Project Profile

Project Description:	**Electrical Load Analysis & Electrical Upgrade**
Location:	Newbridge, Edinburgh
Client:	Exova
Project Value:	n/a
Project Duration:	2009 / 2010 / 2011
Sector:	Industrial

Callidus Design was appointed by Exova to carry out an analysis of their electrical installation as they had previously experienced a number of unexpected power outages, causing significant disruption to their business. Various reports and investigations had been carried out by other parties prior to our involvement without any firm conclusion.

Exova is one of the world's leading providers of laboratory based testing, materials testing, fire safety technology, calibration services and other advisory services.

When Callidus Design was appointed to carry out further investigations, we temporarily installed a power analyser and logger on the main electrical supply to the building. This monitored and recorded the electrical load at regular intervals over the course of a week. The monitor was then moved to many of the sub main circuits to monitor and record their electrical loads for 24/48 hours. This information was collated into graphical format for review and discussion purposes with Exova staff. Although no outages were experienced during this exercise (the analysis was carried out during the winter months), the results along with further investigations concluded that the most likely cause of these outages were as a result of the electrical load exceeding the site supply capacity. As these outages were only experienced during the

summer months the conclusion was that the additional loads from the various localised air conditioning systems were resulting in the electrical overload.

Further to the electrical analysis, an energy audit was carried out to determine how Exova could reduce their electrical consumption. This highlighted a number of ways in which Exova would be able to reduce their electrical demand including the following:

- Refurbishing the lighting installation to incorporate energy efficient LED luminaires
- Incorporating automatic lighting controls
- The addition of solar films to the existing glazing (to reduce the air conditioning load)
- The addition of solar shading around the building façade (to reduce the air conditioning load)

Although the above measures would contribute to a welcome reduction in Exova's annual electricity costs, unfortunately these load reductions were not considered sufficient to prevent future overloads and subsequent outages.

Since the test machinery electrical loads represented a significant percentage of the overall site load, Exova commissioned Callidus Design to design, specify and site manage an upgrade to the existing site mains supply. It was essential to develop a plan that kept the number and duration of any outages to a minimum during the course of the works. A strategy was developed to install new electrical switchgear and transfer the existing electrical loads from the old switchgear to the new switchgear with the minimum of disruption. These transfers were programmed for a number of night shifts. Initially the existing switchgear was fed via a temporary supply from the new switchgear to maintain the existing supply arrangement until all the supplies were transferred to the new switchgear. Once this process was complete, the old switchgear was then eventually decommissioned, disconnected and removed.