



POWER - Partners Offering a Water Energy Revolution

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Total budget: € 2.140.343,-

Dutch Ministry of Economic Affairs

contribution: € 933.910,-

Duration: 36 months

Start date: 01-01-2012

Consortium: 8 Dutch beneficiaries

Lead: Strukton (NL)

Coordination: ARCADIS (NL)

China coordination: Dimitri de Boer

Website: <http://www.powerdtp.nl>

Key Words: Dynamic Tidal Power, DTP, hydraulic engineering, coastal engineering, marine ecology, sustainable energy, tidal energy, business development, innovation

The 3-year POWER programme started in 2012 and aims to create strong partnerships between various Dutch disciplines and Chinese parties. The POWER programme is constituted around a feasibility study on the development of Dynamic Tidal Power (DTP) in China.

Benefits of DTP

The benefits of DTP include:

High power output. It is estimated that some of the largest dams could accommodate over 15 GW (15000 MW) of installed capacity. One DTP dam could supply energy for millions of households.

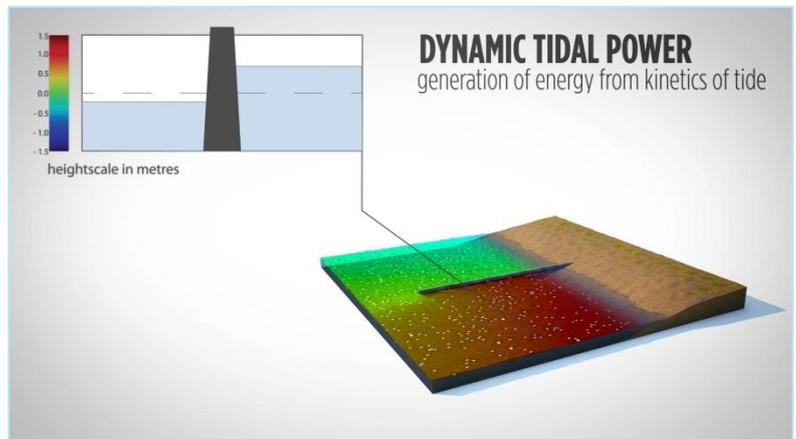
Stable power. The generation of tidal power is highly predictable due to the deterministic nature of tides, and independent of weather conditions or climate change.

High availability. DTP doesn't require a very high natural tidal range, but instead an open coast where the tidal propagation is alongshore. The potential availability of DTP is very high.

Potential for combined functions. The long dam can be combined with various other functions; coastal protection, LNG ports, aquaculture, land reclamation and connections between islands and mainland.

POWER consortium members

Strukton BV, NL (<i>lead</i>)
ARCADIS Netherlands BV, NL (<i>coordination</i>)
Delft University of Technology, NL
Hulsbergen Hydraulic Innovation & Design (H2iD), NL
Oranjewoud, member of Antea Group, NL
IMARES, institute of DLO, NL
DNV KEMA Energy & Sustainability, NL
Pentair Nijhuis, NL



The Dynamic Tidal POWER Video

In November 2013, the POWER consortium developed two video's to demonstrate the concept of Dynamic Tidal Power. The 8-minute version explains the origin of the DTP idea and the importance for the Chinese energy generation. The 3-minute version focuses mainly on explanation of the technology through the use of animations. The videos available with English, Chinese and Korean subtitles. Visit the website www.powerdtp.nl

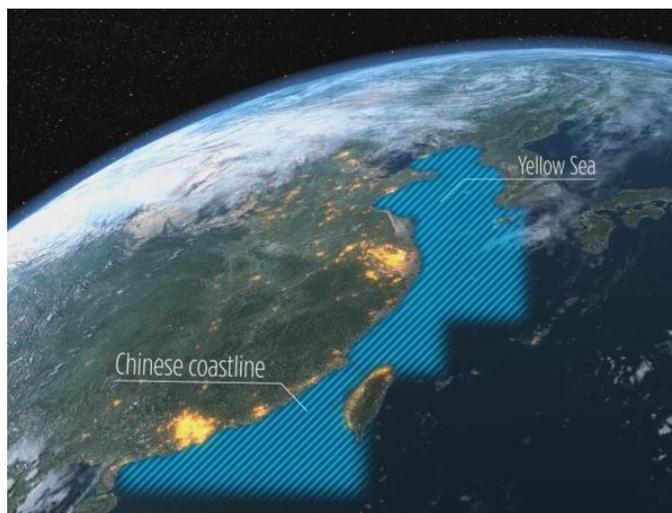


Site selection study at the Chinese coast

DTP is an innovative way to use the natural tidal movement for generating massive amounts of sustainable energy. A dam-like structure of at least 30 km in length is built perpendicular to the shore in a shallow sea basin, with a long series of turbines installed. Studies have shown that a large DTP dam along the Chinese coast could feature installed capacity of 15.000 MW or more, placing it among the world's largest hydropower projects.

Cooperation between Dutch and Chinese engineers

Since the signing of a bilateral agreement in September 2012, Chinese experts have been extensively involved in the feasibility study. Building capacity and exchange of knowledge between the Dutch POWER consortium partners and the Chinese institutes is the key to a successful feasibility study of DTP. Throughout 2012 and 2013, a series of technical discussions, site visits and capacity building seminars took place in China. Chinese experts visited the Netherlands in September 2013 to inspect advanced Dutch coastal engineering projects such as the Delta Works.



Preliminary results of the Site Selection Study

The preliminary results of the site selection study are promising. One potential DTP location is particularly interesting as it appears that the dam could also be used to improve the water circulation in a polluted inner sea. In October 2013, Dutch and Chinese partners agreed on a work plan for the economic assessment of DTP in China. The economic assessment will be conducted for three scenarios of full-scale DTP dams in China.

Next steps

The technical feasibility has been acknowledged by the Chinese partners, and potential sites have been identified. A meeting will be held in China in early 2014 to review results of further modelling work and scale turbine tests. The economic assessment report is expected to be ready in the summer of 2014. If the economic assessment is promising, more in-depth studies and pilots will follow.

POWER partners in China

National Energy Administration (NEA), CH (<i>lead</i>)
China Renewable Energy Engineering Institute (CREEI), CH (<i>coordination</i>)
Hydrochina Huadong (ECIDI), CH
Second Institute of Oceanography (SIO), CH
Institute of Water Resources and Hydropower Research (IWHR), CH

