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Giving folding bikes the push they need

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BIKE INTERMODAL, an EU-funded research project, combines two or more modes of transportation, in this case, cycling with public commuting or driving.

For the past few decades, the promise of folding bikes has been true urban mobility. They were supposed to become the perfect supplement to public transportation – light and small enough to be taken on any bus, metro or car, even during rush hour. But current models have an average weight of 12-15 kg and an average size of 150 litres when collapsed (around the same as a large suitcase). The weight can become an issue and, for many people, the size is not quite compact enough. Not to mention that the collapsed bike's volume actually exceeds the baggage limit on buses or metros in some cities.

Enter BIKE INTERMODAL, a project funded by the European Union (EU). 'Intermodal' means combining two or more modes of transportation, in this case, cycling with public commuting or driving. *"The challenge for bike research is that the bicycle industry is relatively poor and extremely fragmented,"* says BIKE INTERMODAL scientific coordinator, Alessandro Belli of Tecnologie Urbane in Italy. Single producers rarely have the resources to fund innovative research. In addition, because the same manufacturers make folding bikes and full-size bikes, the two formats share components and standards. *"This makes progress difficult. However, thanks to the EU funding we received, we had the freedom we needed to really push folding bikes forward,"* explains Belli.

The seven-partner project team realised that significantly improving folding bikes would mean rethinking both their technology as well as their design. “The key to our success was switching to the technologies and supply chain of the automotive industry,” points out Belli. The project team’s intermodal bikes come equipped with electrical power assistance built directly into a wheel. The miniature motor was custom made for the project by the Swiss partner, Maxon Motor. Meanwhile, the frame of the new cycle is a combination of die-cast magnesium parts that are held together by tensioning cables to create a one-piece, hinged structure, which collapses and unfolds in a single step – just like the roof of a convertible.

“It only takes a few seconds to unfold or collapse our bikes, with no screwing necessary. But what is really exciting about them is their size and weight,” remarks Belli. In their collapsed form, the intermodal bikes have a volume of 30 litres. By comparison, the top folding bike competitor collapses to 90 litres, while all other brands measure between 150-210 litres. In terms of weight, non-powe--assisted folding bicycles are between 12-15 kg heavy. Those with a motor generally weigh more. Yet the intermodal bike is only 7, 5 kg.

Currently, the compact, lightweight bicycle is still a prototype, however the project already won the Gaetano Marzotto Award for start-ups *“From the Idea to Enterprise” and the UniCredit Bank sponsored prize “The Talent of Ideas*” in November 2013. *“As soon as the EU research is completed our partners are determined to go into production,”* says Belli.

European industry is expected to benefit from the highly regulated automotive-style supply chain manufacturing method of BIKE INTERMODAL, both in terms of job creation and greening the production. In addition, the product could make transport systems more efficient. *”Beyond that the folding bikes would fill a growing demand,”* adds Belli. More and more people who previously never saw themselves as cyclists have become convinced of the more eco-conscious and healthy “two wheels better” ethos.

“That was always supposed to be the purpose of folding bikes – to enable a fluid synergy between cycling, driving and public transportation. With our design that is finally possible,” concludes Belli, adding that *“last but not least, they are really fun.”*

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