

LTOP – Loviisa Long-term operation program

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LTOP-organization

Key roles

Management team

Executive VP, Nuclear Generation
Senior VP, Loviisa NPP
Program Owner
VP, Engineering & Projects

Steering group

Program Owner
Program Director
Loviisa Leaders Team

Sponsor

Owner

Program Director

Risk Manager

Program planner

Portfolio Managers

SAME – Safety classified
Mechanical Components and
Readiness for Repairs

TIMO – Turbine Island
modernization

BIRE – Repairs of the Buildings,
Structures and Infra

ICMO – I&C modernization

EDGE – Emergency Diesel
Generators and Electrical
equipment modernization

VAMO – Ventilation and Air
conditioning systems
Modernization

Safety
Improvements

WASPFuel – Nuclear waste and
fuel

BIRE – Repairs of the Buildings, Structures and Infra



BIRE portfolio ensures that the buildings, structures and infra are structurally sound and can be used until 2050. The operation is based on a real estate strategy that ensures appropriateness and cost efficiency.

BIRE portfolio creates value by providing appropriate buildings, structures and infra that enable safe and reliable production.

The total number of projects is 71 of which the toll-gate decision has received:

AALTO LO1 intake wave area pilar repairs	TG2
LORA Warehouse operations and a new welding hall	TG0
VEHU Water management project	TG0
MIRA Renovation of buildings and infrastructure in the accommodation area	TG0
Reactor buildings, renewal of floor coating on level +25	TG0
LO2 Turbine and control buildings, Improving the control room radiation protection, Renewal of smoke exhaust and other windows, Façade repair	TG0
Seawater pump station, waterproofing of the yard deck	TG0

EDGE - Emergency Diesel Generators and Electrical equipment modernization



EDGE portfolio takes care that electrical systems and emergency diesel generators remain operable until 2050. Reliable operation will be achieved by performing needed renewals and by securing essential spare part availability.

EDGE portfolio creates value by ensuring reliable power production and power supply to plant equipment. Safety systems typically rely on electrical power and thus the reliable operation of emergency diesel generators and electrical systems is essential also for safe operation.

The total number of projects is 33 of which the toll-gate decision has received:

POTEMO HM-cabinet renewal	TG0
220 VDC switchgear modernization	TG0
EDSGE Emergency Diesel Spare Generator	TG1
OMAMUU BT01 and BT02 transformer renewal	TG2
DAUT2 LO2 Diesel Automation Renewal	TG2
LO2ECTAS LO2 diesel rectifier renewal	TG2
EKTAS2 EK-rectifier renewal 2	TG2

ICMO - I&C modernization

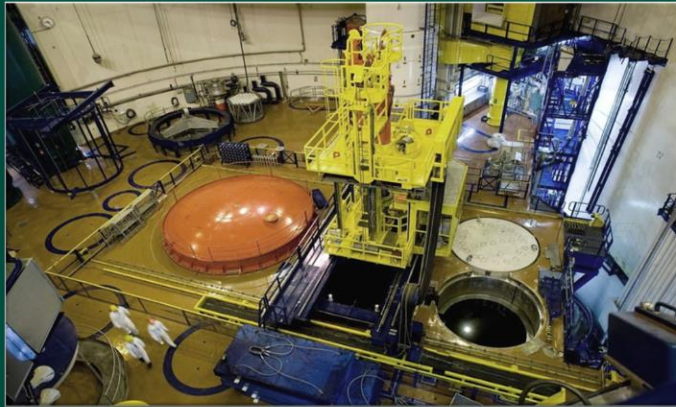


The I&C Modernization portfolio continues the modernization of the automation, control systems and control rooms of the Loviisa NPP. Despite the successful earlier renewal projects, great number of original I&C components and systems are still operating and reaching the end of their lifecycles. Availability and functionality of these components and systems needs to be ensured in a way or another until the end of the power plant lifetime.

The total number of projects is 14 of which the toll-gate decision has received:

TUSS Renewal of turbine protection, control and mechanical system	TG1
FATI Fatigue monitoring system renewal	TG2
LASU2 Renewal of Plant Protection (YZ) I&C system	TG0
NOPSA Renewal of Normal Operation I&C system	TG0

SAME - Safety classified Mechanical Components and Readiness for Repairs



SAME enables reliable long-term operation of the reactor island mechanical components and other safety and non-safety classified mechanical components

SAME creates value by ensuring safe and reliable operation of safety and non-safety classified mechanical systems by replacing, repairing components and securing spare part availability and engineering support from reliable and qualified suppliers. Reliable operation will be achieved by performing needed renewals or repairs and by securing essential spare part availability

SAME optimizes the long-term operation of the reactor island until 2050. Currently the components are reaching the end of their lifetime, spare parts and repairs are needed. Additionally, the support of the initial supplier can not be guaranteed due to the fact that some suppliers are closing manufacturing lines.

The total number of projects is 18 of which the toll-gate decision has received:

HUPU - Steam generator out blowing nozzle and piping (RY) renewal	TG2A
Steam generator collector DMW repair	TG0
Residual machines renewal	TG0
Compressor injection valves spare parts	TG0
MOSSK Procurement of motors for the control rod mechanism, securing spare parts for the reactor	TG1
YDVA Main circulation pump spare parts	TG1
TB11/21D001 pump renewal	TG1
LOLA Fuel handling machine modernization	TG1

TIMO - Turbine Island modernization



TIMO portfolio enables reliable long-term operation of the turbine island mechanical components

Ensures and optimizes the long-term operation of the turbine island until 2050. Currently, the components are reaching the end of their lifetime. Additionally, the support of the initial supplier can not be guaranteed due to the new geopolitical situation

Creates value by replacing, repairing, modernizing obsolete components and securing spare part availability and engineering support from reliable and qualified suppliers

The total number of projects is 24 of which the toll-gate decision has received:

RB HVS separators renewal	TG0
Low-pressure preheaters renewal	TG0
RETU Renewal of Loviisa low-pressure turbines	TG2
Main sea water pump (VC) and motor renewal	TG1
KEKO Renewal of basket chain filters	TG1
LORD1 Renewal of 10RD50 high-pressure preheaters	TG2

VAMO - Ventilation and Air conditioning systems Modernization



VAMO portfolio ensures safe and reliable operation of ventilation and cooling systems operating as auxiliary systems until 2050. Reliable operation will be achieved by performing needed renewals and repairs of current units and components.



VAMO portfolio also includes improving the failure criterion of cooling systems in electrical and I&C facilities important to safety.

The definition phase of the projects included in the VAMO sub-portfolio is currently on-going and the planned start is in 2025. The total number of projects is 20 of which the main projects are:

JÄÄM2 LO2 UV45/UV46 new water chiller, TG1

10UV21- ja 20UV41 MCR air conditioning system changes and single fault tolerance improvement, TG0

Safety Improvements

Selected modifications to enhance the level of nuclear and radiation safety in Loviisa NPP. Most of the needs were identified in or prior to periodic safety review (including how YVL requirements are fulfilled). By implementing selected nuclear and radiation safety improvements/projects, we demonstrate that nuclear and radiation safety takes priority in decision-making, and we show commitment to continuous improvement of nuclear and radiation safety

To increase the level of nuclear safety

To fulfill selected requirements set in YVL guides

To fulfill requirements set by STUK decisions



The total number of projects is 16 of which the toll-gate decision has received:

Improving radiation endurance of TH, TG systems	TG0
Seismic improvements	TG0

Challenges

Description of the Challenge

Adaptations

1. Key Project Roles i.e., Project Owners and Steering group members, don't have sufficient time to support the projects

- **Project Ownership:** Heavy workload and variety of tasks coming from line organization, leads to Owner prioritizing other tasks over the projects
- **Project Steering:** Heavy workload, variety of tasks from line organization + Owner's focus on various tasks, leads to Steering Group also prioritizing other work over the projects

✓ Key Project roles adapted and clarified, to tackle the Owner's workload question:

- ❖ Accountability of portfolio success within the Portfolio Manager, Project ownership within the Portfolio Manager and System Responsible roles
- ❖ **Active Steering Group** for the stream and projects within the stream, that will meet on a regular monthly basis.

2. Not identifying all the needs of the program and project stakeholders have for decision making have resulted in delays in decision making

✓ Clarification of stakeholder requirements and update of the decision preparation of process

3. Resource bottlenecks when multiple projects demand the same resources at the same time

- ✓ Sequencing the projects to avoid key competence areas from being overloaded
- ✓ Update of resource plans on 3 month intervals

4. The scope in certain specific projects being too extensive resulting in ever evolving targets due to changes in plant configuration during the project → Difficulties to finish the project

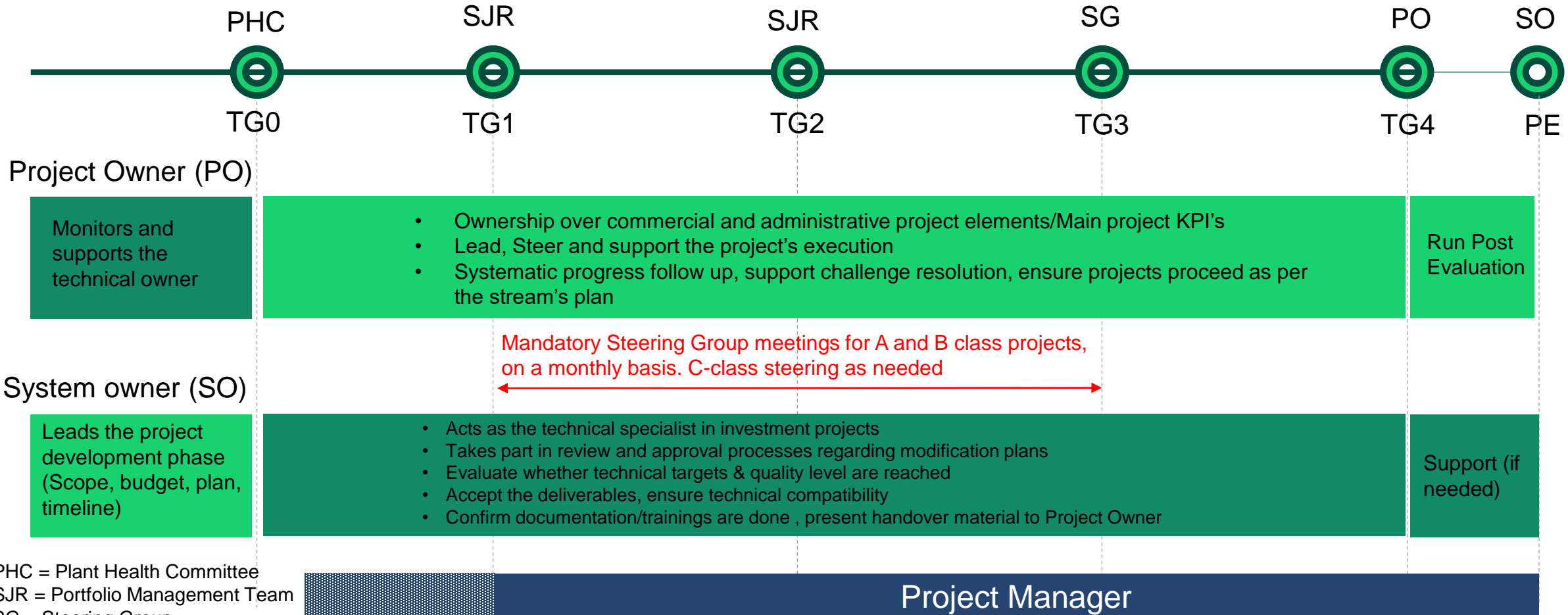
✓ Defining an appropriately limited scope for each individual project → Reduced project duration = Fewer changes to plant configuration during the project

Project Perspective: Project Owner and System Owner roles

Current Project Owner's responsibilities, to be divided to technical and commercial segments as follows:

1. Commercial and administrative part of the projects → **To be led by the Project Owner = Portfolio Manager**
2. Technical side from system perspective → **To be led by the System Owner = System Responsible**

Lead
Support



PHC = Plant Health Committee
SJR = Portfolio Management Team
SG = Steering Group
PE = Post Evaluation