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NOX Energy wins Elia's fourth hackathon focusing on optimising grid management

- From 18 to 20 March, 70 participants – a mix of students and professionals from various industries – worked together in teams to explore ways of optimising the management of Elia's infrastructure and to safely exceed the predefined limits of that infrastructure.
- To make things as specific as possible, the 13 teams focused on developing a substation overload model based on the maximum temperature and then using this model to build a management strategy that will meet the growing demand for electricity.
- After pitching their blueprints to a panel of judges at the end of the third day, the team representing the start-up NOX Energy emerged as the winner with their innovative and easily implementable solution.
- The team members will receive a cheque for €1,500 and will have the chance to continue their discussions with Elia.

BRUSSELS | Elia staged its fourth hackathon at Quartier Papier in Zaventem on 18, 19 and 20 March. The aim here was to develop an infrastructure management strategy enabling the existing facilities to be optimised and safely exceed their predefined limits. The mass electrification of our society is placing growing pressure on our electricity grid, making plans for additional measures essential. Traditional solutions involve reinforcing infrastructure, but that takes time and entails steep financial and societal costs. As a result, we need to come up with new, more innovative measures. Flexibility is an obvious solution, but other avenues could also be investigated. That is what Elia wanted to tease out with the 2025 hackathon. In all, 70 participants from businesses, grid operators, start-ups and universities worked intensively for three days on exploring smarter ways to maximise the efficiency of the existing systems and infrastructure. Among the solutions aimed at meeting this clearly-defined objective, the judges were won over by the one from NOX Energy intended to keep the temperature of transformers under control: an innovative solution which this start-up demonstrated was easy to implement.

Optimising infrastructure management by developing a model

By enabling us to handle increased loads on our infrastructure and maximising the potential of these facilities, we can delay or reduce the need for grid reinforcements. This will slash costs and also save time. Participants focused their efforts on maximising the use of transformers and, to make the solutions as specific as possible, were asked to focus on two challenges. First, they needed to model the substation overload involved to determine its limits and impacts. The maximum permissible load is mainly determined by the maximum temperature tolerated by a transformer. This means they had to develop a model to predict the temperature reached by a transformer depending on its load. The aim was to use this model to assess to what extent and under what conditions we can overload transformers safely. The second challenge then saw participants being invited to come up with a plan, or strategy, based on their model in order to facilitate electrification within existing time and resource constraints.

70 participants developing innovative solutions

The hackathon brought together students and professionals (whether start-up staff, grid operator employees or self-employed people) not just from the energy industry, but also from other sectors and from various countries. This kind of diversity creates a dynamic and a collaborative spirit that fosters creativity in the development of their solutions. Participants took part in intensive brainstorming sessions and technical coaching sessions giving them all the information and knowledge they needed to tackle the challenges presented by the hackathon. As well as offering both Elia and the participants fresh insights, the hackathon also aimed to create a genuine ecosystem facilitating networking opportunities and encouraging collaboration and innovation.

NOX Energy comes out on top with their innovative and easily implementable solution

This year's panel of judges consisted of: Professor Damien Ernst, from the University of Liège in Belgium; Carlos Ferreira, Sustainability Software Principal Product Manager at IBM; Miguel Garnacho, Asset Management Area Manager at Red Eléctrica; and David Zenner, Chief Assets Officer at Elia. The teams and their solutions were assessed on the basis of specific criteria: the model's accuracy, the impact and reusability of their strategy, technical feasibility, financial affordability and, finally, the innovative nature of the proposed solution. The teams were awarded bonus points if they could also pitch to the judges an IT tool supporting their strategy. The winning team, NOX Energy, impressed the judges with their innovative model. Their project demonstrated how using an air compressor can keep transformer temperatures under control. The team members will receive a cheque for €1,500 and will have the chance to continue their discussions with Elia so that they can develop new blueprints and solutions.

> *"We're a team of five people from a single start-up, NOX Energy, and some of our founding members took part in last year's Elia Group hackathon on real-time pricing. For the 2025 hackathon, we developed a solution that involves using compressed air to keep transformer temperatures under control. In our discussions with Elia's experts, we really put our solution to the test and refined it – which could well be what made the difference. Our solution is inexpensive and, above all, easy to implement, which was a very important criterion for the jury. We will continue our discussions with Elia regarding this solution and other pilot project possibilities in the flexibility market, which is the area in which NOX Energy specializes."*
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> **Martin Michaux, co-founder and CTO of NOX Energy**

About Elia Group

One of Europe's top five TSOs

Elia Group is a key player in electricity transmission. We ensure that production and consumption are balanced around the clock, supplying 30 million end users with electricity. Through our subsidiaries in Belgium (Elia) and the north and east of Germany (50Hertz), we operate 19,460.5 km of high-voltage connections, meaning that we are one of Europe's top 5 transmission system operators. With a reliability level of 99.99%, we provide society with a robust power grid, which is important for socioeconomic prosperity. We also aspire to be a catalyst for a successful energy transition, helping to establish a reliable, sustainable and affordable energy system.

We are making the energy transition happen

By expanding international high-voltage connections and incorporating ever-increasing amounts of renewable energy into our grid, we are promoting both the integration of the European energy market and the decarbonisation of society. We also continuously optimise our operational systems and develop new market products so that new technologies and market parties can access our grid, thus further facilitating the energy transition.

In the interest of society

As a key player in the energy system, Elia Group is committed to working in the interest of society. We are responding to the rapid increase in renewable energy by constantly adapting our transmission grid. We also ensure that investments are made on time and within budget, with a maximum focus on safety. In carrying out our projects, we manage stakeholders proactively by establishing two-way communication channels between all relevant parties very early on in the development process. We also offer our expertise to different players across the sector in order to build the energy system of the future.

International focus

In addition to its activities as a transmission system operator, Elia Group provides consulting services to international customers through its subsidiary Elia Grid International. In recent years, the Group has launched new non-regulated activities such as re.alto - the first European marketplace for the exchange of energy data via standardised energy APIs - and WindGrid, a subsidiary which will continue to expand the Group's overseas activities, contributing to the development of offshore electricity grids in Europe and beyond.

The legal entity Elia Group is a listed company whose core shareholder is the municipal holding company Publi-T.

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