EXEED Designed
EXCELLENCE IN ENERGY EFFICIENT DESIGN

Requirements for EXEED Certification

Heading	Requirements
1 Asset definition	The Asset being EXEED Certified shall be defined and documented in the EED Project execution plan, and shall be identified by; - A physical boundary that fully incorporates the system(s) providing its purpose. - An energy balance accounting for and including all energy sources, energy use and energy demand. - Encompassing energy services (i.e., desired outcomes that necessitate the consumption of energy) that are identified with application of the Energy Venn Diagram. (c.f. Figure A.3, IS399)
	All energy services, i.e., desired outcomes that necessitate the consumption of energy, shall be within scope of the Design for Energy Performance and Design for Energy Management processes.
1.1 Understanding the organisation and its context	The organisation shall determine external and internal issues that are relevant to the EXEED Certified project, its purpose and its strategic direction that affect its ability to achieve the intended outcome(s).
	The organisation structure and the context in which EXEED Certified project is applied shall be defined.
1.2 Understanding the needs and expectations of interested parties	The organization shall determine: - the interested parties that are relevant to the EXEED Certified project - the requirements of these interested parties.
1.3 Actions to address risks and opportunities	When planning for EXEED Certified, the organization shall consider the internal and external issues and the requirements of interested parties as determined for the project, and determine the risks and opportunities that need to be addressed to: - assure the EXEED Certified processes can achieve its intended outcome(s), - prevent, or reduce, undesired effects,
	The organization shall plan: - actions to address these risks and opportunities, and how to - integrate and implement the actions into its energy efficient design management system processes, - evaluate the effectiveness of these actions.
1.4 Energy efficient design management objectives and planning to achieve them	The organisation shall establish EXEED Certified objectives at relevant functions and levels. The EXEED Certified objectives shall: - be measureable (if practicable) - be monitored - be communicated, and - be updated as appropriate
	The organisation shall retain documented information on the EXEED Certified objectives.
2 Operational planning and control	The organization shall plan, implement and control the design project processes needed to meet requirements, and to implement the actions determined in 6.1, 1.4 and 2.2, by; – establishing criteria for the processes, – implementing control of the processes, including those outsourced to external service provider(s), in accordance with the criteria,

	– keeping documented information to the extent necessary to have confidence that the processes have been carried out as planned.
2.1 Roles, responsibilities and authorities	The organization shall define the roles, responsibilities and authorities required for the implementation of energy efficient design (EED).
	Top management shall ensure that the EED owner is competent and knowledgeable as relevant to the appointment.
	For the design project an EED owner and an EED expert shall be appointed.
2.1.1 EED Owner	The EED owner shall be responsible for ensuring that energy efficient design is implemented in design projects and shall report directly to top management
	The EED owner shall have the responsibility and authority for: – ensuring the appointment of an EED expert. – ensuring that the EED expert is competent. – providing guidance and direction to the EED expert on the energy efficient design project objectives for design projects. – approving the EED project execution plan. – ensuring the EED expert implements the tasks set out in the EED project execution plan including Design for Energy Performance and Design for Energy Management. – addressing any barriers and risks to implementing energy efficient design opportunities. – reviewing and approving energy efficient design documentation where appropriate. – ensuring the EED project summary report is communicated within the organization, where appropriate. – communicating with top management and with the project team, where appropriate.
2.1.2 EED Expert	The EED expert shall report directly to the EED owner and shall operate independently of the project design team
	The EED expert shall have the responsibility and authority for: – developing and implementing an EED project execution plan. – implementing design for energy performance and design for energy management within the design project. – ensuring that technical specifications developed for specialist suppliers incorporate energy performance requirements. – communicating with the EED owner as appropriate. – liaising with the project design team and specialist suppliers. – assessing design changes so that their impact on energy performance is understood. – completing the EED project summary report.
2.2 Planning for design projects	The organization shall plan and control energy efficient design within design projects.
	An EED project execution plan shall be prepared for each design project and shall include, as appropriate to the nature, scale and complexity of the project, the following: a) requirements for design for energy performance and design for energy management. b) a list of energy efficient design project objectives. c) requirements for energy measurement, monitoring and reporting. d) project timelines for the delivery of energy efficient design project objectives.

	e) an appropriate schedule of design project reviews focused on energy efficient design. f) communication requirements between the EED owner, EED expert and the project design team. g) a list of interested parties, their relationship to the design project, their relevance to energy efficient design, and communication requirements. h) varying operating conditions that the project is likely to experience when operating. i) criteria by which significant energy uses are determined. j) criteria for selecting energy performance opportunities for implementation. k) criteria for measurement and verification of the energy performance of implemented opportunities. l) a procurement and contracting strategy and how they impact on energy efficient design. m) a list of identified risks and opportunities related to the design project, implemented opportunities and energy performance including those identified in 6.1. n) consideration of any national policies or other mechanisms that could support the viability of energy performance opportunities.
	Criteria for measurement and verification of the energy performance of implemented opportunities shall address; – appropriate accuracy and management of uncertainty – transparency and reproducibility of measurement and verification processes – data management and measurement planning – competence of measurement and verification practitioner(s) – Impartiality – Confidentiality – Use of appropriate methods
3.0 Design for Energy Performance (DfEP)	The organization shall implement a design for energy performance (DfEP) process comprising of an energy balance study stage, challenge and analyse stage, and an implementation stage for design projects.
3.1 Energy Balance Study	The EED expert shall be responsible for undertaking the energy balance study of the baseline design.
	The energy balance study shall establish the overall extent of energy use and consumption, and identify, at a high level opportunities for energy performance improvement.
	An energy balance report shall be prepared and shall include: a) a list of all energy uses and proposed energy sources b) an annual energy-consumption profile for the project including assumptions. c) an estimate of the annual energy consumption costs for the project including assumptions. d) identification of significant energy uses for consideration in the challenge and analyse stage.
	The energy balance report shall be documented and maintained as part of the project records.
3.2 Challenge and analyse	The EED expert shall be responsible for implementing the challenge and analyse stage

	Design project reviews of the baseline design shall be undertaken for the purpose of identifying energy performance ideas associated with significant energy uses. Design project reviews should include the participation of specialist suppliers where they are associated with significant energy uses.
	The significant energy uses shall be challenged in sequence as follows: 1) energy service, 2) process, 3) equipment, 4) control, 5) commissioning, 6) operations and maintenance, and 7) management.
	This process shall also apply the guiding principles of energy efficient design as provided in IS399 Annex A (A.8.4.3).
	A preliminary assessment is conducted to select those ideas for further analysis. This analysis shall assess the viability for energy performance opportunities.
	For opportunities requiring detailed analysis the following shall be included: – Energy performance. – Co-benefits of energy performance. – Economic viability. – End user requirements. – Practicality of implementation. – Risk. – Compliance with corporate or legal requirements. – Any other criteria established by the organization. **Note:** The level of detail required for the analysis of energy performance ideas will depend on the scale of energy performance improvement expected and the complexity of the idea.
	The EED owner shall review energy performance opportunities with relevant interested parties to determine which opportunities can be implemented.
	All ideas and opportunities together with decisions on their acceptance or rejection for implementation shall be recorded in an Energy Savings Register (ESR).
3.3 Planning for Measurement & Verification	*ISO50015 Clause 5 Measurement and Verification Plan* shall be used as guidance in the development of measurement and verification plan(s).
	Where required energy performance Measurement and Verification methods shall be established and recorded in the ESR.
	The EED Expert and the EED Owner shall ensure that Measurement and Verification plan(s) are developed and documented for all opportunities selected for implementation, and recorded in the ESR.
	A Data-gathering plan shall be developed by the EED Expert and EED Owner.
	The EED Expert and EED Owner shall ensure appropriate energy baseline(s) are established for each opportunity selected for implementation, which will provide the basis of comparison and/or verification of energy performance achieved.
	The EED expert and EED Owner shall ensure that Measurement and Verification plan(s) are developed using competent practitioners, as appropriate.

	The measurement and verification plan(s) shall be documented in a manner to ensure confidence, traceability, repeatability, reproducibility and consistency for implementation.
	There shall be appropriate records supporting the reasons for decision made in order to establish an audit trail.
	The ESR shall be documented and controlled throughout the design project and maintained as part of the project records.
3.4 Implementation	The EED expert and the EED owner shall review the opportunities selected for implementation with the project design team
	The EED expert and the EED owner shall establish how these opportunities selected are to be integrated into the design, construction and commissioning project stages.
	The EED expert shall be responsible for ensuring that: a) opportunities for implementation and related Measurement and Verification arrangements are incorporated into design, construction and commissioning plans. b) there is an ongoing communication during the course of the project to ensure that the project design team understands how the opportunities for implementation are integrated into the design. c) the energy performance impact of any planned or unplanned changes are assessed.
	The EED owner shall ensure that any barriers to implementation identified by the EED expert are resolved.
4.0 Design for Energy Management (DfEM)	The EED expert shall implement design for energy management (DfEM) within the design project.
	ISO50015 Clause 5.7 Characterisation and selection of relevant variables and static factors shall be used as guidance in the identification of relevant variables, static factors and energy performance deterioration review.
4.1 Energy measurement planning	The organization's energy measurement and reporting requirements shall be determined.
	An energy measurement plan to deliver the organization's energy measurement and reporting requirements shall be developed.
	Verification requirements as determined during the Challenge and Analyse process shall be incorporated into the energy measurement plan, where appropriate.
	Measurement of energy performance deterioration as determined in the Energy performance deterioration review shall be incorporated into the energy measurement plan, where appropriate.
	Energy metering requirements shall be included in the energy measurement plan.
	The energy measurement plan shall be reviewed and approved for implementation by the EED owner.
4.2 Energy variables review	The organization shall conduct an energy variables review of the significant energy uses to understand how energy performance is affected by relevant variables.
	The energy variables review shall challenge the design to ensure the significant energy uses operate efficiently under expected or planned variability in operating conditions.

	Where the energy variables review recommends design changes or commissioning procedures for part-load operation, these shall be identified in the ESR as opportunities for further analysis.
4.3 Energy performance deterioration	The organization shall determine the potential for deterioration in energy performance during operation.
	Appropriate measurement of this potential deterioration shall be considered during the design stage.
	Actions to mitigate such loss in energy performance shall be defined and documented within the ESR for further analysis.
4.4 Procurement	When outsourcing functions or processes to an external organization or appointing suppliers that can impact the performance of significant energy use(s), the organization shall verify that these parties have the competency in energy efficient design as appropriate.
	Competency of external parties providing outsourced functions or processes shall be assessed as part of the procurement process.
	Procurement documentation for any service, process or equipment shall include an energy performance specification.
	Where an organization outsources a third party to act on its behalf, the organization shall ensure that the requirements of its energy efficient design management system are understood and implemented.
5.0 EED Project summary report	The EED expert shall be responsible for preparing an EED project summary report.
	This report shall include outputs of the DfEP process including the extent of avoided energy consumption.
	This report shall include outputs of the DfEM process.
	This report shall include description of any co-benefits arising. e.g. environmental, production, quality, and health and safety benefits.
	This report shall include financial implications including capital expenditure, operational expenditure and associated return on investment
	This report shall include all opportunities not implemented and documented in the ESR which could be revisited in the future
	This report shall include a list of relevant handover documentation
	This report shall include lessons learnt
6.0 Achieving and Maintaining EXEED Designed certification	Subject to demonstrating all requirements EXEED Designed certification can be awarded and shall be active for a period no longer than five years.