HOW MSD CARLOW ACHIVED EXCELLENCE IN ENERGY EFFICIENT DESIGN (EXEED)

The QO Laboratory Building in MSD Carlow was designed and constructed as a new 2,311m^2 standalone facility complementing an existing Production Building. The functional spaces include an open plan laboratory, lab support areas, office spaces and a dedicated plantroom.

Sustainability in the built environment is a key goal in the development of MSD facilities. The opportunity to obtain EXEED certification was undertaken for the QO lab as it complements the design philosophy of MSD. Optien were engaged as the Energy Efficient Design experts.

THE ENERGY EFFICIENT DESIGN PROCESS

Sustainability considerations for the development of the laboratory commenced at concept design stage, with consideration given to how to minimize the impact the project would have on the site's CO_2 emissions. The driving force behind the energy efficiency measures was the site leadership commitment to obtain EXEED and LEED certification for the building. This decision ensured that the design process considered energy and sustainability in all elements of the project.

ENERGY BALANCE:

An energy balance was carried out at the outset of the project to determine the building baseline. Simulation software was used to obtain the most accurate baseline possible. Identifying the significant energy uses in the building, provided the basis on which to challenge the design from a sustainability perspective.

ANALYSE AND CHALLENGE:

The MSD Energy Lead, in conjunction with Optien representatives, performed the role of EED expert, challenging the design from an energy perspective throughout the process. This involved engaging with the appointed design engineers throughout the design process, analysing and challenging the design to minimize energy impacts of the project. Proactive engagement between the design team, the EED Expert and the stakeholders on site ensured that the project was a success from a sustainability perspective.

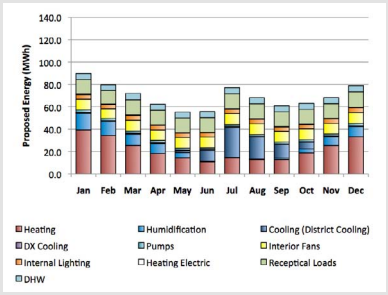
IMPLEMENTATION:

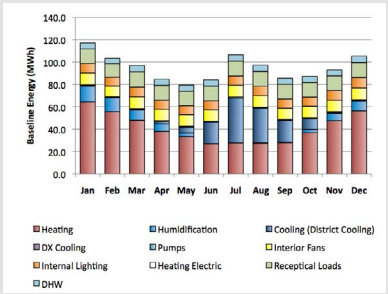
As part of the energy efficient design process, numerous discussions were held between the design team, the EED expert, EED owner and other stakeholders in order to integrate improvement opportunities from the analyse and challenge phase into the design. There were 21 opportunities for improvement implemented as part of the process which, yielding significant energy and CO_2 savings.

NEW BUILD QO LABORATORY certified to the ENERGY EFFICIENT DESIGN Standard

IMPROVEMENT OPPORTUNITIES IDENTIFIED

- Maximise building fabric improvements by taking a “fabric first” approach
- Installation of high performance solar control glazing
- Installation of Variable Air Volume HVAC system
- Challenge the filtration requirements of the HVAC systems
- Challenging the Lab Equipment schedule
- High efficiency pumps, motors and fans (on Triple E register)
- Comprehensive metering of the system for ongoing management of the building.





IMPACTS FROM THE EED PROCESS

- **68 Action items** tracked to closure through the design process
- **21 improvements implemented** as part of the process
- **No impact** to the capital costs of the project
- **27.4% reduction in operational energy use of the building** as verified by the simulation model V Ashrae 90.1.
- **Enhanced understanding** of the asset prior to handover.
- **Part funding from SEAI** to demonstrate best practice design.
- **LEED Silver certification**
- **Third Party verification of the sustainability elements** of the design which delivered EXEED Designed certification

“The energy efficient design process brought sustainability to the forefront of this project. A key learning from the process is that the early engagement of all stakeholders in the consideration of energy efficient design for capital projects, will ensure success”

LEE MURPHY FACILITIES SPECIALIST, MSD CARLOW

Optien

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EXEED