Division of Grobal Architecture, Graduate School of Engineering

Ocean Material Engineering (OSAWA Laboratory)

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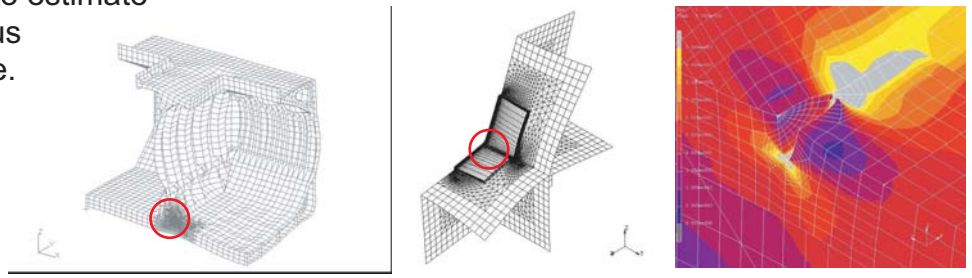
● Safety evaluation for ship and offshore structures on the total lifetime

The accident of ships and offshore structures cause the serious environmental disaster and probably massive loss for the human life. In order to protect the ocean environment and human life against the ship accident, we have to manage the safety performance during the total life of the structures. We develop the new design concept to estimate the safety performance of the structures which is considering various on-loading condition and optimize maintenance cost of the structure.

→ Fatigue strength analysis for the ship structures

→ Fracture mechanics for the ship structures considering the real sea conditions



FEM ship structural model for zooming analysis

● Study on the automatic and supporting system of the skilled work in the shipyard

The less skilled worker in the ship building yard and industrial factories is serious problem in Japan. Our research group simulates the line heating process and gus cutting process which are typical processes to bulid the ship hull, and develops simulator to make theautomated system or supporting system for the beginner to acquire the knowledge of the skilled work.

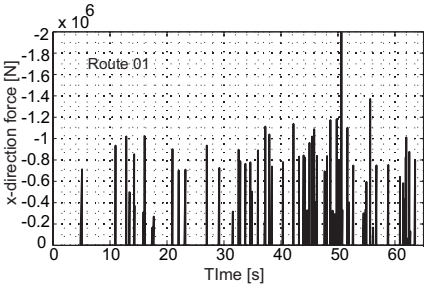
→ Study on the plate cutting process with aqua-gas

→ Development of the support and automation system for line-heating process

● Development for ship and offshore structures in the arctic area

Arctic region is the most popular area because of exploring the fuel resources and developing the northern pole route. Our group is conducting the comprehensive study on the ice load which is acting on ships and offshore structures in order to design the structure, propulsion and manoeuvring power requirements.And, we develope the new design and operation system of ships and offshore structures in arctic area.

Arctic ship operations
(Cesos Annual report 2007)



Numerical simulation of the ice load in level ice

→ Development for the fatigue analysis for the ship in ice (Ice-ship interaction, ice load)