Assignment 1. System Specification

This is the first part of three assignments:

1. Develop a specification for an electrical energy system
2. Component options and analysis
3. System design and performance appraisal

The objective of these assignments is for students to develop an appreciation of system design principles and of applications of electrical energy conversion devices.

For Assignment One, you are required to:
(a) form a group of three students,
(b) select a typical energy system, and
(c) develop a specification for the whole system, through the study of the system.

Each group will present the assignment work and submit a hardcopy of the complete report on the assignment presentation day, which is Thursday 7 September 2006 in Week 49. The PowerPoint presentation slides should be sent as an email attachment to the lecturer well before the presentation day. It is encouraged to submit a softcopy of the assignment report besides the hardcopy.

Typical systems include:
- Electric vehicles
- Remote area power supply
- Grid connected power supply

The system specification should at least include:
- Performance requirements
- Volume, mass requirements as appropriate
- Environment details
- Safety and other relevant standards and regulations

Typical (but not exhaustive) details in the specifications could be, for example, if an electric car is chosen, what speed, range, and acceleration are required, what mass must be accelerated, what air drag is present, what temperature range exists, and what standards should/must be complied with. If a power supply is chosen, how much power is required at what load profile and voltage (end user or customer voltage), what space is available and what transmission distance is required, what energy resources are available, what energy overloads exist, what ambient temperature and humidity is present, what standards and regulations are relevant (e.g. acoustic noise, overload).

The specifications should be written from the point of view of the final end user or owner, and should not enter into details of what is inside the system, as this is the purpose of Assignments 2 and 3.