

Hybrid Catenary Maintenance Vehicle for HSL (High Speed Lines) & CL (Classic Lines)



CMV - Catenary Maintenance Vehicle

John Cockerill implements its latest innovations in a hybrid, autonomous vehicle featuring a zero emissions transmission mode. The CMV (Catenary Maintenance Vehicle) consists of a Motor Unit Vehicle and a Railcar, the whole considered as an inseparable unit.

Designed with cutting-edge technology, the CMV's elevated platform provides an easy access in any direction to maintain the catenary system.

Motor Unit Vehicle

The Motor Unit Vehicle is made of a main frame on two axles. Each axle is equipped with an electric traction motor. Electrical power is provided by an alternator powered by diesel engine or traction batteries.

The MUV complies with emissions standards thanks to a SCR (Selective Catalytic Reduction) device. The exhaust line incorporates a SCR after treatment (through Ad-Blue injections) device to substantially reduce the nitrogen oxide (NOx) emissions level.

The electrically powered compressor located under the

main frame, associated to a pneumatic module, generates the required air pressure for the brake system.

For maintenance operations on main high speed and classic lines, the Motor Unit vehicle is equipped with the retractable platform, a crane and a drum stand (catenary cable).

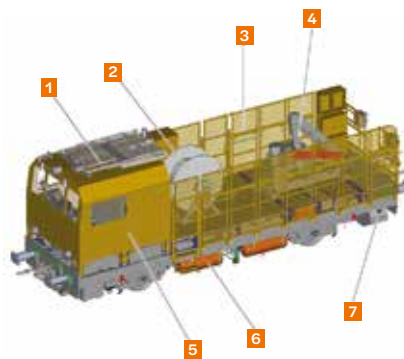
Railcar

The railcar consists of the main frame with two Y25 bogies with carrying axles. The 8 racks traction batteries are located under the wagon's cab. The rail-car is equipped with a cab divided in three parts :

- One driving cabin (the second one is located at the other extremity of the vehicle)
- Social room consists of a locker room and a kitchenette with sink.
- Workshop

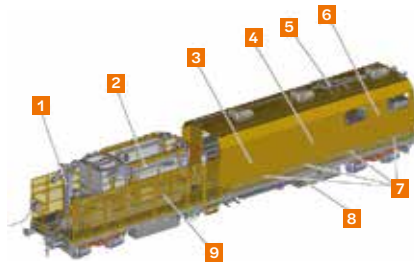
For the maintenance operations, the car is equipped with an elevating platform fitted with two telescopic handlers that insures an optimum and complete mobility, along with a device that guarantees the alignment with the catenary system. It also features a catenary clamping pylon and as well as an equipotential pantograph.

Main modules of the Motor Unit Vehicle



1. Retractable deck
2. Drum stand
3. Retractable guards grid
4. Crane
5. Driving cabin
6. Main air tank
7. Main fuel tank

Main modules of the Railcar



1. Catenary clamping pylon
2. Elevated platform
3. Workshop
4. Living area
5. Pantograph
6. Driving Cabin
7. Battery Rack
8. Auxiliary fuel tank
9. Retractable guard panels



Elevated platform



Control panel (1 dashboard per cabin)

Main characteristics

Power of diesel engine	550 HP
Routing Mode transmission	Diesel-Electric AC/AC
« Zero-emission » mode transmission	Full electric - Traction battery
Axle load	20T max/axle
Overall length	31.4m
Motor Unit Vehicle wheelbase	5.500 mm
Railcar wheelbase	14.660 mm
Minimum bend radius	Rmin 100 m
Maximum speed	100 km/h
Driving wheels	2 drive axles on the MU vehicle
Wheel diameter	920 mm

Operation modes

- Routing Mode to work site from 0 to 100 km/h in thermic Diesel-electric AC/AC mode
- Work Mode on site from 0 to 10 km/h: “zero emission mode”: traction battery energy supply that insures great autonomy (with remote control)

On-board safety and signalling equipment

- TVM430 (High Speed Track signalling device)
- Event data recorder ATESS
- GSM-R radio station
- ATSD (Automatic Train Stop Device)
- Speedometer Logiplus (digital)
- Vigilance device
- Interphone

