

MULAG

Innovative Technologies for Ground Support Equipment



Fuel Cell Towing Tractor Comet 3 FC



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CO₂ emission free

Large range / 24-hours operation

Future-oriented technology

Great agility

The built in fuel cell generates electrical energy through a chemical reaction of hydrogen and oxygen and provides power for the conventional electrical engine of the vehicle. Clear water and heat are the only emissions being generated in this process – the heat is reusable without power loss for the cabin heating. The refuelling with hydrogen takes only a few minutes thus the vehicle qualifies for 24-hours operation.

MULAG-Quality makes an impact

More than 45 years of experience with the production of airport vehicles, a fully developed technology and the latest technical know-how are complemented by the highest manufacturing quality, certified by DIN EN ISO 9001:2008.

Interesting equipment details like the hydraulically suspended drivers seat, the adjustable steering wheel and the clearly arranged dashboard show that great demands are placed on ergonomics at MULAG.

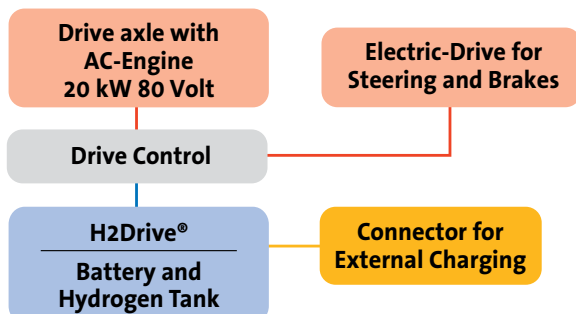


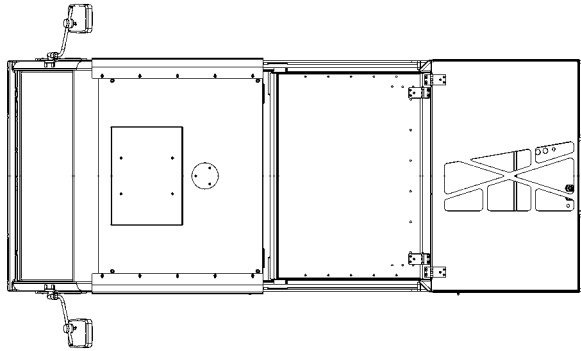
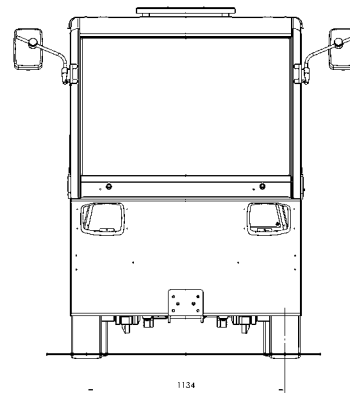
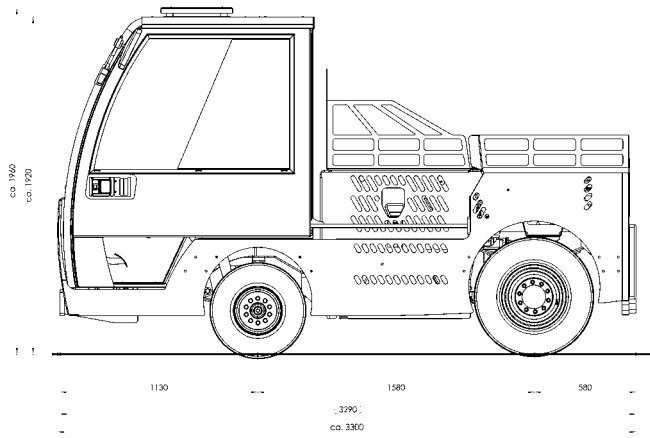
The design of our airport vehicles is based on an independent chassis especially developed for the following purposes: Optimal load balance and outstanding dynamical characteristics as well as a quick and easy access to all important service points and components.

Towing tractor with Fuel Cell System

The Comet 3 FC is the ideal solution for baggage handling in sorting areas, on the apron and for indoor industrial use. With its electrical drive and power generation using a fuel cell system by H2Logic® the towing tractor is CO₂ emission free and thus ideally suited for indoor use as well as continuing powerful operation on the airport apron.

The MULAG Fuel Cell System





Comet 3 FC

Technical Data and Dimensions

Engine and Powertrain

Engine	AC 20 kW, coaxial, axle-integrated
Drive electronics	Drive control with braking current feed
Drawbar pull	20 kN
Steering	Hydraulic steering system
Motor for hydraulics	2 kW electrical motor
Brakes	Power-brake system, disc brake in front, multiple disc brake in rear, hydraulic spring loaded parking brake
Front axle	Heavy steering axle with disc brakes and shock absorbers
Rear axle	Heavy differential axle with multiple disc brakes
Electrical system	24 V
Driving speed	up to 25 km/h

Dimensions and Weights

Dead weight	4.000 kg incl. fuel cell
Length	3.180 mm
Width	1.320 mm
Loading platform	1.200 mm x 1.500 mm
Height (top of cab)	1.920 mm / 1.960 mm
Ground clearance	130 mm
Turning circle	3.000 mm (outer wheel)
Wheels/tires front	6.00 R 9
Wheels/tires rear	7.00 R 12

H2Drive® fuel cell unit

Manufacturer	H2Logic®
Operation with full tank	1 work shift
Refuelling time	3-4 min.
Certificates	CE and TÜV

Serial equipment

- Maintenance-free AC drive
- Hydraulic steering system
- Dual circuit power-brake with brake booster
- Hydraulically ventilated parking brake acting on rear axle
- 3-level tow hitch at the rear (others upon request)
- 2 outside rear view mirrors
- Hydraulically suspended driver's seat, individually adjustable
- Seat contact (when the driver leaves the vehicle, drive and wiper-washing system are switched off, lighting is switched to parking light)
- Safety belt
- Adjustable steering wheel
- Roof light
- Wiper-washing system
- Sun shield for driver
- Indicator for state of charge
- Working hour meter
- Emergency switch-offs



Comet 3 FC

Comet 3 FC – Take-off into the future of fuel cell technology!

The state-of-the-art drive concept of the Comet 3 FC turns the use of this CO₂ emission free fuel cell tractor into an investment for the future: All towing tasks are accomplished easily and fast even under cramped conditions – inside and outside of buildings. The high quality of workmanship reduces long down times and service cycles to a minimum – that means efficiency and economy in many fields of application!



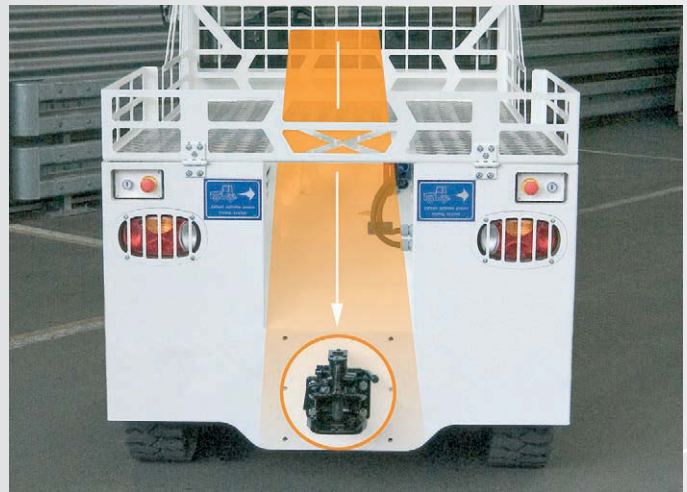
At MULAG service comes first

Even the best vehicle design is of no avail without a strong and efficient after-sales service during the whole lifecycle of a vehicle. This is where MULAG comes into play, with a reliable and quick supply of information and spare parts for our customers – you can count on us!

High-Tech is our crucial advantage!

The use of high-grade industrial components instead of standard components is crucial for the reduction of down times and need for service of our vehicles to a minimum! Overdimensioned power and loading capacities result in high reliability and safety – well known to our customers worldwide as MULAG Quality.

Our achievements in Ground Support are convincing!



Viewport for optimal view onto the rear tow hitch



Optimized steering geometry up to 70° with low tire attrition



Numerous options – e.g. sliding doors or hinged doors

MULAG

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