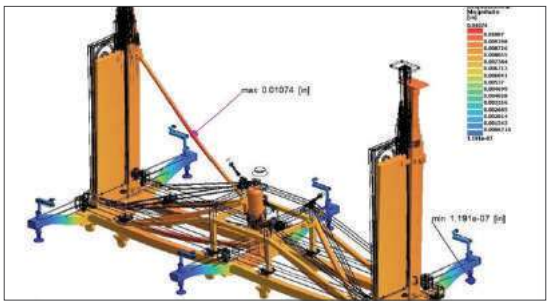
About Serapid

Serapid, the developer and manufacturer of the original Rigid Chain, designs and manufactures telescopic mechanical actuators for the horizontal and vertical movement of heavy loads. At Serapid, we have been meeting the needs of industrial professionals for 45 years with a combination of manufacturing quality, technical know-how, innovation and creative talent.



Dynamic analysis of the structure

Ergonomic work platform



Large 770 part assembly from Serapid

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