

### Tomorrow's engineers are cross-disciplinary



Foto: Jakob Strømmand-Andersen

*The Frontiers of Engineering Symposium 2022 gathered 60 engineering talents from the United States and Europe in Slovenia. Focus was on creating network and discussing solutions, combining distant fields of disciplines.*

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"I left with a clear feeling that these international, cross-disciplinary connections will have a role in creating new solutions that we will need in the future", Jakob Strømmand-Andersen says. He is a partner and Director of Innovation and Sustainability at Henning Larsen Architects.

All the participating engineers were nominated by academies in the US and Europe. Jakob Strømmand-Andersen was invited by the organizers to give a presentation at the 'Sustainability in Buildings' panel whereas Mandana Sarey Khaine was nominated by ATV; she works as Assistant Professor in daylighting and lighting at DTU, the Technical University of Denmark.

"Most conferences are only about presenting your work. In Blend, our discussions were more about the purpose of our work. We were really encouraged to engaged in discussions of engineering and social problems and scrutinize how I could contribute to solve them", Mandana Sarey Khaine says.

#### **Different disciplines inspire each other**

Jakob Strømmand-Andersen and Mandana Sarey Khaine are both inspired by cross-disciplinary cooperation. To Mandana Sarey Khaine, the cross-disciplinary cooperation has been part of her academic work for years. Nevertheless, it surprised her that the four topics at this year's symposium were so heterogeneous, i.e. Post-lithium Batteries,

Prosthetics and AI, Supply Chain/Logistics, and Sustainability in Buildings.

Jakob Strømmand-Andersen was also struck by the variations in topics but noted that not being an expert in all four topics provided an opportunity to gain new insights. "One morning, we were discussing lithium batteries and how to integrate these in our energy system. I understood very little of the technical discussions, sometimes maybe only around 2%, but as an architect I gained important inspiration and background knowledge. We are already looking into how we can better integrate batteries better in buildings and cities. Therefore, the discussions surrounding batteries were very fruitful."

### **From optimizing energy to changing behavior**

Another important discussion in Blend concerned the barriers for green transition. "In the US, green transition is not regarded mainly as a technical challenge like we tend to discuss it in Denmark. The Danish discussion focuses on heat pumps and biofuels. Whereas in the US, green transition is discussed also in the context of social policy and equity," Jacob Strømmand-Andersen explains and continues: "This was a new perspective to me, I always thought that the transition was about creating technical solutions. Along with the growing diversity in Denmark, we will have to include the same perspectives here."

But that is not to say that the 'human perspective' is new Henning Larsen. Both participants work with anthropologists to improve the function of buildings.

"Many building projects around the world are based on statistically calculated norms about human behavior. But none of us behave alike,

which creates problems in measuring a building's performance. Therefore, one of the points that I tried to make was that we, as engineers, must qualify these statistics further – we must allow for more diversity, different ways of organizing our lives and different ways to live in our buildings," Mandana Sarey Khanie says.

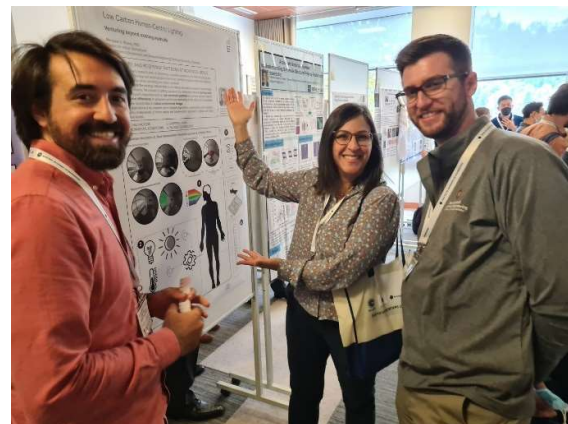
### **Facts on the EU-US Frontiers of Engineering (FOE) Symposium?**

The US-EU Frontiers of Engineering (FOE) Symposium aims to bring together outstanding, early-career European and American engineers from industry, universities, and other research institutions to introduce their areas of engineering research and technical work, thereby facilitating an interdisciplinary transfer of knowledge and methodology that could eventually lead to collaborative networks of engineers. As a member of Euro-CASE, ATV can nominate participants to FOE. More information: [Euro-CASE Frontiers of Engineering](#).

Jakob Strømmand-Andersen points out that out of the 19 tons of CO<sub>2</sub> that the average Dane emits per year, only one-two tons stem from our housing: "Previously, we focused on designing the best possible buildings and then forget all about the people who lived in them and how they use the buildings. Luckily, this is changing now."

### **Engineers should be more arrogant**

As part of their education, many engineers have been taught to optimize. Architecture is totally different, Jacob Strømmand-Andersen says: "As an engineer, you solve a, b, and c, and then you can go home. In architecture, there is not a correct answer as such. As engineers, I think we must get better at asking



*Mandana Sarey Khanie presenting her work at the symposium*

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questions to problems in society – not just focus on the technical optimization. In my panel, we actually ended up discussing that engineers should be more arrogant. The point is: Many engineers are maybe not confident enough to engage in a broader discussion about how our technologies and solutions impact society and the lives we live.”

At the conference, the engineers also discussed how much more technology actually is needed. “As engineers, our role in society is to find solutions, our purpose as such is not to

create technology or big machines. This is an important distinction when discussing our role in society”, Mandana Sarey Khanie says.

Jakob Strømmand-Andersen agrees, “If we work on a problem concerning ventilation, the good engineer will develop the best ventilation system. But how do we eliminate the need for ventilation in the building? In the future, this will be the most important task.”