



Rail safety awareness and regulations are increasing for the protection of passengers and rolling stock. Rail crash tests are not usually feasible and Oleo offer the unique combination of crash energy management simulations correlated with impact energy absorption devices. This helps to achieve real improvements and assist in the process to conform to exacting standards such as EN15227.

Oleo simulation capability has been developed over the last 20 years and the results used by rail operators, train builders and coupler manufacturers worldwide.

OLEO 1D

A one dimensional simulation programme that accommodates the combined effects of impact energy absorption characteristics of couplers, buffers and anti-climbers with approximate crush behaviours of vehicles ends.

The software is specifically designed for evaluating the options for various energy absorption methods used in bolt on devices including, couplers, buffers, anti climbers and other crush elements.

OLEO 2D AND MULTI BODY DYNAMICS SIMULATION

Oleo Multi Body Dynamics (MBD) Simulation Service include a two dimensional model of the rail vehicle including bogie and suspension, coupler and anti-climber characteristics.

FINITE ELEMENT MODELS

Oleo can provide special elements for energy absorption devices such as couplers, buffers and anti-climbers for use with FE codes such as LS-Dyna and Radioss crash.



The aircraft industry provided the first application for the Oleo gas hydraulic energy absorber principle in landing gear. Oleo has developed and refined this to meet the specific needs of the rail industry over the last 60 years.

Oleo units are made from precision parts and protected and sealed against contamination to reduce the need for maintenance even under arduous operating conditions to provide:

- Controlled impact energy dissipation that improves passenger safety and minimises costly damage to rolling stock
- Dissipating virtually all of the impact energy over the closure stroke avoiding damaging re-coil forces
- Uniform buffer force in order to maintain minimum vehicle deceleration.
- Accurately predictable and consistently repeatable performance characteristics
- Long maintenance free service under normal operating conditions

Oleo also supplies bolt on impact energy absorption devices and has over one million units in service in passenger and freight rail applications including:

- **Gas Hydraulic buffers**
- **Deformation tubes (devices)**
- **Crash Buffers**
- **Anti-climbers**
- **Multistage devices**
- **Obstacle deflectors**
- **End Stops**

All Oleo buffers conform to the European specification EN15551.