



Project: Merrion Hall, Strand Road, Dublin.

Client: Merinda Developments Ltd.

Background:

The site on Strand Road, Sandymount was developed by the Property Corporation of Ireland in 1973 based on 1960's technology and became the Head Office of Irish Shipping Limited from March, 1974. Merrion Hall consists of three floors of office space spread over a total floor area of 3,826 m² overlooking a central courtyard. The building comprises of a mixture of open plan and cellular offices.

Challenges:

The building's heating is provided by gas boilers and the cooling is provided by electric chillers. The HVAC system was the original induction system which operated at a constant volume. As per 1960's technology which was used at the time of construction, all the heating was provided by the main AHU and all the cooling supplied by induction coils around the perimeter of each floor. The main challenges were:

1. The lighting installation comprised of a mixture of 4x18W T8 fluorescent light fittings in addition to Pars and Dichroic down-lighters. These are installed recessed into a tiled ceiling, with the light fittings being supported off the slab above from threaded rods, and not the ceiling itself.
2. Inadequate lighting controls existed on any of the floors; with floor space being switched centrally, giving little flexibility in respect of the use of space and occupancy.
3. Due to the lack of temperature zoning on floors there was an imbalance in the temperature profile, tenant discomfort and excessive running costs through higher gas and electricity consumption.

Lighting

The lighting upgrade involved the replacement of up to 400 4x14W T5 fluorescent fittings and a mixture of 3W and 12W LED down-lighters to yield a reduction in lighting energy consumption, whilst providing adequate lighting levels in all areas. Presence sensors were introduced in key areas where lighting is not required when areas are unoccupied – e.g. corridors, stairwells, storage rooms, and office spaces. Daylight sensors were installed on the inner and outer perimeter areas to maximise the benefit of natural day-lighting where possible. The project also included rewiring the

lighting installation to create multiple circuits on each floor, thus allowing only those occupied areas to be lit as required. On-going savings will be achieved through a reduction of 20% of the number of fittings; more efficient lamps introduced and optimised lighting controls.

HVAC system

In order to address the heating challenge within the building we installed an additional 30 heater batteries on each floor which will create 6 different zones on each floor.

Dampers were installed to restrict air flow to vacant areas, and VSD's were installed within the AHU plant to control air volume. Pre-heating is now provided by the AHU with zones that require additional heat will receive this by heater batteries; therefore tenants in different areas on the same floor can have a comfortable working environment regardless of solar gains.

An upgrade of the Building Management System to control the temperature in each zone, with additional temperature stats installed on each floor. The BMS will control actuators on the valve sets of the heater batteries depending on the temperature in the zone it serves.

With an upgrade to the BMS and the heater battery installation we calculated a saving of approximately 22.5% in the gas consumption.

Results:

These projects combine excellent energy savings with a significant upgrading of services in terms of lighting, heating and building controls. This refurbishment of services was a cost-effective solution executed with little or no disruption to client services.

- The projected savings are **139,509kg CO₂ annually**.
- A significant reduction in running costs with over **22.5% savings on heating and cooling**.
- Significant savings on running costs for lighting **reducing lighting energy consumption by 64%**.
- Lower maintenance costs and an improved life cycle costing due to vastly improved performance of the new fittings, guaranteed for 3 years, represent **additional savings**.
- The projected **payback period of less than 36months**.

Frontline's solution has delivered an office building with enhanced comfort levels and improved flexibility for end users in terms of occupancy and layout. With greater monitoring and control capabilities and improved energy efficiency and improving sustainability.

This was achieved without huge capital outlay and business interruption; in addition the energy and other savings will allow the costs to be recouped in a short period.

Additional Info:

This is an exemplar retrofit project of older buildings, as it provides significant energy savings to a 1960's building system which was inefficient and did not meet modern standards. Through the combination of various energy efficiency technologies using innovative applications, measurable environmental and financial savings were achieved and will continue into the future.

This was recognised by SEAI who provided part-funding as part of the Better Energy Workplaces programme, which supports sustainable energy upgrade projects.

For more details please contact Eimear Dunne on (01) 634 2114
or email: eimear.dunne@frontlineenergy.ie