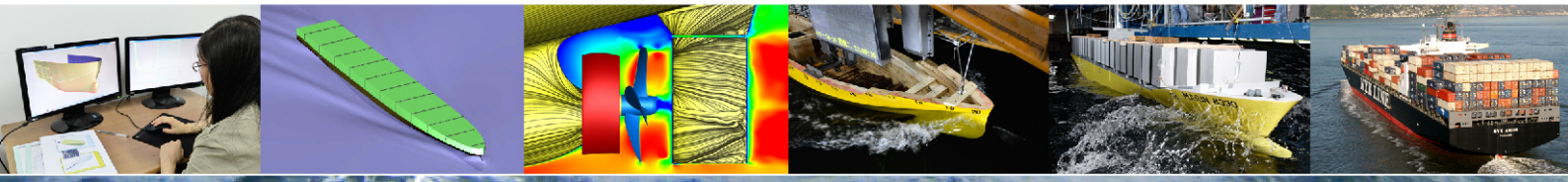

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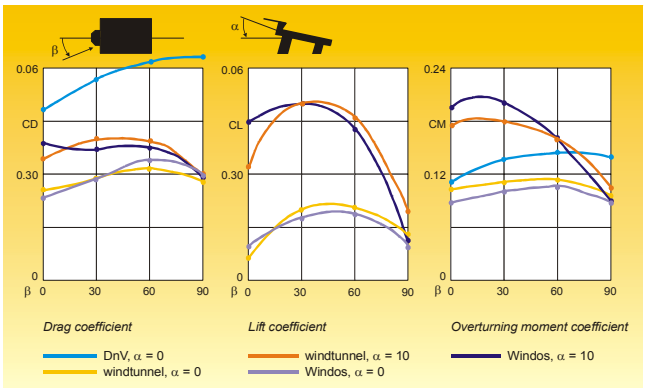
Assessment of wind loads on ships and offshore structures 作用在船舶和海上平台的风载荷评估

WINDOS

WINDOS is a computer program for the calculation of wind loads on offshore structures. The program has been developed to bridge the gap between the two common methods used for wind load prediction: the simple calculation models provided by the classification societies and model testing in a windtunnel. The program can handle arbitrary types of ships and offshore structures.

WINDOS 是一款用于计算作用在海上平台风载荷的程序。该程序的研发弥补了用于风载荷预报两种常规方法之间的漏洞。即：由船级社提供的简单计算模型和风洞中的模型试验。该程序可以用于计算任意类型的船舶和海上平台。



Comparison between wind force coefficients calculated according to the rules of a classification society, measured in a wind tunnel and calculated with WINDOS

船级社规范计算、风洞试验测量以及 **WINDOS** 计算的风阻力系数对比

Computational approach 计算方法

The program is based on a building block approach. The structure is composed of a number of standard components of which the resistance coefficients are stored in the program's database. These standard components include rectangular prisms, cylinders, lattice structures, ship hulls, helicopter decks and user defined components. Theoretical and empirical relations are used to calculate interactions (shielding) between the components and lift forces on elevated and tilted decks. Extensive windtunnel tests have been carried out to validate and extend the calculation model. The program is able to compute the drag, lift and overturning moment on arbitrary structures in various tilted conditions.

该程序是基于积木块方法。计算对象的结构是由若干个标准构件组成，每个标准构件的阻力系数存储在程序的数据库当中。这些构件包括长方体、圆柱、框架结构、船体、直升机甲板和用户自定义的构件。使用理论方法和经验关系计算所有构件与作用在升高甲板以及倾斜甲板上的升力之间的相互作用。开展广泛的风洞试验用于验证和评估计算模型。该程序可以计算各种情况下作用在任意结构物上的风阻力、升力和倾覆力矩。

Input 输入

The input includes the following items:

- **Number, location, type and dimensions of standard components**
- **User defined component data**
- **Type of wind velocity profile**
- **Wind velocity and wind angles relative to the structure**
- **Orientation of the structure (roll and pitch angle)**

输入包括以下内容：

- 数量、位置、类型和标准构件的尺寸
- 用户自定义构件数据
- 风速变化图类型
- 风速和相对风向角
- 结构的定向（横摇和纵倾）

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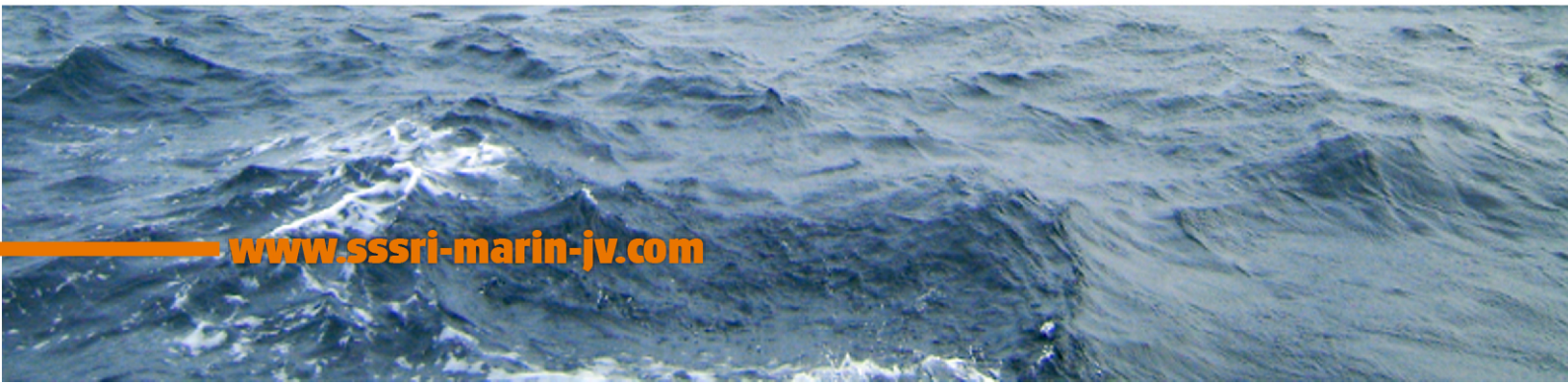

Output 输出

The output consists of:

- Review of the input
- Forces and moments for each orientation

输出包括：

- 输入内容概括
- 各个方向上的力和力矩

Application 应用

WINDOS allows a quick and easy assessment of wind loads on arbitrary offshore structures. The structure types include semi submersibles, jack-up rigs, jackets, fixed structures and ships.

The accuracy is sufficient for use in the design stage.

WINDOS 可以对作用在任意海上平台的风载荷做出快速便捷的评估。海上平台类型包括半潜式、自升式钻井平台、导管架、固定式结构和船舶。

计算精度足以满足设计阶段的使用要求。

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