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Harnessing urban wind power: innovative building-integrated technology

From the [Cluster for Sustainable Cities](#), an interdisciplinary research group at the University of Portsmouth.

Urbanisation is one of the defining challenges of our times. With nearly 70 percent of the world's population likely to live in cities by 2030, the quality of life experienced by the urban population will determine the global future. With this in mind the Cluster for Sustainable Cities, an interdisciplinary research hub based at the University of Portsmouth, brings together over 36 researchers from a wide range of disciplines across the University. Our Innovation Cluster is engaged in relevant and practical projects to deliver solutions for enhancing urban resilience, developing novel urbanisation models for cities to better cope with climate change impact.

My name is [Professor Steffen Lehmann](#) and I am Founding Co-Director of the Cluster for Sustainable Cities. We are currently working on the collaborative INNOVATE UK-funded 'Emerging Technologies' project **Wind-ASSURE**. I am a Professor of Sustainable Architecture and have been a full professor for the last 15 years at leading universities in Australia and Germany, before returning to the UK to establish the new Cluster.

We were approached by our industry partner, [MA Systems and Control Ltd](#) based in Southampton, to team up with them and support their application, the Wind-ASSURE proposal. We were of course very happy when we found out that the proposal was successful and funded through INNOVATE UK, as this kind of partnership allows us to stay at the forefront of innovation and industry engagement. This industry-driven collaboration is led by MA Systems and Control, however, we participate to explore the full potential for building-integrated urban wind power technology; we want to ensure public acceptance of the new technology and its architectural integration in urban developments.

The collaborative project is tackling one of today's grand challenges: how to effectively generate renewable energy inside the city through decentralised systems that no longer have any rotating elements. The surplus generated energy can be fed into a smart grid, which will allow us to turn any city into a power station. This amazing technology is an alternative to the conventional wind turbine and it can use low wind speeds within built up areas. The technology is expected to outperform big turbines at much lower wind speeds, which are frequently found in urban areas.

We are very keen to work more with innovation-driven industry partners and INNOVATE UK, as it allows us to be involved in cutting-edge R&D activities and contribute in a meaningful way on the sustainability and design integration aspects of novel urban solutions.

Photo: Prof Steffen Lehmann, Dr Dennis Majoe and David Majoe - Director of of MA Systems and Control Ltd, Dr Alessandro Melis; back row: Mr Walter Menteth and Mr Francis Graves from the Cluster for Sustainable Cities at the University of Portsmouth (from right to left)

