

LEADING THE WORLD IN ENERGY ABSORPTION



RAIL

Products and Services



Keeping People Safe

Oleo leads the world in energy absorption in many critical applications, often as the last line of protection for people and equipment.

Every day millions of people around the world rely on Oleo to provide their safety.

It is our responsibility to ensure all international standards for the industries we supply are adhered to, but we strive for more than that - to enable our partners to provide the safest energy absorption solutions remains a core principle.

Our mission is clearly and simply to keep people safe.



HIGH SPEED RAIL ROLLING STOCK CATERS FOR SPEEDS IN EXCESS OF 250KM/H



The railway industry

The future of the railway industry is in a growth phase with the rising demand for passenger and freight capacity.

In all areas of the world vast investments are planned to build rail infrastructure to provide safe, efficient and sustainable networks that deliver economic growth.

New passenger and freight rail networks are forming the backbone of the transport system, linking airport and cities with high speed and intercity rail networks whilst urban areas are feeding into multi-modal local transport networks, such as metro and light rail.

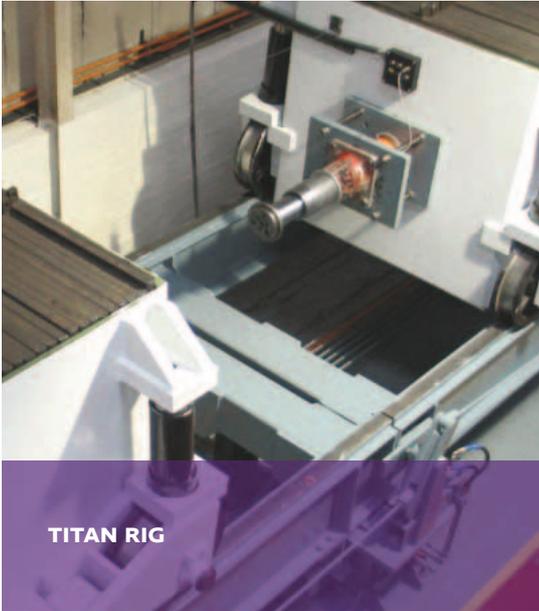
With the increase in rail networks and traffic volumes, passenger and freight trains are increasing their speed and require improved protection. Rail networks and rolling stock are inherently safe but accidents do happen and the highest level of crash energy management expertise is required.

Oleo provides crash energy management products and services at all levels for rail operators, manufacturers of rolling stock and couplers.

With 1.5 million hydraulic and deformation impact energy absorption units worldwide, Oleo are meeting the challenges of higher levels of protection through innovative new products and services.

Oleo provides a full range of Crash Energy Management solutions, in order to ensure a predictable controlled and safe outcome. All units are tested by Oleo with validated mathematical models in accordance with EN15227. Plug in elements are available for Radioss and LS-Dyna finite element software.

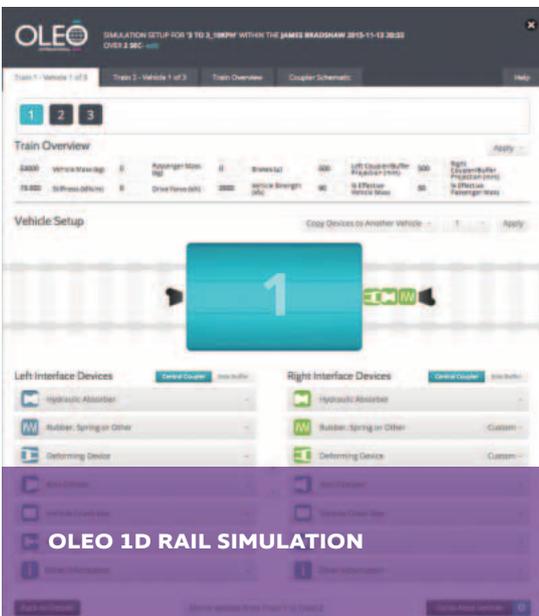
The system used by Oleo for the mathematical modelling of crash scenarios is approved by a European Rail Authority as being accurate, appropriate and properly controlled. Our Test Facilities are accredited to ISO/IEC 17025.



Test and Validation

Rail projects often require unique trains due to variations in infrastructure, regulations and operating practices. Neither time nor cost permit prototype trains to conduct operating trials and crash testing, at the same time crash energy management systems are increasingly complex. Oleo offer the unique combination of crash energy management simulations using mathematical models that are validated in accordance with EN15227.

Oleo's in house test facilities are accredited in accordance with ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories (UKAS accreditation number 7778).



Simulation

Oleo has developed 1D Rail simulation software, a powerful online application for analysing train collision dynamics. Simulating various collision scenarios including high speed train, metro and end stop solutions.

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1D Rail is used by Oleo for the mathematical modelling of crash scenarios and is approved by a European Rail Authority as being accurate, appropriate and properly controlled.

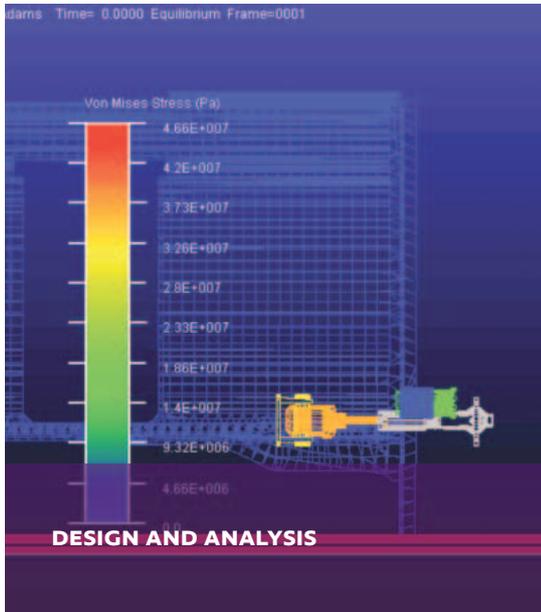


Research and Development

Our purpose is to provide the highest levels of protection against harm or injury: Keeping People Safe.

We pride ourselves on being innovative in response to both industry standards and customer demands. Providing technological industry standards and solutions which can be optimised to suite any customer specific requirements.

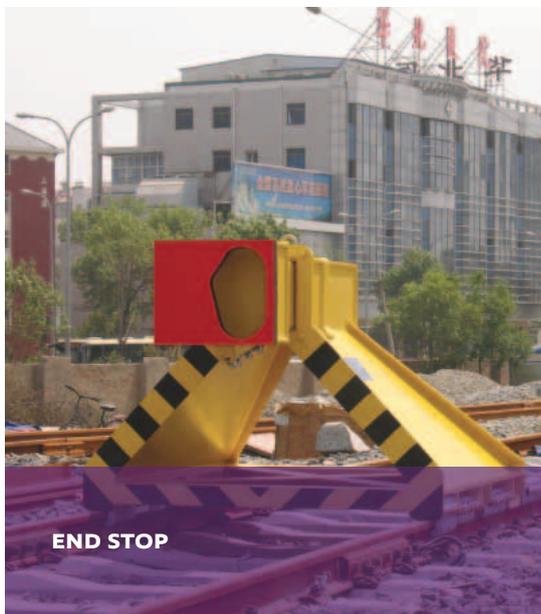
Continuous investment in research and development, state of the art technology and modern manufacturing processes has made Oleo leading experts in energy absorption.



Consultancy

Consultancy is a growing part of Oleo's business – we are regularly undertaking work producing energy absorption solutions for customers including simulation, design, analysis and testing services.

For more information on consultancy services please contact us.



Infrastructure

Oleo has extensive experience in delivering complete end stop solutions globally for use on depot and mainline; including sliding friction end stops, hydraulic friction end stops, fixed end stops, hydraulic systems with concrete base foundations and bespoke applications.



Service

Oleo offer a full reconditioning service for all rail buffers and have service centres in Germany and China.



Light Rail



MONORAIL FAST TRAIN ON RAILWAY, MOSCOW, RUSSIA

Oleo's crash energy management products and services are designed for use on light rail vehicles such as trams, passenger movers and light rail networks.

Light rail covers a range of platforms (APM's, Trams etc.) which operate primarily in urban areas and at airports.

Light rail networks have become popular in recent years due to their lower capital costs and increased reliability compared to heavy rail systems. Oleo's new Sentry™ System can supply train builders with cost effective solutions for their vehicles to help keep the capital costs down and increase passenger safety.

The Sentry™ System offers lower price per train set, lower life cycle costs, reduced potential impact damage with increased passenger protection.



Metro

As urban areas are growing so is the need for rapid transit systems such as metro, subway and underground networks.

These high-capacity systems provide a lifeline between residential and business areas and run on electric railways often in tunnels or on elevated railways.

Rapid transit/Metro systems are typically integrated with other public transport and often operated by the same public transport authorities such as mainline stations and buses. Oleo is working with train builders and operators on crash energy management systems for rapid transport and has developed the Sentry™ System to service this growing market - a standard product range.

The Sentry™ System offers lower price per train set, lower life cycle costs, reduced potential impact damage with increased passenger protection.



CONTEMPORARY NEW TRAIN ON UNDERGROUND STATION



PASSENGER TRAIN, GERMANY



Mainline

Mainline trains (or intercity trains) are essential for linking cities, airports and rural areas together.

Many of Oleo's crash energy management products and services are designed for use on mainline trains, such as Oleo's Sentry™ System, Gas Hydraulic capsules, Deformation Tubes and Anti-climbers.

Mainline trains operate primarily along exclusive rights-of-way and uses multiple units coupled together to form a train. Oleo's crash energy management products are designed for mainline trains and offer lower price per train set, lower life cycle costs, reduced potential impact damage with increased passenger protection.



High Speed

High-speed rail is a type of rail transport that operates significantly faster than traditional rail traffic, rolling stock is designed and built to cater for speeds in excess of 250km/h and dedicated tracks are usually required.

As vehicle speeds increase it is vital that trains have safety devices which can protect passengers and

the structure of the train in the event of a collision.

Oleo has introduced a range of gas hydraulic energy absorption devices to support this growing market. In addition Oleo's 1D Rail simulation software allows train builders to run simulations using various crash scenarios to select the best possible devices for their trains.



HIGH-SPEED RAIL, CHINA



ELECTRIC LOCOMOTIVE, FRANKFURT



Locomotive and Freight

Oleo's first buffers produced in 1953 were high capacity energy absorbing buffers for use on Locomotive and Freight/Passenger wagons.

Using Gas Hydraulic technology Oleo provide a safe and robust solution to protect passengers and cargo with UIC 526 approved Cat. C buffers.

Oleo Cat. C buffers can be fully simulated with 1D Rail simulation software to protect against accidental events and collisions.

Oleo Crash Buffers comply with UIC 573 annex F (250kJ and 400kJ), with the reversible element (using Oleo Gas Hydraulic technology) fully complying with UIC 526 Cat. C requirements.



End Stops

Many passenger, freight and depot locations are terminal (end of line) situations, on the rare occasions the train fails to stop or slow down sufficiently the risk is that it collides with or overrides the end of the platform/line.

With train velocities increasing and a greater emphasis on the importance of passenger safety and rolling stock protection, end stops are an essential factor in any new rail project. With over 60 years

experience within the rail industry, Oleo has an in depth understanding of train performance, ensuring efficient and effective end stop solutions are provided to the industry in the event of a train failing to stop. By dissipating the impacting energy through friction clamps, gas hydraulic buffers or a combination of both, each solution is optimised to provide the lowest deceleration rates whilst maintaining minimal installation distances.



GUANGZHOU LINE



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Classified under UN ADR, IMDG & IATA regulations as: UN3164 Articles, pressurised, Pneumatic or Hydraulic 2.2.



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