

Environmental Assessment & Protection



Activities associated with the construction, operation and eventual decommissioning of civil nuclear facilities have the potential to cause damage to the environment. This may include pollution of the surrounding environment as a result of planned/authorised discharges and/or accidental releases.

Environmental protection must be an integral element of the life-cycle management of any civil nuclear facility so that potential environmental impacts are identified as early as possible and mitigating measures incorporated into the design and operational procedures. Operators of facilities can then implement measures to prevent the release of pollutants or, where this is not practicable, to reduce the impact to an acceptable level.

Rolls-Royce environmental engineers have significant experience of potential environmental impacts, including pollution by both radioactive and non-radioactive substances. In addition to their specific civil nuclear experience, our engineers also benefit from knowledge gained from other industrial sectors and of general environmental protection and waste management legislation.

Specifically, environmental engineers within Rolls-Royce have the knowledge and experience to:

- Identify the potential for environmental impact;
- Assess the associated risk;
- Provide advice on appropriate mitigation measures;
- Undertake independent peer reviews.

Rolls-Royce realises the significant overlap between measures required to ensure environmental protection and nuclear safety. Hence our environmental engineers and safety case engineers work closely together to ensure a fully integrated approach.

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Supporting Capabilities:

Environmental Protection:

- Nuclear site licensing;
- Environmental permit applications;
- Control of Major Accident Hazards Regulations (COMAH);
- Management of Environmental Impact Assessment (EIA) process;
- Construction environmental management plans;
- Environmental risk modelling;
- Environmental monitoring.

Waste Management:

- Construction waste management plans;
- Waste management strategies;
- Remediation strategies;
- Discharge authorisations;
- Best Available Techniques (BAT).

Applications:

Rolls-Royce capability and experience includes the following:

Site Specific Detailed Design: Identification of site specific impacts associated with the construction and operation of a civil nuclear facility which need to be assessed as part of the detailed site design.

Input to Environmental Submissions to Support Nuclear Site Licensing (NSL): Whilst applications for a NSL are primarily concerned with the demonstration of the Safety Case, it is necessary to demonstrate that protection of the wider environment has also been addressed. This includes potential radioactive doses to non-human receptors and the potential for non-radioactive pollution.

Environmental Permit Applications: In addition to the NSL, other 'environmental permits' will be required. These insist on the collation of relevant information and commissioning of appropriate analysis/modelling activities prior to submission of applications to the relevant regulatory authorities.

Environmental Monitoring Strategies: The NSL and other 'environmental permits' for a civil nuclear facility require the design and implementation of an environmental monitoring programme. The objectives of this programme are to:

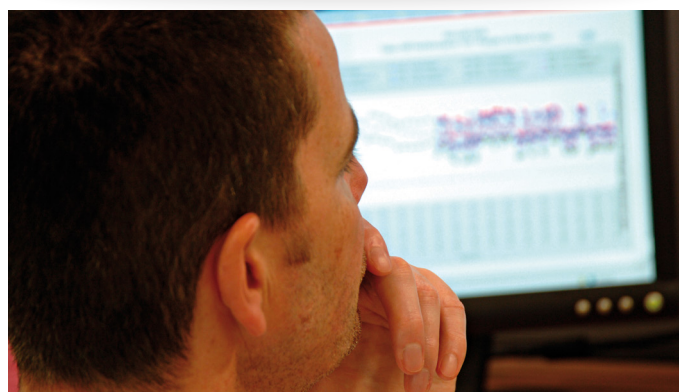
- Demonstrate the ongoing effectiveness of environmental protection measures;
- Provide early warning of plant failure of these protection measures.

Decommissioning: Decommissioning must be an integral part of the design and licensing process and the strategy has to be continually developed throughout the life-cycle of a facility. Part of this strategy considers environmental impacts and identifies appropriate mitigation.

Experience/References:

Interpretation of National Regulatory Approaches: Although the overall objective of environmental protection is similar throughout the world, the regulatory approach taken to achieve these objectives can differ. Rolls-Royce have reviewed national regulatory regimes against reactor designs in order to identify where further design or analysis will be required to satisfy regulatory authorities. This is particularly the case for reactor types designed primarily for the US markets where there is a rigid approach to nuclear safety and environmental protection, rather than in Europe where target-based approaches are more common.

Operation of Nuclear Licensed Sites: Rolls-Royce has responsibility for the operation of the Core Manufacturing facility at Derby and the Vulcan Reactor site at Dounreay. Utilising in-house capability, Rolls-Royce manages the Environmental Permit process for both sites, and ensures compliance with the relevant environmental and waste management regulations. This has provided our Environmental Engineers with a broad experience of the regulatory processes and environmental issues facing site and plant operators.



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