

# WASTE-LED DECOMMISSIONING APPROACH



ONE-STOP NUCLEAR SOLUTIONS

DECOMMISSIONING & DISMANTLING

REDUCING VOLUME AND RECYCLING  
WASTE TO RESPONSIBLY  
SHAPE THE FUTURE

Cyclife is EDF Group's subsidiary dedicated to the challenges of the decommissioning market and the growing requirements to recycle nuclear waste.

**Our mission:**

- Develop innovative cost-effective solutions for waste management and decommissioning
- Answer the growing need to reduce volume, recycle waste and preserve disposal capacity
- Use EDF's skills and assets to offer efficient decommissioning and waste management solutions following a waste-led decommissioning approach

## DECOMMISSIONING

### Plant physical & radiological inventory

Cyclife provides a turnkey state-of-the-art physical and radiological inventory of the entire nuclear power plant from calculations to final characterization.

### Technical support

Cyclife can provide on-site decommissioning projects, taking benefit of its technical expertise in decontamination of systems, structures and sites (soil and groundwater).

### Dismantling

Cyclife can perform a wide range of dismantling services, including cold and hot segmentation (for example of primary circuits or other steam supply systems).

### Optimization with digital

DEMplus® for nuclear® is a decision support and simulation tool based on real-time 3D technologies. This application calculates cost, time, waste flows and effective dose uptake by operators during an activity related to operations, maintenance or dismantling in order to effectively select the optimized scenario.

### Preliminary studies and decommissioning strategy

Cyclife realizes preliminary studies and decommissioning strategies: decommissioning scenario, waste management scenario and environmental impact assessments.

### Program and project management

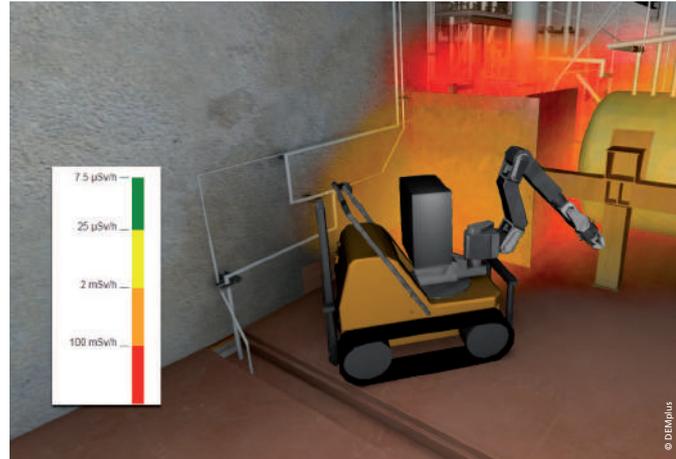
Cyclife offers tools and professional expertise to deliver decommissioning project management solutions and actions to schedule transition period, thanks to the presence of technical experts throughout the entire duration of the project.

### Costing

Cyclife assesses, optimizes the risks and contingencies for cost estimates, using technical insights from best international practices and benchmarking in-house.

### Professional training

Cyclife's experts provide bespoke training to decommissioning personnel, from on-site operators to program managers.



# WASTE MANAGEMENT



FROM CONCEPT  
TO FINAL DELIVERY

## Waste characterization

Cyclife carries out an accurate physical and radiological waste inventory to optimize waste management by selecting the optimal route for each waste.

## Waste routing

Cyclife operates three European waste treatment facilities, each with unique capabilities and existing secondary waste routes. Cyclife ensures that waste is routed to the facility which offers customers the best technical, economic and regulatory solution.

## Waste storage and disposal developments

Design of temporary waste storage facilities and design studies with Andra (French national radioactive waste management agency) for the construction of the French deep geological disposal (Cigéo) dedicated to high-level waste.

## Waste treatment engineering

Cyclife provides engineering solutions for the design of waste treatment facilities and innovative processes in this field.



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# WASTE TREATMENT



## On-site services

Cyclife has developed an offer to treat waste directly on production sites thanks to mobile processing and conditioning units and personnel able to operate on client's sites.

## Sorting, segregating, packaging and transport

Cyclife supports its customers for waste management and transport from their nuclear site.

## Metallic waste treatment, melting and recycling

Cyclife processes metallic waste and operates blasting of metallic waste, size-reduction, melting operations and clearance.

## Large components

Cyclife owns unique capabilities and expertise for the management of large components that saves final disposal costs for customers. Cyclife's offer integrates chemical and abrasive decontamination.



## Incineration

Cyclife incinerates combustible, solid and liquid waste. Cyclife also treats low radioactive waste arising from hospitals and laboratories.

## Pyrolysis

Apart from traditional incineration, Cyclife also uses pyrolysis, in which material is treated by dry distillation without any oxygen.



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INNOVATIVE  
ONE-STOP SOLUTIONS

# EUROPEAN FOOTPRINT

Cyclife is a subsidiary of Groupe EDF owned by 100%. Created in July 2016, Cyclife can provide an offer that integrates decommissioning and waste management services.

## UK | Workington facility

- > Size-reduction and shot blasting: 3,000 T/year



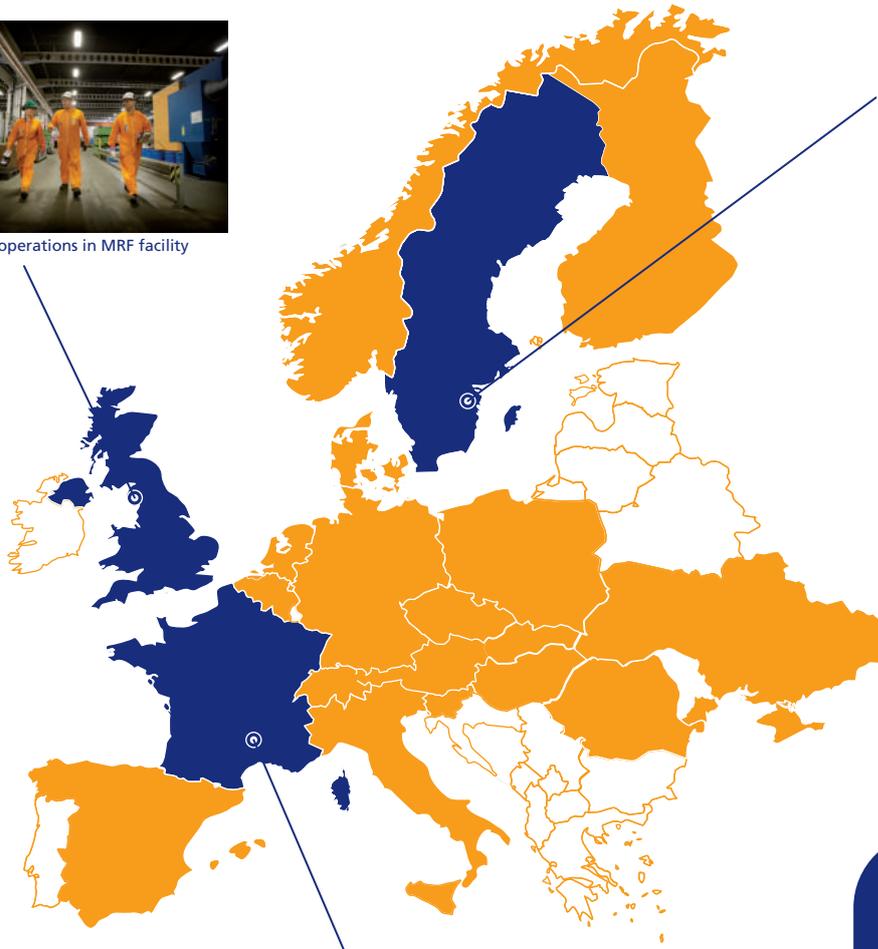
Recycling operations in MRF facility

## SWEDEN | Nyköping facility

- > Melting: 5,000 T/year
- > Incineration: 500 T/year
- > Pyrolysis: 50 T/year
- > Large components workshop: 2,000 T/year
- > Decontamination & segmentation of components up to 400 T
- > Clearance: 2,500 T/year



Melting operations in Swedish facility



-  Our locations
-  Our experiences

## FRANCE | Centraco facility On-site: Mobile units

- > Melting: 3,500 T/year
- > Incineration: 6,000 T/year
- > Large Components workshop: decontamination and segmentation of components up to 200 T



Incinerator in Centraco

## EUROPE

- > Engineers specialized in decommissioning, dismantling, waste management, safety and environmental studies including engineering and digital solutions.



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**Cyclife's facilities are nuclear licensed to provide best available techniques for volume reduction/stabilisation.**