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2021



ELECTRICITY CANNOT JUST BE WASTED

ADAPTRICITY MAKES THE DISTRIBUTION GRIDS FIT FOR THE CLIMATE-NEUTRAL AND RENEWABLE ENERGY FUTURE.

ENERGY TECHNOLOGIES CATEGORY. The path towards a climate-neutral Switzerland leads through greater electrification and decentralisation as well as increased digitalisation of the energy supply system. Distribution grids have a major role to play. The higher level transmission grid with the large power plants, but increasingly more solar facilities, electro-charging stations, and heat pumps, and finally the sockets at the consumer's home "hang" on to these systems. In that case a great deal of responsibility rests upon the distribution grids, which are mainly invisible in cables in the ground. How can this "black box" be made more transparent? How can

distribution grids be constructed according to the need instead of having to be extended continually, how can they be operated cheaply and controlled without faults and loss of electricity?

Adaptricity AG, a spin-off of the ETH Zurich, has been looking into these questions since 2014. The fledgling company originated from a doctoral thesis by Stefan Koch, today the CTO, and from a research project funded by CTI and the Swiss Federal Office of Energy. "To begin with we were very heavily involved in research, in the meantime our solution is



Adaptricity: Stephan Koch (CTO), Janis Münchrath (Project Engineer), Mario Baumgartner (CEO), Andreas Ulbig (COO) from left to right



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fit for the market”, states Stefan Koch. That was noticed by German company LEONI AG, a worldwide provider of solutions and services for energy and data management. In 2017 LEONI AG acquired a two-thirds majority share in Adaptricity. “LEONI has the major share, but in the operative field we are more or less independent”, emphasises CEO Mario Baumgartner. “That’s important because intense communication is required in this market as grid operators want solutions which are exactly tailored to their needs”. And Adaptricity, which has grown to 24 employees, is able to offer such intense consultation as well as tailored software products. With success: the Adaptricity.Mon grid monitoring tool, that has received the Watt d’Or 2021 award, is already being used by four grid operators, three of whom are employing the tool throughout their entire grid area.

How does Adaptricity.Mon work? It allows distribution grid operators to automate electricity networks and to monitor them almost in real time (Mon. stands for monitoring). The tool dashboard presents an image of the entire grid area as a digital model, a map in fact of the low tension and high tension grids right up to the domestic connections. Continuous load flow calculations are a supplementary feature of the model: the map shows not only the “roads” but rather the volume of “traffic” under way at any given time. In addition, all data at the grid operator from smart meter data to data from transformer stations to geo-information is linked in the Adaptricity.Mon software.

This leads to transparency helping grid operators visualise, simulate and analyse systems. The software allows operators to think in the form of scenarios. This means that during extensive grid planning much time can be saved and planning and operation of grids are better integrated. “The grid operator can find answers to the question of how many heat pumps, charging stations, and photovoltaic plant can fit into its grid, and how it has to be adapted and operated”, explains Andreas Ulbig, Adaptricity’s COO. “Thanks to digitalisation with Adaptricity.Mon expansion, modification and operation of grids will be much more efficient and cost-effective. Renewable forms of energy can be better integrated and less losses are incurred in the grid”. That is particularly important because the idea is not to let valuable decentrally produced electricity leak out in the grid. “You don’t throw freshly baked bread away as soon as you have made it,” says Andreas Ulbig as he and his team prepare to demonstrate to another customer how much more profitable the smart Adaptricity solution is compared to constantly adding on more copper cable.

WATT D’OR VIDEOS

