CAMMELL LAIRD

Task Specification

It is proposed that Amy will deliver a short technical report on smart pro-active materials and surfaces that could be used in a 21st Century nuclear hot cell design. Smart pro-active materials and surfaces are commonly found in specialist industries such as the pharmaceutical and food industries. The Cammell Laird vision is to incorporate this technology into the nuclear industry through a modular constructed 21st Century hot cell.

The term 'hot cell' is recognised as a dedicated facility used for processing radioactive nuclear materials. The cells comprise of a thick wall/roof structure to provide shielding from radiation along with sophisticated ventilation and containment systems to protect operators and the general public from the effects of the hazardous materials. Due to the contamination caused by the hazardous radioactive materials, decommissioning of a hot cell is fundamentally challenging with large costs incurred. The theory of integrating smart pro-active surfaces into the design would virtually eradicate any contamination concerns preserving a super clean hot cell structure with a far less complex decommissioning plan.

The technical document will require investigating the possibility of utilising smart pro-active surfaces in the Cammell Laird hot cell design. The document will therefore require studying material from relevant sources; examples of which can be seen below:

- Research papers
- PhD theses
- Liaising with local Universities

It is recommended that the completed technical document/report should be fully referenced and will include conclusions and recommendations.

The skills and experiences that Amy will gain from writing the technical document will be of benefit and the report presentable as part of Amy's institutional accreditation as a professional engineer. Some of the skills and experiences include research into high technology finishes, time management, preparing a technical document, communication with colleagues, universities and relevant organisations and are all applicable to the professional competencies required for a professional engineer. Further details are available on the IMechE website.

Harvey Walters
Mechanical Engineer / Project Leader
27/04/2015