



Design and Applications of Large Electric Motors & Generators

Wednesday 25th October 2023 – 7:30pm

Venue **Les Cotils**

Presented by **Graham Le Flem** B.Sc.(Hons) C.Eng. M.I.E.T.

all welcome – free to attend – no tickets required

Graham started in the Large Induction Motor Dept of EE-AEI (Rugby) as a design engineer. During 49 years with that company he designed, or helped design, a wide variety of motors and generators for projects including:-

- The Queen Elizabeth-class aircraft carriers and Type 45 destroyers.
- Electromagnetic catapult (EMCAT) prototype system for launching F35 aircraft.
- Propulsion for cruise ships such as The Queen Mary 2 and Princess Cruise liners.
- Winder motors for gold, coal, and copper mines; water pumping stations; power stations; wind turbines; water and tidal flow turbines; wave power generators.
- 8.8MW induction pony motors which powered the 2x150MW synchronous flywheel generators for the JET fusion project.
- 5MW superconducting motor as a prototype for the 36.5MW superconducting propulsion motor for the US Navy.
- 200MVA 22.9kV flywheel motor/generator for the KSTAR fusion reactor in South Korea which has enabled it to reach 100,000 deg C for 30 seconds.



On retiring, Graham was asked to be the Motor Design Consultant for Williams Formula 1, helping with their electric motor design for the Formula E racing cars. The Williams Advanced Engineering (WAE) power unit drives the Jaguar Racing TCS and Envision Formula E cars, and this year they won the 2023 world championship.

He is now assisting WAE with their motor/generator design for the Infinity Train in Australia. This project expects to save 82 million litres of diesel per year using on-board batteries to store Potential Energy recovered from a loaded down-hill run from mines to coastal ports.

Speaker's photo ©



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Next Lecture: Sustainable Urban Drainage Systems *Ian Titherington BEng*
22nd November



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