

Dynamic Positioning is a separate philosophy. Vessels with DP system can hold a position or follow a predefined track with high accuracy. In order to control such a system, a separate competence is required, which implies attending of specific training courses. This explains the high payroll of experienced DP operators.

But a DP system is reliable when all its components are reliable. Being a part of the DP system, the DP operator must know the system arrangement and monitor its correct functioning. Having extensive experience with the DP system and being an instructor of DP courses in the training center, I wrote the book "DP Concept", which gives the concept of this comprehensive and very interesting topic.

It took more than three years to complete writing of the book, DP Concept. I tried to focus on the basic concepts and principles, and talk about complex things in simple words. This book will be useful to everyone who is at the stage of training and obtaining DP competency (DP Induction and DP Simulator courses). And also, who wants to refresh knowledge of the theory of Dynamic Positioning.

The book "DP Concept. Principles of Dynamic Positioning" is a 154-page hardcover print edition. To order, send a request to book.dp.concept@gmail.com. The price of the book is \$25, plus the cost of delivery.

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1. DP Concept

DP stands for Dynamic Positioning and a DP system is defined as:

A DP system consists of components and systems acting together to achieve sufficiently reliable position keeping capability.

From this definition, it is clear that the DP system includes some parts called components in the number of seven, as shown in Figure 1, which shall be remembered:

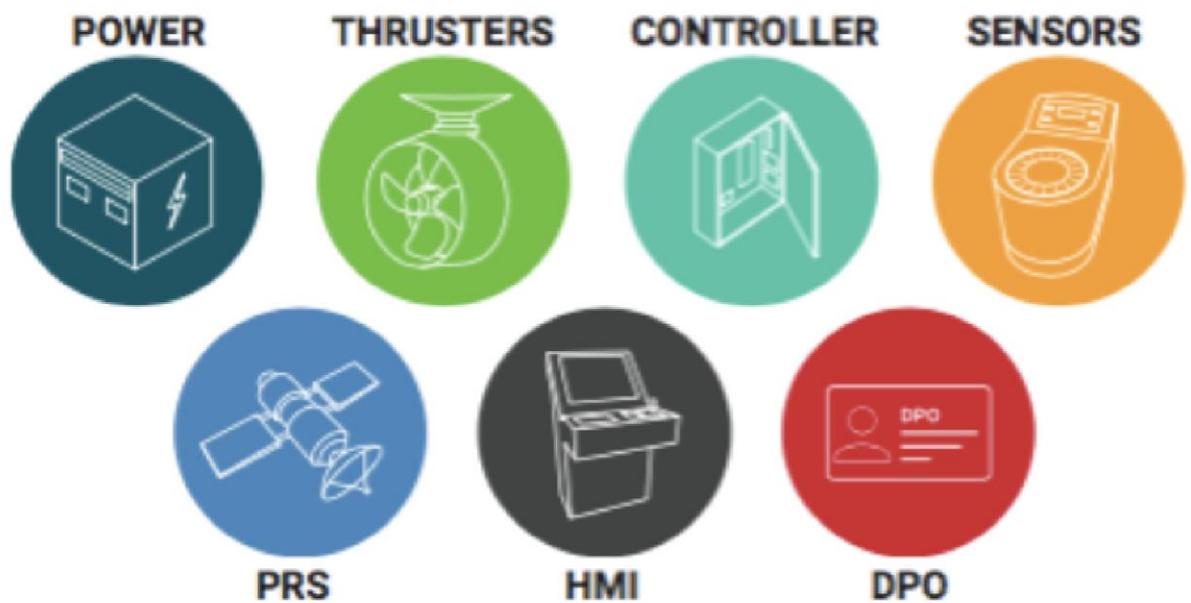


Figure 1 – Components of a DP system

Only proper functioning of all these components is able to ensure reliable functioning of the whole DP system. Upon arrival on board, it is necessary to study each component individually (its structure, layout, disadvantages, etc.) and monitor its functioning continuously during DP operation.

While speaking about DP class 2 and 3 vessels, duplication of each component is considered – a so-called *Redundancy*.

On the basis of the information provided by the Wind sensor and data of the above-water projection of the vessel, as shown in Figure 63, the DP system creates Wind Model. The correctness of the Wind Model depends on the accuracy of the wind measurement – if the sensor is sheltered from the wind by a mast or a platform, as shown in Figure 21, it will provide incorrect data that will lead to misreckoning. The DP system will continue to keep the position of the vessel with the incorrect Wind Model, as well as to keep the position, if the Wind Sensor is switched off at all. In that case, wind force affecting the vessel will be added to the DP Current along with the sea current and wave action, as an unknown external force.

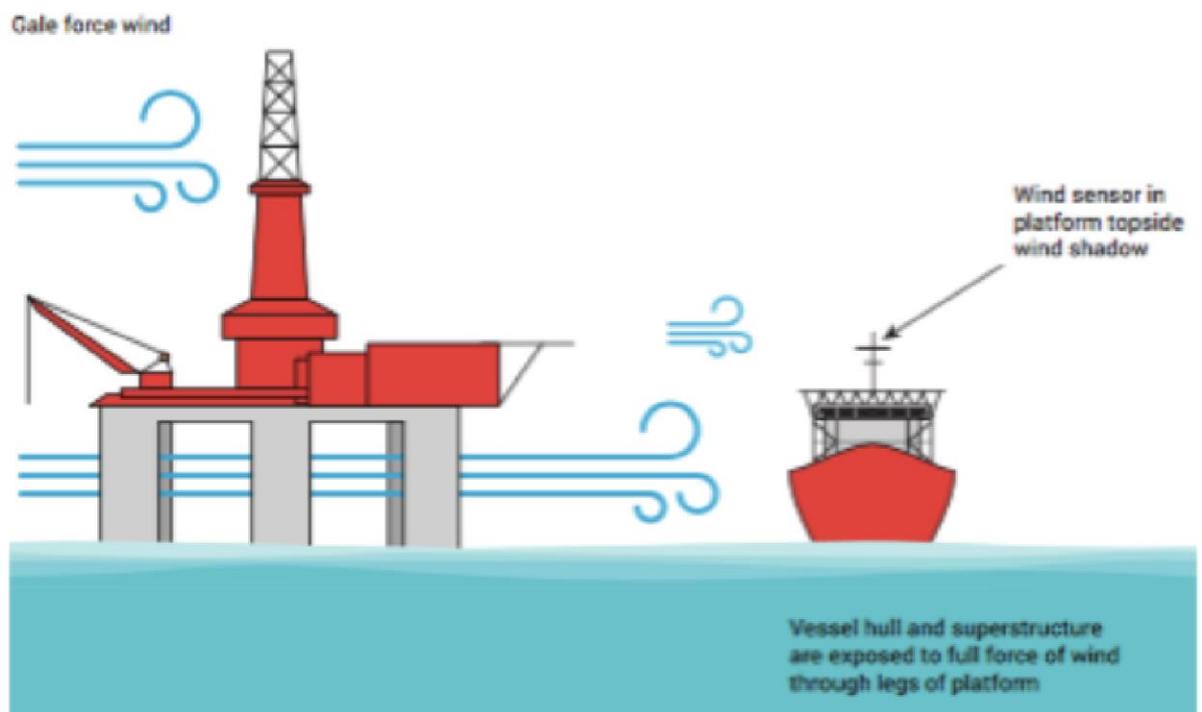


Figure 21 – Wind sensor in wind shadow

The question may arise, why do we talk about importance of the Wind sensor, if the DP system is able to work without it? Before answering this question and look at the other situations with the Wind sensor, it is necessary to review the concept of *Wind Feed Forward* – the ability of the DP system to react quickly to the wind gust, developing the counteracting force.

One more important condition for using Follow Target Mode is that either transponder or responder shall be set as a mobile target. The DP system, in this case, will not use it for positioning calculations.

The vessel moves when the target reaches the boundary of the circle

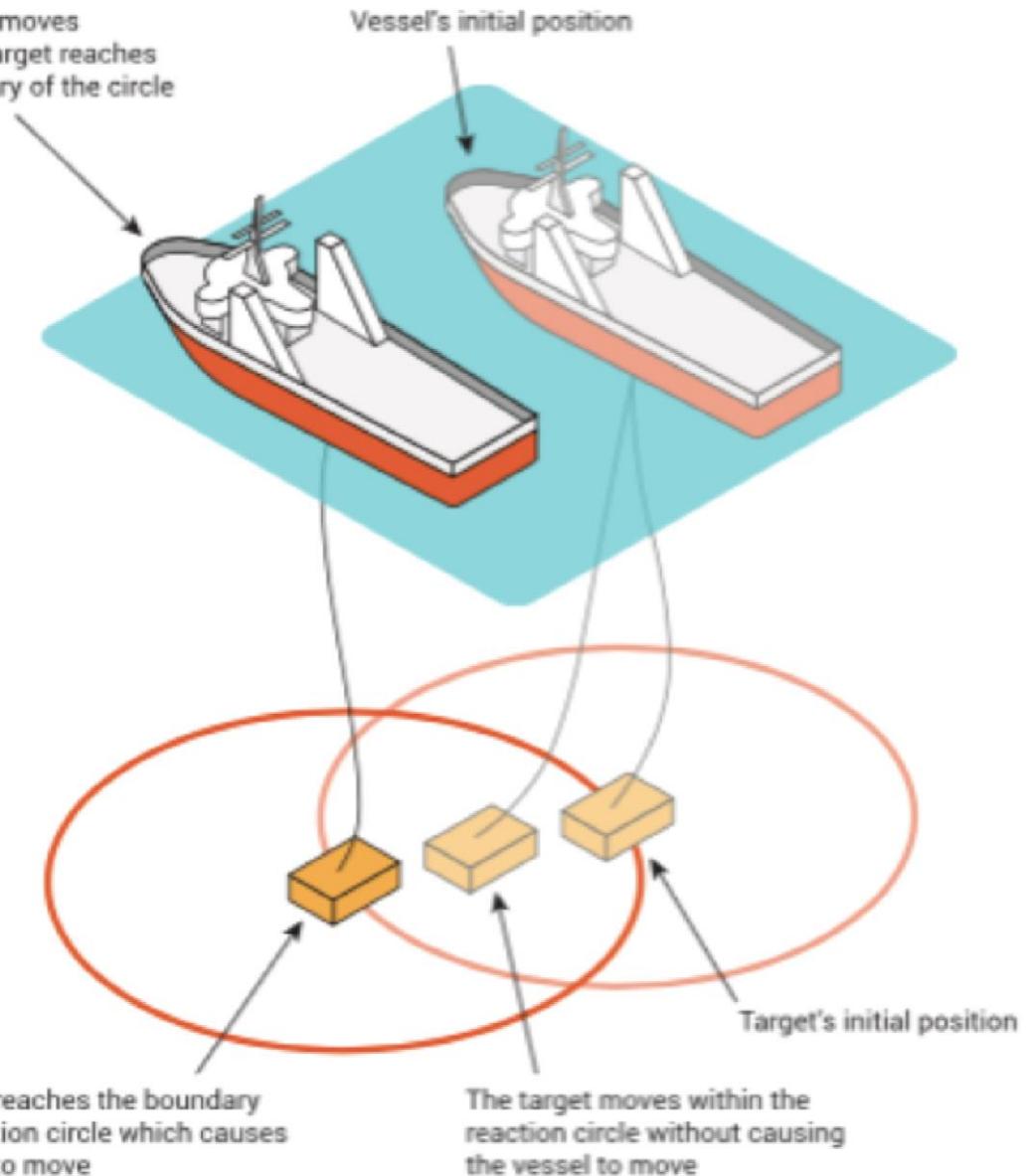


Figure 39 – Follow Target mode

Weathervane Mode

Weathervane is a mode, when the vessel, reacting to changes of the wind, current and sea, rotates about a point, called terminal