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# Technical concept of prototype plasma device for water cleaning

OP6-5.2

**PP #12 (IMPPAN, Gdańsk, Poland)**

Dr. Mirosław Dors  
Mr. Bartosz Hrycak  
Mr. Tomasz Izdebski





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## 1. Introduction

The aim of the WP6 of the PlasTEP project is developing a prototype of mobile floating device for destruction of oil and oil-type leakages in ports of the Baltic Sea. Tests of optimised modules described in OP6-5.1, showed that all modules are ready for the fixing in the final floating device. In this report technical details of the final device are presented.

## 2. Floating platform

The floating platform was constructed by the external workshop “Usługi ślusarskie Jarosław Lipkowski”, (translation: “Metal-works Jarosław Lipkowski”), specialized in small boats manufacturing. Following the agreement the floating construction was delivered to the Institute in March 30, 2012.

The primary concept of the floating platform with the foreseen arrangement of key components is presented in Fig. 1. However, after calculations made by experts from “Metal-works Jarosław Lipkowski” it turned out that the displacement of the device is so high that dimensions of floats must be much larger than assumed.

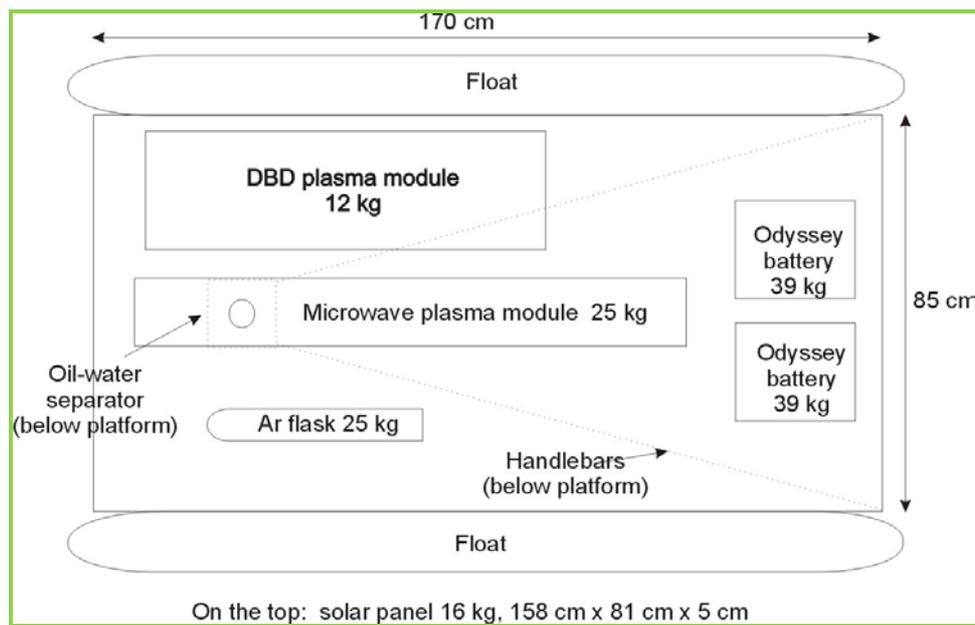


Fig. 1. Sketch of the floating platform for the final device.

The floating platform was made of aluminium foil 4 mm thick. It consists of two floats, plate and sealed box for modules. The successful launch test was done in January, 2012 (Fig. 2).



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Fig. 2. Launch of the floating platform.

The painted floating platform delivered to the PP#12 was additionally equipped with cover and frame for solar panel (Fig. 3).



Fig. 3. Final floating platform.





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### 3. Arrangement of modules

Modules were placed in the box of the floating platform as presented in Fig. 4. Such an arrangement ensures efficient use of the space and proper balance of the device at floating conditions.

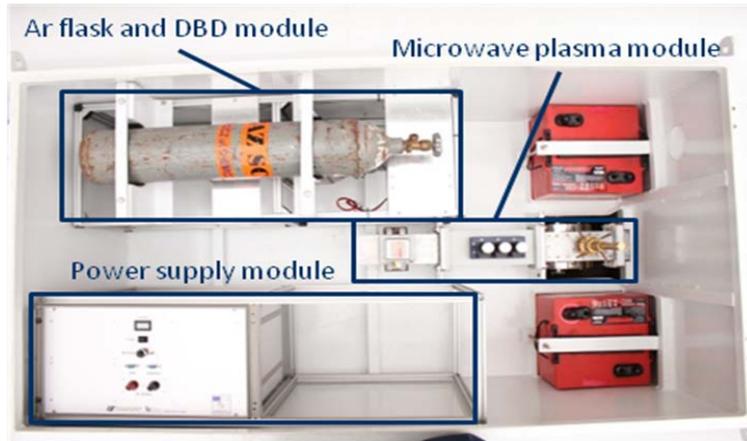


Fig. 4. Interior of the floating plasma device for oil slicks destruction.

The microwave plasma module with oil-water separator is placed in the hole cut in the plate of the platform (Fig. 5). The separator should reach the water level and is placed in the narrow space between two plates operating as drivers directing the oil slick towards the separator (Fig. 6).



Fig. 5. Part of microwave plasma module with oil-water separator beneath.



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Fig. 6. Bottom view of the floating device showing drivers and oil-water separator.

#### 4. Conclusion

All modules placed in the sealed box of the floating platform are arranged properly and must only be connected with cables and wires. After that the device will be completed and ready for field tests.

