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Interview mit Kalev Kallemeets, CEO of Fermi Energia AS



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Kalev Kallemeets, Ph.D., is co-founder and CEO of Fermi Energia, company established early 2019 by Estonian nuclear energy professionals and business people to develop Small Modular Reactor deployment in Estonia. Mr. Kallemeets earned his Ph.D. from Tallinn University of Technology studying energy economics.

Mr. Kallemeets has extensive private & public sector experience from an Estonian private energy company, Ministry of Economic Affairs, deputy director of Geological Survey of Estonia and as Member of Parliament of Estonia.

Your company, Fermi Energia, wants to pioneer nuclear power in Estonia. When did the endeavor start and what was the motivation to bring nuclear power to Estonia?

Estonia started to consider nuclear energy in 2006 in cooperation with Lithuania, but due to political mismanagement of the effort in Lithuania, the project did not proceed. I personally and all co-founders of Fermi Energia developed significant interest and engagement in nuclear energy since then, but in 2018 as I personally finished my Ph.D. on oil shale economics and saw serious effort in US, Canada and UK on SMR development, became convinced that only through private effort SMR deployment in Estonia or the Baltic states is possible. Thus, in February 2019, seven founders established Fermi Energia and very quickly received good private funding and strong public interest in Estonia.

We can witness an increase in willingness to enter or expand nuclear power and an acceleration in programs after the Russian war in

Ukraine started in many European countries, such as France, the UK, Poland, Sweden, the Netherlands, the Czech Republic, Romania and Bulgaria. What impact did this double geopolitical and energy crisis have on Estonian energy policy?

Indeed, energy crisis hit already in December 2021 when some older fossil capacities were unable to generate power due to unplanned outages and with $-20\text{ }^{\circ}\text{C}$ and dunkelflaute renewable capacities were useless. Thus, power prices surged to ca 500 €/MWh as daily average. Russian full-scale invasion has exposed the folly of Austria and German led renewable plus natural gas anti-nuclear energy policy in Europe

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nuclear energy policy in Europe given the whole continent is increasingly importing its fossil fuel supplies and there is considerable price coupling between carbon and fossil fuel prices. Estonia, Baltic states, Poland and others warned for many years that NordStream 1 & 2 buildouts together with weak defense and foreign policy will lead to dependency that Russia will take advantage of. Unfortunately German elite and government



Fermi Energia chooses GE Hitachi's BWRX-300 as the technology for planned SMR nuclear power plant in Estonia.
Quelle: Fermi Energia

ridiculed these concerns and for years neglected its role in Europe as responsible leader. Russian barbaric war against Ukraine has proven that United States is the keystone of European defense and thus all Central- and Eastern European countries are cooperating closely with USA in defense, foreign policy and energy policy.

How much political and social support does your nuclear project have, what is the public opinion about Estonia entering nuclear energy?

Since early 2019 we have been polling biannually public view on option of SMR deployment displacing heavy carbon emitting oil shale power generation and in the beginning support for SMR option was 52 %. The latter is not too bad given Estonia has not deployed nuclear energy, but supporting that is knowledge that Finland and Sweden have managed both nuclear reactors and spent fuel in careful, wise manner to the benefit of the whole society. In 2022 as result of Russian aggression and energy crisis the support rose to 68 % and the latest government poll on the question of whether Estonia should deploy SMRs was even 75 % support.

Estonia being a relatively small country, your company looked to Small Modular Reactors early on. When did you start your selection process and which were the criteria that finally made you choose the General Electric Hitachi BWRX-300?

Indeed, in studies with Tractebel Engineering we started screening potential SMRs early on. Also, we learned that only up to 400MWe generators were acceptable to the Transmission System Operator. In September 2022 Fermi Energia invited

proposals from NuScale, RollsRoyce and GEHitachi to make definite vendor commitment in order to professionally prepare for site and technology specific planning, design, development and financing. Key criteria for us were a credible First of a Kind deployment in a Tier 1 nuclear country by a strong nuclear utility. Clearly OPG (Ontario Power Generation) is an absolute world class nuclear utility that is willing to cooperate with BWRX-300 customers to support its deployment in other countries like Poland and Estonia.

Which are the next steps in the project and what is your target date for the start up of Estonia's first nuclear power plant?

Given increased power demand, fossil fuel price volatility, aging of fossil fleet, renewables unreliability and urgency of climate change, Fermi Energia aims to receive nuclear construction license early 2028 and to start commercial power generation by Christmas 2031. We cannot

exclude delays due to unplannable reasons, but so far we are in schedule and based on an official Nuclear energy working group report the Estonian government and Parliament will likely decide early 2024 yes or no to "knowledgeable commitment on nuclear energy".

Being a newcomer to nuclear power is more than an industrial construction project. How are you and the government providing for the necessary regulatory and oversight framework, the education programs, the qualified workforce and the best possible localization of construction, supply chain, maintenance and service to be able to create the best economic value for your country out of the nuclear project?

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Estonian government established the Nuclear Energy Working Group in early 2021 and is working based on the IAEA Milestones approach on all 19 nuclear infrastructure areas. Key to Fermi Energia and Estonian progress is international cooperation with our allies as it always has been in nuclear science and energy. However, there are certain Estonian characteristics that we have been successful in implementing such as: frugality – avoiding overspending or wasting money; efficiency – focus on most important and temporary priority areas; early investment – Fermi Energia is investing private capital to international nuclear engineering masters and domestic bachelor scholarships; proactive education – Fermi Energia has done lectures in 60 public schools, over 30 site area meetings, organized about 10 nuclear power plant visits, nuclear energy information room and been active in communications; honesty – being honest about the mistakes of the past and present of operation and construction of NPPs in Europe.

Apart from GEH, who will be an international cooperation partner for the project and can you imagine a role for German nuclear companies in your supply chain?

Early on we tried to contact Preussen Electra for cooperation and response was that we do not see future in nuclear energy. For Estonia it is practical to cooperate with Swedish, Canadian and American companies who are also able to connect to governmental and financial ecosystems in their countries. In Germany latter would be too optimistic.

How will nuclear power fit into Estonia's energy and climate policy, which role do you aim for nuclear power?

Estonian TSO currently has mandated 1000MWe firm capacity in Estonia that is being provided by national utility with oil shale power plants. We aim not to be overly ambitious, and plan for minimum 600MWe capacity that is necessary for Estonia and our southern neighbor Latvia to ensure security of supply with decarbonized sources of power.

Is there cooperation on the issue of nuclear power among the Baltic states or does everyone pursue its own course, eventually even in opposition to nuclear power?

Fermi Energia has a MOU with the Latvian

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national utility Latvenergo and we have completed a study on the role SMRs in the Baltic power market given the increased penetration of renewable energies. We are in discussion on further cooperation given the urgent need to re-

place expensive and aging fossil capacities to ensure security of supply.

When you look at European Union energy and climate policies, do you think that nuclear power is adequately considered as a building block for a future decarbonized and competitive energy system on the European level?

Leadership by France of uniting pro-nuclear member state governments is very welcome and Estonia has joined recently that group. Unfortunately, due to vehemently anti-nuclear positions by Austria and Luxembourg and lately also Germany, cooperation in EU on nuclear energy is difficult.

It does not help if industry itself loses faith in this technology. Specifically, that German nuclear power industry decided to terminate membership in Foratom (now Nuclear Europe, where Fermi Energia is corporate member) even years before last Ger6 were closed. I would recommend to re-join and embrace the 1957 signed by founding members of Treaty establishing the European Atomic Energy Community Article 1: "It shall be the task of the Community to contribute to the raising of the standard of living in the Member States and to the development of relations with the other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries."

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Nicolas Wendler has been Head of Press and Politics at KernD since August 2013 (Nuclear Technology Germany e. V. / German Atomic Forum e. V.) and started his career in March 2010 as Policy officer. Previously he was an international consultant for the international relations of the Young Union (Junge Union) of Germany among other topics of energy, climate and economic policy for the organization. Since January 2022 he is also the editor in chief at atw. Wendler studied in Munich and Bordeaux political science and economics and (North) American cultural history.