### FLOATING ECO-POWER PLANT

TOTAL GENERATING CAPACITY FROM THREE RENEWABLE ENERGY SOURCES (RES) OF THE COAST OF POLAND 17MW

ANXXXXXAA

#### Sea wave as a significant Renewable Energy Sources



Rysunek: Średnia moc fali w kW na metr grzbietu. [Wave Energy Brochure]

The seas and oceans account for 2/3 of the Earth's surface it is estimated that the power of waves in the world is about **2.5** ÷ **3 TW** 

that is 2 500 000 ÷ 3 000 000 MW

#### Sea wave as a significant Renewable Energy Sources



Estimated wave power in the Baltic Sea is approximately **5-10 kW** / running meter of wave crest

that is, for **400 km** of coastline that Poland has at its disposal

theoretical the total obtainable power of the Baltic Sea would be 4000 MW

# Floating technology - floating platforms as the future of offshore energy farms



- The size of the platform structure does not depend on the depth of the water area on which it is to operate
- Foundation works are less harmful to the fauna inhabiting the seas and oceans

# Floating technology - floating platforms as the future of offshore energy farms



- Increasing the working depth of the platform is related to the extension of the mooring lines - not to make a larger foundation structure
- The time it takes to set up the platform at a specific location is shorter than the construction of a permanent seabed foundation structure

# Floating technology - floating platforms as the future of offshore energy farms



 Changing the location of the platform is incomparably easier than the foundation structure permanently connected to the bottom (utilization)

### World trends in the design of offshore structures



sources

For HNP

Research on the world's largest floating solar model in South Korea

### World trends in the design of offshore structures



GE's new floating wind turbine concept



The Norwegian company Wind Catching System presented the technology of floating offshore wind energy

#### World trends in the design of offshore structures

- Iberdrola will install floating wind farms with a total capacity of 980 MW in Spanish waters
- The Japanese Wind Energy Association estimates it will obtain 128 GW from foundation installations and 424 GW from floating installations

Floating Eco-Power Plant by WUPROHYD using three Renewable Energy Sources (RES)

- Wave turbines 1,6MW
- Rotating deck for solar panels – 40 000m<sup>2</sup>
- Wind turbine  $\geq 12MW$

#### Object parameters:

- Length LCA = ~ 250m
- Width BCA =  $\sim$  220m
- Maximum draft = 20m
- Displacement = 78,000T



### Wave turbine



#### Patented profile tested

1. Rotor skin

Ι.

- 2. Fixed axle
- 3. Generator
- 4. Axel mounting
- 5. Ballast chamber





#### Wave turbine

Advancement of works on the turbine - model studies in the wave channel, efficiency approx. 7%





## FLOATING ECO-POWER PLANT

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