



Horse Powertrain reveals waterproof hybrid engine suitable for off road vehicles

- HORSE B20 engine is a four-cylinder 2.0-liter turbocharged unit capable of 140–185kW power and 300–380Nm of torque
- Designed for hybrid vehicles that tackle extreme off-road terrains and deep-water wading
- Powertrain is fully waterproofed for depths up to 1.1 meters at IPX8 standard

London, UK (8 September 2026) – Horse Powertrain, a global leader in innovative, low-emission hybrid and combustion powertrain solutions, has revealed its fully waterproof engine, the HORSE B20.

Designed for extreme off-road vehicles and deep-water wading, the HORSE B20 brings all-terrain capabilities to hybrid vehicles, including applications for SUVs and pick-up trucks. Fully compliant with IPX8 waterproofing standards, the HORSE B20 can operate up to depths of 1.1 meters. It is also capable of maintaining continuous and stable power output under extreme off-road high-load conditions including 100% grade climbing.

Weighing just 130kg, the HORSE B20 is a four-cylinder, 2-liter inline gasoline engine designed for HEV, PHEV, and REEV applications. Featuring a turbocharger and direct injection technology, it can output up to 140-185kW of power and 300-380Nm of torque. The engine is powered by an advanced Miller cycle, enabling a brake thermal efficiency of 48.4%.

The HORSE B20 features a range of innovations to encourage leaner, cleaner combustion and to maximise fuel economy and range. These include high-pressure injectors and high-tumble intake ports, which promote superior air-fuel mixing and more efficient combustion. Additionally, the engine features pistons designed to make full use of the “squish” effect to promote air-fuel mixing at the peak of the compression cycle – this enables the spark plug to ignite a cleaner and faster combustion event.

Outside the engine cylinders, the HORSE B20 uses a number of innovative technologies. These include a gantry-type aluminium block with integrated exhaust manifold and a simplified balance shaft system, which improve NVH, durability, and overall efficiency. It also features a variable displacement oil pump ensuring optimal oil flow and pressure throughout the engine.

To improve the cooling efficiency, an exclusive fully active dual-cooling system ensures the unit remains in the optimal operating temperature, even under extreme conditions such as continuous slope climbing and long-duration, high-temperature scenarios.

To achieve an IPX8 waterproof rating, the engine uses a fully sealed waterproof structure equipped with torsional vibration dampers and dedicated engine-transmission sealing. Fitted with IPX8-rated electrical components and sensors, it continuously monitors the surrounding operating environment of the engine. When the engine is submerged in water, the control system makes automatic adjustments such as limiting power or adjusting the throttle response, based on feedback signals from the sensors. This ensures the stable operation of the engine under deep wading conditions.

Ingo Scholten, Deputy Chief Technology Officer of Horse Powertrain, said: *“The HORSE B20 demonstrates how we are meeting the full range of market needs, delivering flexible engine and powertrain solutions designed for multiple use cases and applications. Supporting HEV, PHEV and REEV platforms, the HORSE B20 enables new opportunities across a range of vehicle categories - particularly off-road applications, due to the engine's waterproofing and climbing capabilities. This engine is another step forward in advancing modern powertrain technology and a further example of how Horse Powertrain is pushing our industry forward.”*



First showcased at the Beijing Auto Show 2026, the HORSE B20 was recently used within a PHEV powertrain in the Geely Galaxy Cruiser 700 off-road vehicle (China only), paired with a HORSE 3DHT230, a 3-speed intelligent hybrid transmission.

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About Horse Powertrain

Horse Powertrain is a global leader in innovative, low-emission hybrid and combustion powertrain solutions, supporting automotive OEMs with a range of systems including engines, transmissions, power electronics, range extenders, and integrated hybrid platforms. Horse Powertrain has operations in Europe, China, and the Americas, and employs over 19,000 people across 18 plants and five R&D centers. Its 25 customers include Renault Group, Geely Auto, Volvo Cars, Proton, Nissan, and Mitsubishi Motors Corporation. Horse Powertrain is headquartered in London, UK.

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