

CARE

Crash Absorber for Remote-operated Equipment

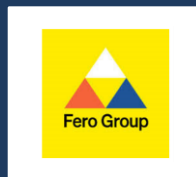
Tele-operated crash absorber

Isaak Yperman, Movias



Movias

Consortium leader &
coordination



Fero Group

Crash absorber operator



V-tron

Technology & tele-
operation



Orange

5G network & connectivity



WHY ARE WE DOING THIS?

The safety of our drivers



50%

of the Fero fleet had an accident last year

45 of the ± 90 crash absorbers



Real accident — collision on a Belgian motorway

Extrapolated to the entire Belgian fleet

300+

crash absorbers on Belgian roads

1×

an accident every other day — with a driver in the vehicle

Good protection for road workers — but sitting inside is life-threatening.









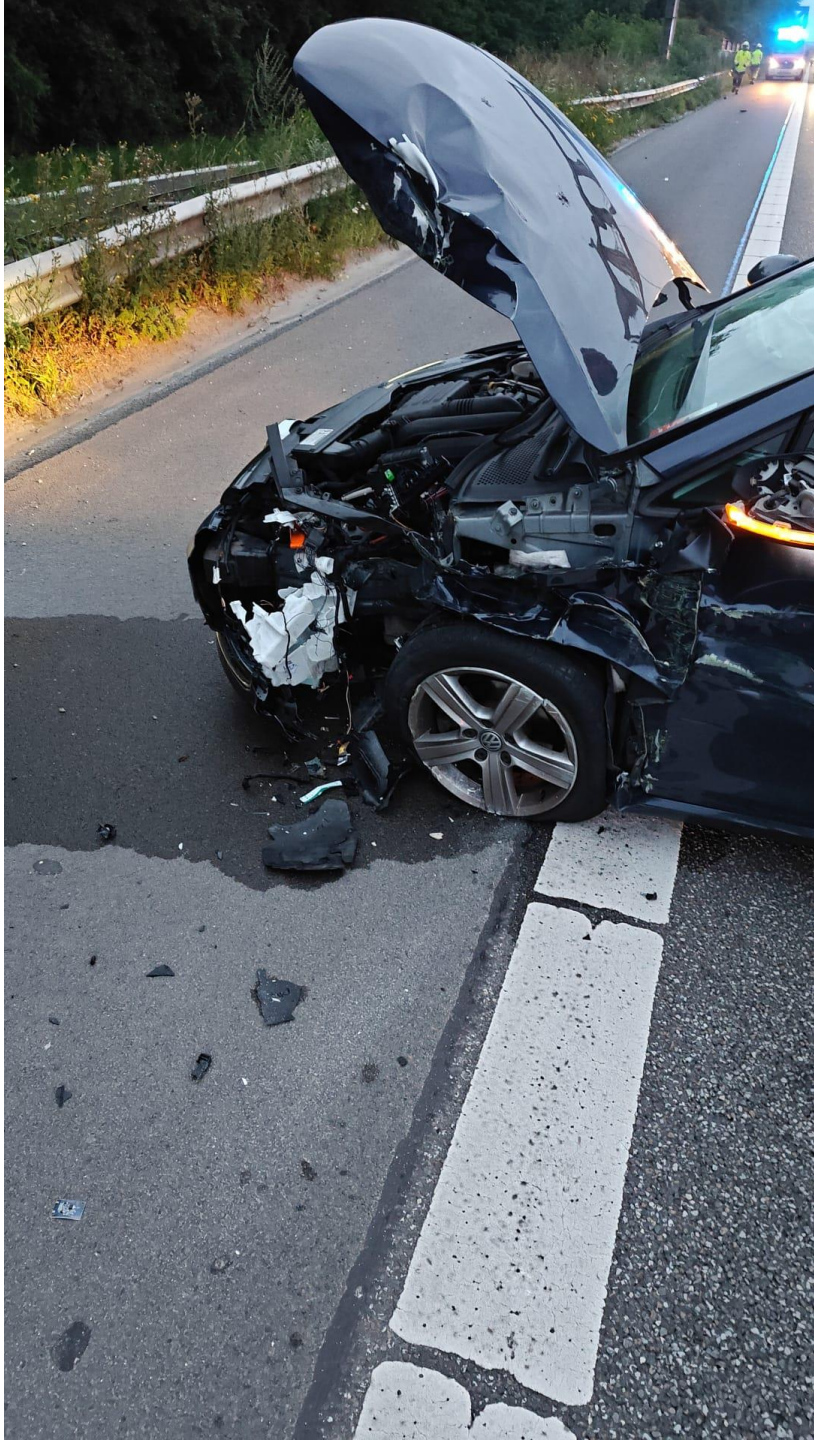


SAFETY TRUCK

XF
EURO 6

517











Why remotely operate a crash absorber?



Safety

- Driver no longer on the carriageway
- Zero exposure to collision risk
- Operator in a safe control environment



Efficiency

- 1 operator can manage multiple vehicles
- Faster deployment, flexibly scalable
- Lower operational cost per vehicle-hour



Sustainability

- Engine off during worksite monitoring
- Significant CO₂ reduction
- Fewer driver trips



Labor market

- Structural driver shortage
- More attractive job — safe and technological
- Fewer drivers needed for the same output

Computable Award 2026: Social Innovation of the Year



CARE (Movias, Fero Group, V-tron, Orange) named Social Innovation of the Year at the Computable Awards, 21 May 2026.

What have we achieved by the end of CARE?

3 + 3

vehicles control stations

Operational at project completion



Technical integration

Sensors, actuators, cameras, 5G router & control stations with end-to-end 5G network slicing.



Operational processes

Communication protocols, role allocation, integration with worksite signage and road authorities.



Operator training

Certification path & training framework for tele-operators in a professional, safe environment.



5G proven as an enabler

Demonstrated that 5G SA can carry critical remote control, high video bandwidth and sensor data.

WHERE DO WE STAND TODAY?

3 vehicles fully equipped



Fero Group — crash absorber equipped with tele-operation kit

Installation & integration per vehicle



Sensors

Multiple cameras for all-round view and cabin perspective



Actuators

Control of throttle, brake pedal, steering wheel



Tele-Operation Box

Software for transmitting the video stream and receiving the command stream



Router & antennas

5G router Sierra Wireless with antenna setup for mobile connectivity



Safety layer

Failsafe preparation and secured command stream

3 control stations & 5G communication layer



Control station at Fero in Willebroek



Control stations

- Live video feeds from the cabin and around the vehicle
- Primary control: throttle, brake, steering (via pedals, steering wheel, gear lever)
- Secondary control: lights, crash cushion, LED panel, lift
- Real-time vehicle status



5G network by Orange, with 4G as fallback

- End-to-end connection vehicle ↔ control station
- 5G Standalone for low latency and high uplink bandwidth
- Automatic fallback to 4G, continuous availability

LIVE DEMO

Watch: tele-operation in Willebroek & safety driver in the port



**Tele-operator at the Willebroek control station
Safety driver in the port of Antwerp**

Video to be played live during the presentation.



Fero Group

CARE



Fero Group

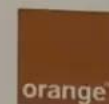
PROJECT

Telegestuurde botsabsorbeerders bij mobiele werven



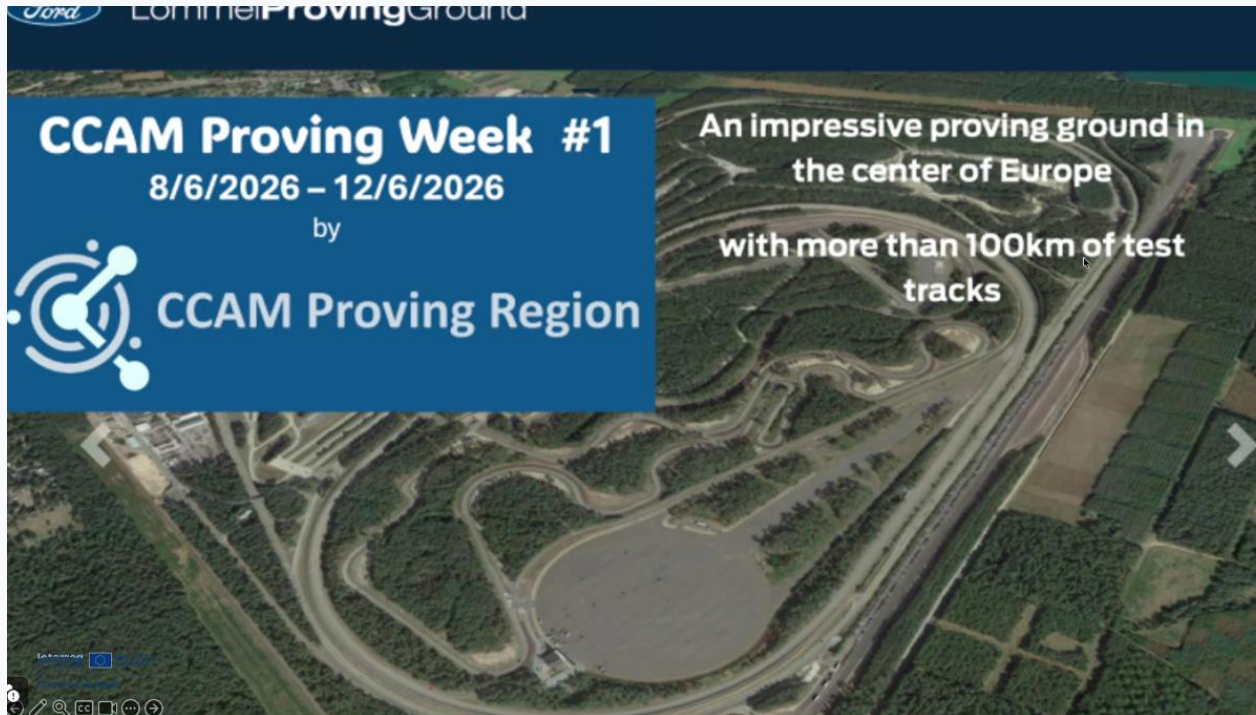
MOVIAS
smart mobility

v·tron
YOUR WAY IN INFOMOTIVES



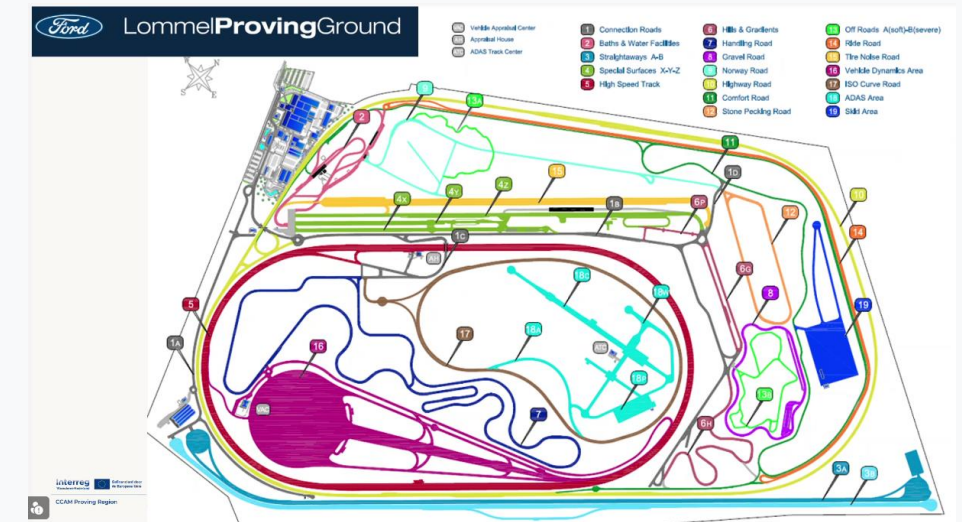
Business

Lommel Proving Ground, 8–12 June 2026



Lommel Proving Ground — more than 100 km of test tracks

Our first tests outside our home base



Part of the CCAM Proving Region

A shared test infrastructure for connected & automated mobility — more in Sven's presentation.

Tele-operated on a motorway test track



Mobile worksite scenario on the Lommel motorway track



Realistic motorway setting

Mobile worksite scenario: the remotely driven crash absorber follows a work vehicle, just like on a real mowing or marking job.



Away from home base

Vehicle, control station and the video & command streams tested in a new environment, outside Willebroek.



Lessons learned → improvements

Test feedback shaped our improvement list: steering wheel returning to neutral, camera positioning, network redundancy.

Port of the Future, 16 September 2026



Enclosed site at the Port of the Future, Antwerp, set up for mobility testing

Two locations, connected live via 5G



Truck in the port

The tele-operated crash absorber drove laps around the building in the enclosed test zone.



Livestreams at our stand

Footage of the safety driver and the tele-operator was streamed live to the CARE stand.



Control station in Willebroek

Our tele-operator drove the truck remotely from the control station at Fero in Willebroek.

What visitors saw on the day



Fero Group crash absorber at the Port of the Future



Live cabin view: safety driver on board, tele-operator in control



The CARE stand with the livestreams



Visitors could ride along on the passenger seat, next to the safety driver — while the truck was driven from Willebroek.

From proof of concept to public road and market



STEP 1

Test permit for the public road

- Closing the last technical gaps — e.g. hazard lights on connection loss, backup connectivity for the control centre
- Then: ready to apply for the public-road test permit



STEP 2

Commercial roll-out

- In parallel: business plan in preparation for commercial roll-out
- Regulation becomes essential for the business case



THE KEY REGULATORY QUESTION

Can 1 operator control more than 1 vehicle and if so, from when?