

# HYDROGEN POWERED EXCAVATOR



**CMB**  
**.TECH**



## H<sub>2</sub> DUAL FUEL TECHNOLOGY

Heavy Duty Platforms require incremental innovation instead of disruptive innovation. CMB.TECH's H<sub>2</sub> dual fuel technology is the first step towards the zero emission goal. This novel technology has been proved to drastically reduce carbon emissions on existing Heavy Duty Platforms. The modular design of the retrofit kit allows an easy installation on existing platforms.

The H<sub>2</sub> dual fuel excavator can reduce up to 50% of the CO<sub>2</sub> emissions. The H<sub>2</sub> dual fuel excavator 2.0 is currently being tested on the dyno test cells and looks promising to save up to 70% of CO<sub>2</sub> emissions and will additionally reduce the tailpipe NO<sub>x</sub> and Adblue consumption with similar levels.

In the H<sub>2</sub> dual fuel technology, hydrogen is aspirated into the combustion chamber. This substitution directly reduces the amount of diesel fuel required to power the engine, resulting in a drastic reduction of CO<sub>2</sub> emissions. This is done while maintaining the same power output and still relying on the proven technology of diesel.



### H<sub>2</sub> STORAGE

- 6x Type III, 35MPa H<sub>2</sub> cylinders
- Individual solenoid valve per cylinder
- Modularised design
- Integrated pressure regulator
- EC79 compliant (UN/ECE-R134 ready)
- 30kg H<sub>2</sub> storage



### H<sub>2</sub> REFUELLING

- Standard H<sub>2</sub> high-flow receptacle
- Flow rate approx. 100-120 g/sec
- No cooling required
- Less than 15 mins refuelling time











## SPECIFICATION

### EXCAVATOR

Type	-	Hitachi ZX350
Weight	-	37 ton

### ENGINE

Type	-	6HK1X 7,8 L
Power	-	210 kW
Torque	-	1080 Nm

### FUEL TANKS

H <sub>2</sub> Storage	-	30 kg
Diesel Tank	-	630 L
AdBlue Tank	-	70 L



## SAFETY

With one click, the system can be switched to diesel only, instantly shutting down and closing the H<sub>2</sub> system.

The technology is based on standards used and proven within the industry for more than 50 years.

- Static & dynamic leak detection strategy
- CMB.TECH's 3 layers of safety
- EC79 approved components
- UN/ECE-R134 ready

## KEY FEATURES H<sub>2</sub> DUAL FUEL EXCAVATOR

- The best available clean technology heavy construction equipment (37t)
- Savings of up to 50% of CO<sub>2</sub> emissions
- Low-cost technology for the highest CO<sub>2</sub> savings
- The base excavator is not modified so maintenance can still be undertaken by the same technicians
- Available as a retrofit kit, which can be easily installed in 3 days
- A full day autonomy in dual fuel, after which refuelling can take place or diesel operation continues
- Enabling energy transition, whilst not being dependent on the availability of the H<sub>2</sub> refuelling infrastructure

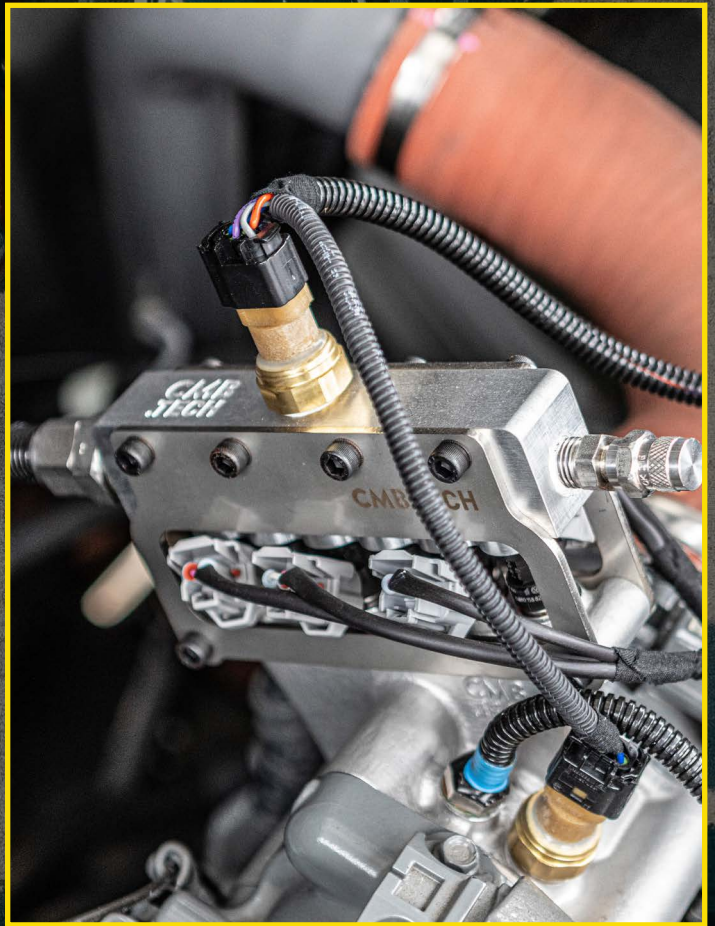
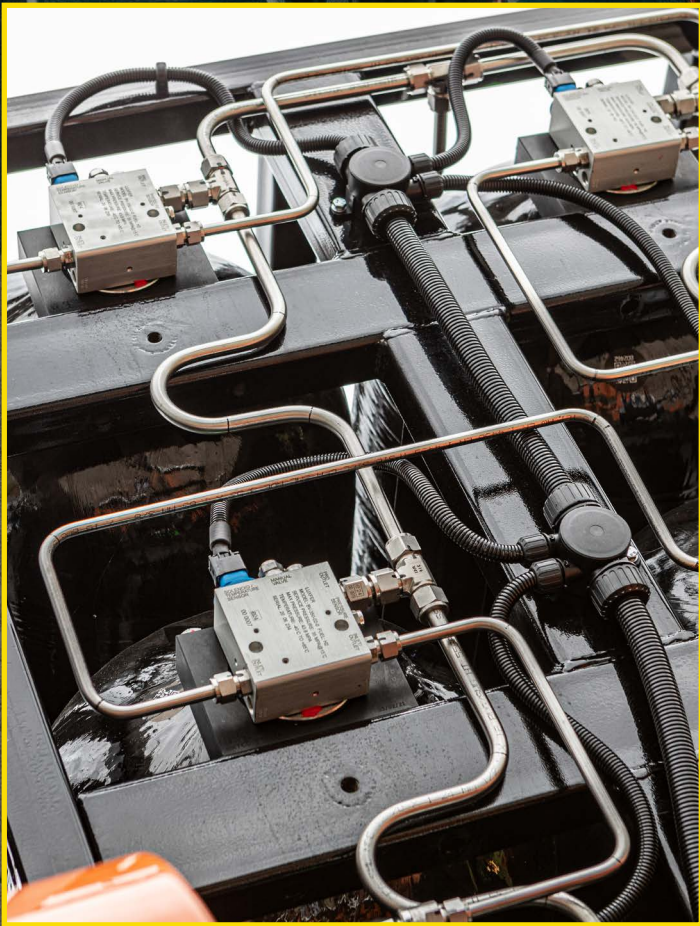






	STAGE III DIESEL	STAGE V DIESEL	LNG	CMB.TECH H <sub>2</sub> DUAL FUEL TECHNOLOGY	H <sub>2</sub> FUEL CELL	BATTERY ELECTRIC
INVESTMENT	€ € € €	€ € € €	€ € € €	€ € € €	€ € € €	€ € € €
CO <sub>2</sub>						
AUTONOMY						
REFUELLING TIME						
COST / TONNE						













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