

Jean Baptiste Drevet invites us into the bathroom of a Parisian apartment. There in a tank the size of a large bath is a sort of long carpet undulating in the current. "Voila; my water turbine" he exclaims proudly.

This man, a graduate of the prestigious Arts et Métiers School, has already shaken the industrial world with the invention of a membrane pump that is currently used by companies such as Areva, Suez and Saint-Gobain, and which also has uses in the medical world.

"I went back to basics in the field of applied Physics to design these undulating membrane pumps", he says. "Watching them in operation I thought to myself that it might be possible to generate energy from the coupling effect of a fluid passing over an undulating surface".

Tests carried out in September 2012 at L'IFREMER.

Basically, Jean Baptiste Drevet places in the water a rubber mat covered with converters, which transform kinetic energy (resulting from the undulation caused by the current) into electrical energy. An idea already proven by nature: "In water fish swim forward by undulating", explains the founder of EEL Energy, who claims to mimic this effect. Note the play on words between EEL and an eel in English.

Wishing to take his idea to the next step, the engineer approached L'Ademe to finance the modelling of his invention. L'IFREMER provided an experimentation tank equipped with a swell and current testing simulator, where he tested a 1/6<sup>th</sup> scale model.

The final step was for industries to physically build the marine converter: Hutchinson, the world leading rubber specialists, fabricated the membrane, "in natural latex, resistant to tears and abrasions which prevents organisms from fixing onto it", specifies Jean Baptiste. Baron, the industry group from Nord-Pas-de-Calais built the 200 ton base which the converter sits on.

Currently with four full time members of staff, EEL has big plans: "we will soon be harnessing energy from the Agulhas current in the Indian Ocean and a water turbine farm in South Africa. We are in discussions with Japan and Scotland", confirms the president of the company.

In France, the first full scale model, a beast measuring 16m x 16m, is scheduled to be put in place in Boulogne-sur-mer at the end of 2014, whilst the 1/6<sup>th</sup> scale model will be submerged next February.

This new generation of water turbines must of course first prove itself, but the results are promising; the absence of wake and drag allows a high density of machines per site: 20 times superior to classic turbines and all the while not harming marine flora or fauna. The lifespan of the machine is far greater than that of traditional turbines and the return of energy far excels them because they are capable of functioning even in weaker currents. Plus, further applications are envisaged for the future in rivers and on the back of ships as hydro generators.

The EEL energy wave is infinite !

For further information and articles about this project visit the following site:

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