

ZIMM drive technology for defence applications

A use case for vehicle, radar and communication systems

ZIMM – Reliable movement functions for lifting, levelling and positioning

In defence applications, loads and technical systems have to be lifted, levelled, positioned and adjusted in a controlled manner. Precise and reproducible movements as well as drive technology tailored to the respective application and ambient conditions are essential.

Within the ZIMM modular system, screw jacks and electromechanical actuators can be combined with matching screws, motors, connecting shafts, couplings and add-on parts. This creates coordinated drive systems for a wide range of lifting, levelling, positioning and adjusting tasks in defence applications.

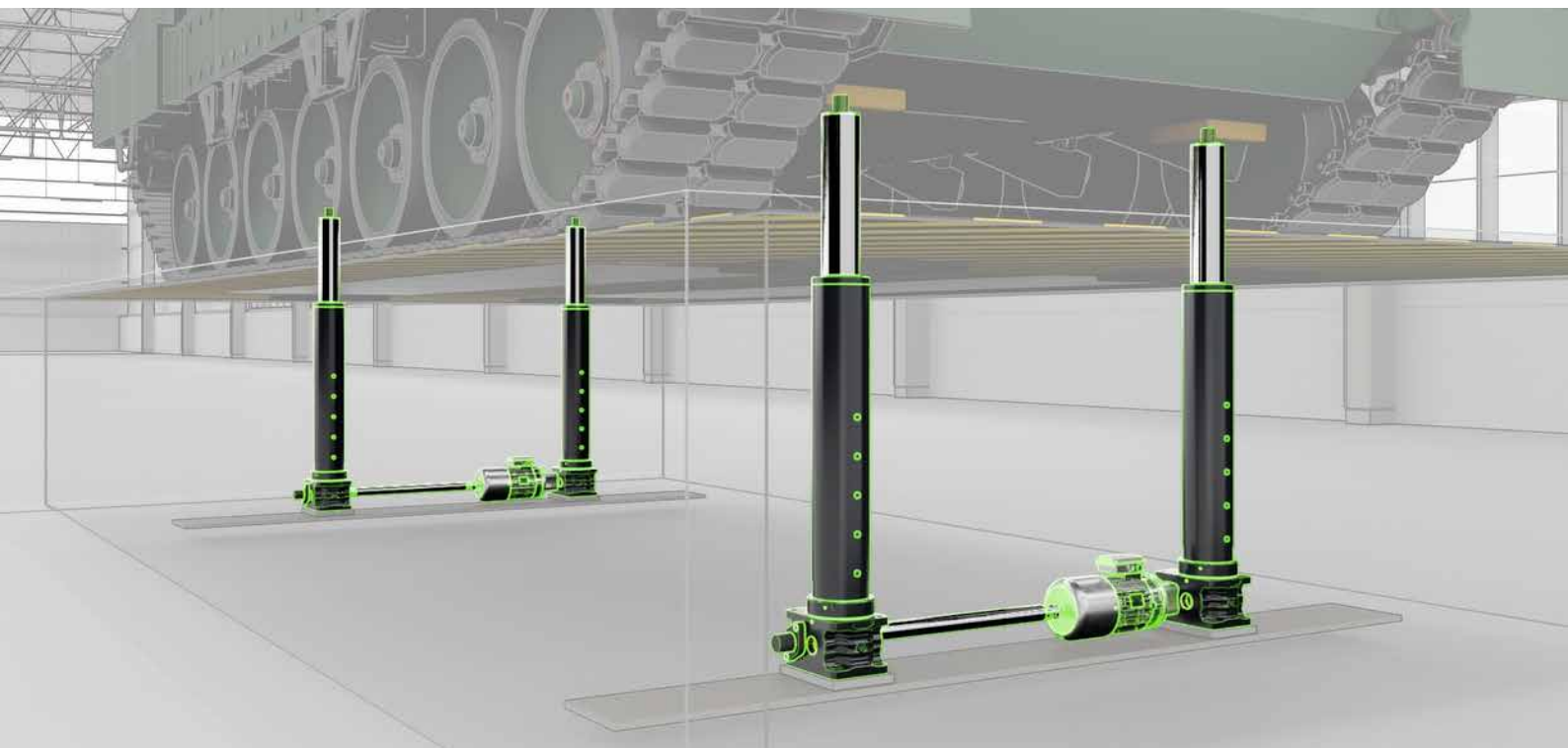
ZIMM solutions for defence applications:
Screw jacks and electromechanical actuators for lifting, levelling and positioning in vehicle, radar and communication systems.



Vehicle lifting | Lifting and positioning

For assembly, inspection and maintenance work, military vehicles can be raised on four lifting posts and brought into a defined working position. Four ZIMM electromechanical actuators generate the required linear lifting movements.

Two actuators each form a front or rear lifting group. The control system coordinates both lifting groups during the lifting operation. Vehicle pick-up, supporting structure, guidance, locking and safety functions are designed to suit the overall installation.



Benefits

- Vehicle lifting at four defined pick-up points
- Joint control of the actuator pairs
- Reproducible working height
- No hydraulic drive medium within the ZIMM lifting axes
- Adaptable to vehicle mass, stroke and pick-up points

Operating principle

- Four electromechanical actuators generate the linear lifting movements
- Two actuators each form a jointly controlled lifting group
- Four lifting posts take up the vehicle at defined points
- The control system coordinates the lifting groups up to the working height
- Supporting, guiding, locking and safety elements secure the vehicle

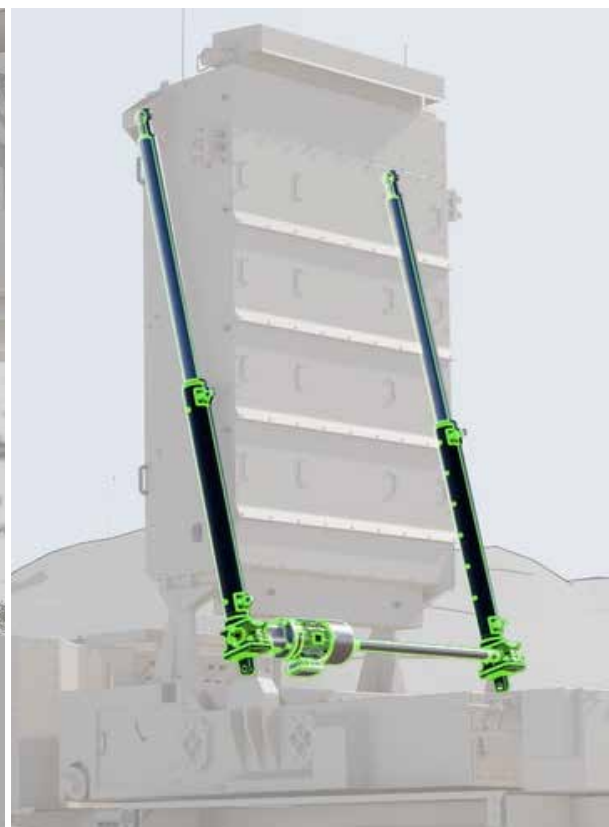
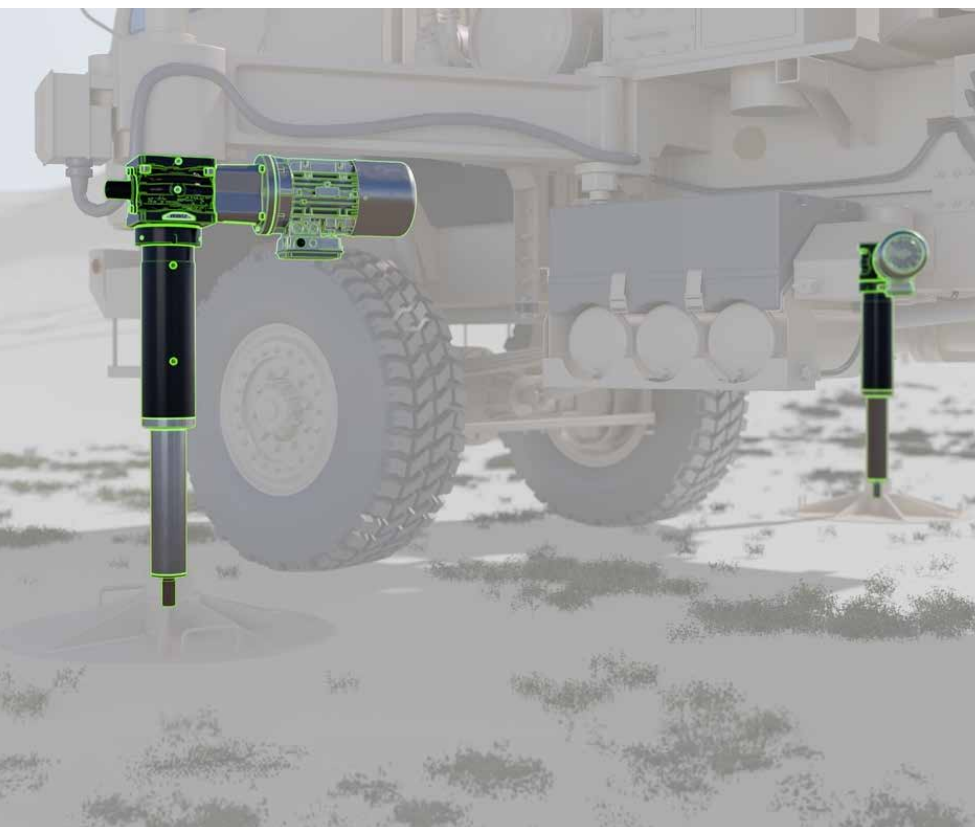
Application scenarios

- Assembly and maintenance of military vehicles
- Inspections of the vehicle underside and running gear
- Replacement and servicing of vehicle components
- Stationary lifting systems in workshops and depots
- Replacement of technically suitable hydraulic lifting systems

Vehicle levelling | Levelling and erecting

On uneven ground, mobile radar and vehicle systems first have to be brought into a defined horizontal position. Four ZIMM electromechanical actuators perform the linear adjusting movements at the support points of the vehicle.

After levelling, separate electromechanical actuators move the radar from the transport position into the operating position. Vehicle levelling and radar erection are therefore two separate, consecutive adjusting functions.



Benefits

Levelling of the vehicle on uneven ground

Adjustment of the vehicle attitude via four support points

Defined starting position for the radar system

Electromechanical erection and lowering of the radar

Integration into the higher-level vehicle control system

Operating principle

Sensors detect the vehicle attitude

Four actuators adjust the height at the support points

The control system coordinates the travel until the vehicle is horizontal

Separate actuators move the radar into the operating position

Support, locking and safety functions secure the overall system

Application scenarios

Mobile radar platforms

Communication and command vehicles

Mobile reconnaissance and surveillance systems

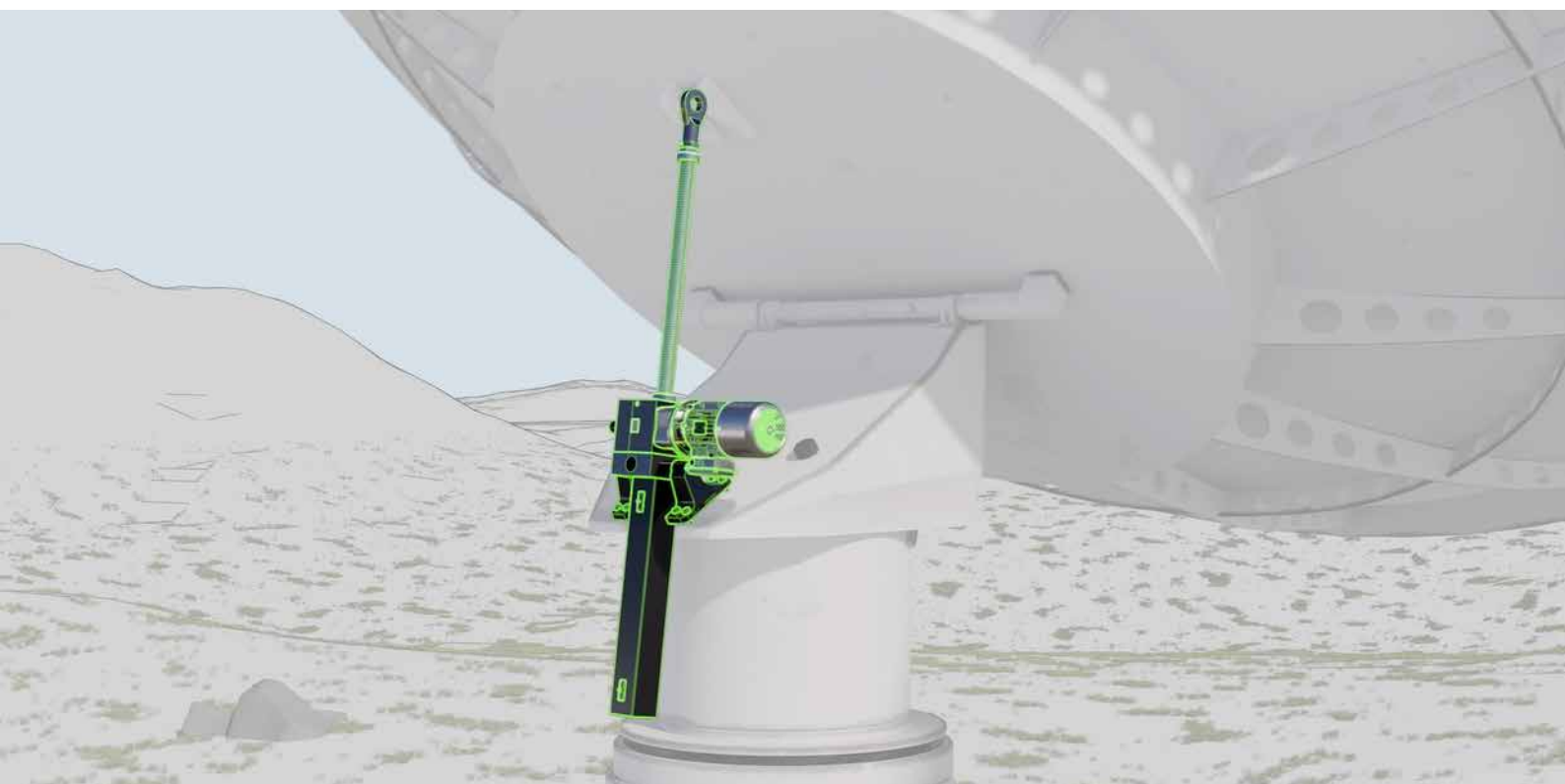
Vehicles with erectable technical systems

Mobile platforms with a defined horizontal operating position

Antenna positioning | Setting the elevation angle

In stationary antenna and radar systems, the reflector has to be set to the required elevation angle and positioned reproducibly. A ZIMM screw jack generates the required linear adjusting movement.

Via a defined linkage point, the linear movement is converted into a pivoting movement of the antenna reflector. The sizing is based, among other factors, on reflector mass, lever ratios, wind load, adjustment range, adjusting speed and positioning requirements.



Benefits

- Defined setting of the elevation angle
- Reproducible positioning of the antenna reflector
- High actuating forces thanks to the mechanical ratio
- Integration into the supporting and pivoting structure
- Adaptable to reflector mass, lever ratios and angular range

Operating principle

- A motor applies a rotary motion to the screw jack
- The screw jack generates the linear adjusting movement
- The linear movement acts on the reflector via the linkage point
- The reflector is set to the elevation angle
- Position monitoring reports the position reached to the control system

Application scenarios

- Stationary parabolic antennas
- Radar and communication installations
- Ground stations with an adjustable antenna reflector
- Antenna systems with a variable elevation angle
- Retrofit of existing positioning systems

Submit an inquiry for your application now

Are you planning a lifting, adjusting, levelling or positioning task in the defence sector? Send us your movement task and the most important technical parameters. You can also attach a drawing or sketch of the installation situation.

ZIMM supports you in selecting and sizing suitable screw jacks and electromechanical actuators.



ZE-Series | Screw jacks

ZIMM screw jacks convert rotary motion into linear lifting and adjusting movements and are available in different series and sizes for lifting forces from 2.5 to 1,000 kN. Several screw jacks can be combined via connecting shafts, couplings and bevel gearboxes to form a mechanically coupled system, enabling the coordinated movement of several lifting points.

ZA-Series | Actuators

ZIMM actuators generate controlled linear movements for lifting, lowering, positioning and adjusting. Depending on the version and system design, lifting forces from 25 to 200 kN are available. The protected screw and sealed gear support use in demanding environments.



Further applications and technical information on ZIMM drive solutions for the defence sector are available online: zimm.com/defence

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