

Extreme weather and flooding has been increasing rapidly in recent years, causing great destruction in the UK, other low-lying areas in Europe, and across the world. Where most people see trouble, some see opportunities. The Norwegian company TideTec AS has patented solutions to create good business out of floodwater. They have combined mostly known components and technology elements to an active concept of coastal defences that integrates transport and renewable power production by exploiting the tidal currents near bridges and other coastal constructions. The concept is known as “energy-producing bridges” and the worldwide potential is enormous. TideTec addresses the two essential factors for affordable renewable energy production: lowering the capital investment cost and increasing the energy production.

TideTec’s system technology has four main elements:

1. A patented two-way turbine to be integrated in a bridge fundament. Turbines can be reversed when the tide turns and yield electrical power in both directions. The turbines can also be run as pumps to achieve active flood protection and store the energy.
2. Pumped storage, otherwise only used with hydropower in mountain areas. This allows power production from tidal or floodwater at times when power prices are high. Pumping can also use cheap excess power from e.g. wind farms at other times.
3. The construction method for combined flood protection / bridges / tidal power plants is also patented. It consists of pre-fabricating concrete elements (caissons) which are floated to the installation site, This method is much more cost efficient than in-place casting, which also makes the new solution scalable.
4. By combining energy-producing bridges with flood protection, a distribution of the investment costs on several measures of societal interest, which gives better total economy and also presents a good business case for the Norwegian innovation company.

The Eurostars project Safe\*Coast, which will run from late 2014 until 2017, will verify the concept from a technology and market perspective for a selection of potentially interesting sites and installations.

TideTec is leading the project and is thereby qualified for playing in the “Champions’ League of small European technology companies”, one of the labels used for the Eurostars programme. On this winning team are also two more small tech companies: German Mareval AG, marine engineers based in Hamburg, the English infrastructure planning company Metrotidal, who are working on a possible installation in the Thames Estuary, and the Technical University of Munich, whose Turbine laboratory has nearly a century of experience with turbine technologies.