

FMC Auto Innovation - Case Study

Reverse engineering the best KERS system in the world with the best talent



In 2007 the only commercially available Kinetic Energy Recovery System (KERS) on the market was far too big and heavy for an F1 car. They are all about the 'holy grail' of aerodynamics, power and weight. The weight distribution must be spot on and must not be too high, or risk failing on the regulations and the car being too slow. A huge KERS system just wouldn't do!

Back in 2007 Mercedes AMG HPP spoke to the company with the best KERS system in the world. They wanted to buy the system, but only if they could halve the weight and size and make it twice as powerful. They told Mercedes this request was impossible.

Mercedes disagreed. They acquired the IP to the KERS system and set about reverse engineering it to halve the weight and size and make it twice as powerful. **This is where FMC came in: Mercedes needed a team of specialists to complete the task.**

What did we set out to do?

An F1 KERS system in 2007 consisted of a Motor Generator Unit (MGU), a Power Control Unit (PCU), a lithium-ion battery pack and a new electrical wiring architecture. This was all new to Mercedes in 2007, and they didn't have the talent to do the job!

FMC were instructed to source a variety of talent, including:

- Mechanical and electrical engineers to work on the MGU
- Electronics hardware and software engineers to work on the PCU
- Electrical engineers to work on the electrical architecture

- Manufacturing engineers to get the new designs into prototypes, and then full production
- Test engineers to prove the new technology in a test environment
- Calibration and performance engineers to get the most out of the new system

What did we deliver?

Finding the talent needed was no easy task. Back then, almost nobody on the face of the Earth was developing this technology for car applications.

We successfully sourced people from a myriad of industries including aerospace, defense, energy, further education institutes, and even the mapping of outer space! Within 12 months not only did Mercedes have the team they needed, but they had developed a new KERS that was half the size and half the weight, but twice as powerful as before.

What was the ultimate outcome?

The quality and success of the Mercedes KERS system speaks for itself. Much of the team that FMC placed back in 2007 remains in situ in the company today, and some of them have progressed to team management positions.

Some key achievements for Mercedes include:

- First ever KERS powered F1 win - Hungary, 2009
- First ever KERS powered Pole Position - Valencia, 2009
- World Champions (drivers and constructors) in 2014, 2015, 2016, 2017 and 2018!

Get in touch with **FMC Auto Innovation** if you need help recruiting top talent for your project.

Call us on **+44 (0) 1275 372 230** or visit **fmcautoinnovation.com**