

## Engineering the visions of tomorrow's architecture



**With 180,000 people moving to cities every day, the search for new solutions to housing issues intensifies. On top of solving the challenge of space, we also need to make sure that new housing solutions are attractive, efficient and gentler on the environment.**

Finding a sustainable answer to today's urbanization challenge means exploring the undiscovered resources in our cities, as Kent Martinussen, Director of the Danish Architecture Centre explains.

"People moving to cities is a problem, but it's also the solution. So, how do we make the problem part of the solution? We think smart. And by thinking smart I mean thinking sustainably. Sustainable solutions mean that they both look good, are nice to live in, but also that they perform."

Thinking smart depends on cultivating a deeper cooperation across stakeholders and building stronger relationships between engineers, architects and contractors in particular. The Urban Rigger student housing

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Students are amongst the first to experience the challenges of finding a place to live in an undersupplied market. Often new in town and with a small disposable income, they frequently face difficulties finding affordable and permanent housing. In fact, rising urbanization in Europe's major cities will leave a projected shortfall of more than four million beds by 2025.

The Urban Rigger project shows how thinking smart can lead to creative ways of solving housing challenges. Like placing buildings on water, rather than land. Developed by Kim Loudrup of Udvikling Danmark in close collaboration with Bjarke Ingels and architects from BIG, these floating dorms are an ambitious attempt to meet Copenhagen's student housing challenge.

Made out of upcycled shipping containers, construction of the prototype was finished in the summer of 2016 and the Rigger is now located in the city's harbor. Along with its modern style, its green benefits can also make people feel good about living there. "As the ultimate symbol of hedonistic sustainability, the students can take long, warm showers without feeling guilty," says Bjarke Ingels, Founder & Creative Partner, BIG.

The Urban Rigger is also a powerful example of how innovative engineering solutions can help bring architects' visions to life and solve urban challenges.

"Today sustainable is almost another word for common sense, or making things practical and smart. Companies like Danfoss have pioneered innovation and made cutting-edge technology available," says Bjarke Ingels, Founder & Creative Partner of BIG.

Danfoss has played an important role in the Rigger's heating and ventilation infrastructure. Technologies like heat pumps, hydronic floor heating and heat recovery ventilation help ensure an ideal indoor climate is maintained, while also contributing to the Urban Rigger's objective of a minimal CO2 footprint.

The Urban Rigger's so-called "Hydro Source Heating" is an efficient, economical and sustainable solution that uses surrounding water as a free and clean heating source. The heat pump ensures that 75% of the energy for heating and hot water is extracted from the sea. Together with solar panels, this means the Danfoss 13KW heat pump uses very little electricity. Additionally, the Rigger's ventilation unit removes stale air and supplies constant fresh air, while minimizing heat loss with up to 95% heat recovery.

We've come to associate buildings with land, but could urban water areas be at least part of the answer to the world's growing housing shortage? The potential is clear. Urban Rigger neighborhoods developed in crowded cities around the world could create up to 1.5 million energy-efficient student homes. Kim Loudrup, Founder & CEO, Udvikling Danmark and the entrepreneur behind the initiative, thinks it's just the beginning.

"We hope to inspire the next generation of students and my wish in general is just to get them out there and get a roof over their heads. At the end of the day they are our future."

To date, results from operating The Urban Rigger prove promising and the project is just one example of how Danfoss is constantly pushing the limits in order to ensure a better and more sustainable future. Rune Andersen, Danfoss Engineer and Product manager agrees.

"I think the Urban Rigger has the potential to play an important role in solving the challenges of urbanization. The fact that Danfoss is part of a project like this, is what drives us."