

MEDIA INFORMATION

HOW THE ENERGY RECOVERY SYSTEM (ERS) WORKS

INFINITI is a technical partner of the Renault Sport Formula One™ Team for the co-development of the R.E.16 Power Unit's Energy Recovery System (ERS), which incorporates two motor generator units and a battery. After five years as sponsor in Formula One™, INFINITI makes the daring move to become a technical partner for one of the most sophisticated technologies in motorsport, leveraging its expertise in hybrids and contributing engineering resources to the Formula One™ team.

The ERS recovers otherwise lost energy and either deploys it as acceleration performance immediately, or stores it for later use. The ERS adds some 160 hp to the power unit's total power output of over 900 hp.

ERS components:

MGU-K

The MGU-K is connected to the crankshaft of the internal combustion engine. Under braking, the MGU-K operates as a generator, recovering some of the kinetic energy dissipated during braking. It converts this into electricity that can be deployed throughout the lap (limited to 120 kW or 160 hp by the rules).

Under acceleration, the MGU-K is powered from the battery and/or from the MGU-H and acts as a motor to propel the car.



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MGU-H

The MGU-H is connected to the turbocharger. Acting as a generator, it absorbs power from the turbine shaft to convert heat energy from the exhaust gases.

The electrical energy can be either directed to the MGU-K or to the battery for storage for later use. The MGU-H is also used to control the speed of the turbocharger to match the air requirement of the engine (e.g. to slow it down in place of a wastegate, or to accelerate it to compensate for turbo lag).

One major challenge here is that the MGU-H mechanically connects to the turbocharger spinning at speeds more than 100,000rpm, so a highly complex design process to manage the rotational dynamics is needed.

Also, the very high rotational speeds produces the alternative current at a very high frequency, so the inverter design must be optimised for this specific requirement.

Battery or energy store

Heat and kinetic energy recovered can be consumed immediately if required, or used to charge the battery. The stored energy can be used to propel the car with the MGU-K or to accelerate the turbocharger with the MGU-H.

ENDS

About INFINITI:

INFINITI Motor Company Ltd. is headquartered in Hong Kong with sales operations in over 50 countries. The INFINITI brand was launched in 1989. Its range of premium automobiles is currently built in manufacturing facilities in Japan, the United States, United Kingdom and China. INFINITI plans to also expand manufacturing into Mexico by 2017.

INFINITI design studios are located in Atsugi-Shi, near Yokohama, London, San Diego and Beijing. INFINITI is in the middle of a major product offensive. The brand has been widely acclaimed for its iconic design and innovative driver-assistance technologies.

More information about INFINITI and its industry leading technologies can be found at www.INFINITI.com. You can also follow us on Facebook, Twitter, LinkedIn and see all our latest videos on YouTube.



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