

NEO Report: Decommissioning of the Swiss nuclear power plant in Mühleberg

Zürich, 7 February 2020

Biography



Urs Amherd graduated with a Master's in Physics from EPFL and afterwards joined BKW, where he has been working for the last ten years. He is currently

the project manager for post operation in the decommissioning of the Mühleberg nuclear power plant (KKM).

Summary

The shutdown of the KKM reactor represents the start of the first decommissioning of a nuclear reactor in Switzerland. From a regulatory point, it stands out as a pioneer project, although it is technically not a novel initiative. In his keynote, Urs Amherd from BKW described the challenges associated with the project.

Mostly driven by entrepreneurial reasons, BKW decided to decommission the Mühleberg reactor in 2013. In September of 2018, the first milestone in the decommissioning process was reached with the legally binding decommissioning order from the Swiss Federal Office of Energy.

On the 20th of December 2019 KKM stopped power operation. Until September 2020 necessary dismantling preparation and adjustments of systems have to be done. The nuclear power plant is then shut down permanently and the decommissioning process enters its first phase. This phase encompasses the beginning of the nuclear dismantling and the removal of spent nuclear fuel. Subsequently, in the second phase, which will last from 2024 until 2030, the reactor and infrastructures will be disassembled, and the site decontaminated. Finally, the third phase will be reached by 2031. It consists of a final legal procedure, which will culminate in the release of the cleared nuclear site and will allow for a repurposing of the site for subsequent usage.



Overall, the decommissioning will take up to 15 years to complete and will cost around 950 million Swiss francs.

The KKM decommissioning process brings together novel regulatory challenges, various stakeholders and strong involvement of the public opinion. To address potential issues beforehand, BKW tried to maintain the project as transparent as possible through media conferences and information sessions with the stakeholders.

Interview

In 2011 the Swiss federal authority decided to phase out nuclear power, at the same time public opinion turned against nuclear power after the disaster in Fukushima. Did this impact your decision to shut down the KKM reactor?

The resolution to phase out nuclear power in Switzerland did not directly affect the BKW decision to shut down the reactor. The decision was purely entrepreneurial and mostly related to the very low electricity price at that time. Additionally, in 2011 the regulation regarding nuclear power plants got stricter, and we expected a continuation of this trend.

Moreover, it is true that following the Fukushima incident, the public opinion concerning nuclear power became rather negative. However, we also need to remember that before Fukushima, the population of the Canton of Bern voted favorably to the project to build a new nuclear power plant in Mühleberg.

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What was the biggest concern for the public during the decommissioning?

There was a certain fear amongst the public regarding the decommissioning. Indeed, the delivery of a new decommissioning order comes with new limits for radioactive release, and the public was susceptible to that. Stated bluntly, the primary concern of the people was: “Are we sure that we won’t have some radionuclides in front of our garden?”. Another important issue for the public was the removal of 200’000 tons of material away from the site. They were concerned about the impact on the transportation system, traffic and potential damages to the roads.

Further, some citizens just wanted to be part of the objection process. The fear was that if they failed to be involved at the beginning of the decommissioning process, they would have lost the right to object further down the line.

In the end, thanks to the media outreach and the transparency of the whole project, BKW managed to address the fears of the public during the decommissioning process.

How will BKW compensate for the loss in electricity production due to the shutdown of the KKM reactor?

BKW does not need to replace the electricity production lost due to the shutdown of the KKM. Thanks to its production park in Switzerland and abroad, its international trading and its European network it has enough electricity to supply its customers also in the future. On a more general level, the question to be answered by politics is how the missing energy of all Swiss nuclear power plants will be replaced in the mid-long term.

How did digitization affect BKW and how did the internal structure change over time?

BKW currently has three main pillars. This is different compared to the time when I started at BKW. At that time, there were only two pillars, energy production and the build-up and maintenance of the electric grid. During the last years, BKW changed a lot with the addition of a third pillar: the services business. This third pillar is focused on finding solutions and providing services that help save energy, improve infrastructure projects and leverage the digitization process. Further, due to BKW’s direct access to its consumers; BKW knows its end-users and can use this information to implement digital services like smart homes and smart grids. Thus, the “services business ” pillar is currently growing at a swift pace.

The main challenge faced by the energy production pillar in recent times has increasingly become the profitable production of environmentally friendly energy. For the energy grid, there are changes coming along with smart meters, for example, as well as new challenges due to the higher number of decentralized energy production sources. Additionally, the energy grid remains a very cost-intensive investment due to the maintenance it requires.

What message would you give to students who want to pursue a career in the energy sector?

This is an area with enormous challenges, and the bigger the challenge, the more interesting the work is. There’s an increasing need for energy, but nobody wants new plants even though everybody wants environmentally friendly production. This poses exciting questions that are to be solved over the next years.

This report was produced by the NEO Network – a student think tank and network at the largest Swiss universities. NEO aims to explore tomorrow’s challenges that are brought about by cutting-edge technologies with the leading industry experts, scientists and entrepreneurs.

Authors:
Francesco Saltarelli, Yanik Kipfer, Laurie Prélôt