

SYRA42, Oct. 2011, Tokyo

Studies on Frictional Resistance Acting on Painted Flat Plate and Other Topics

New Paint



Conventional Paint



Yokohama National
University

Kazuo Suzuki

Contents

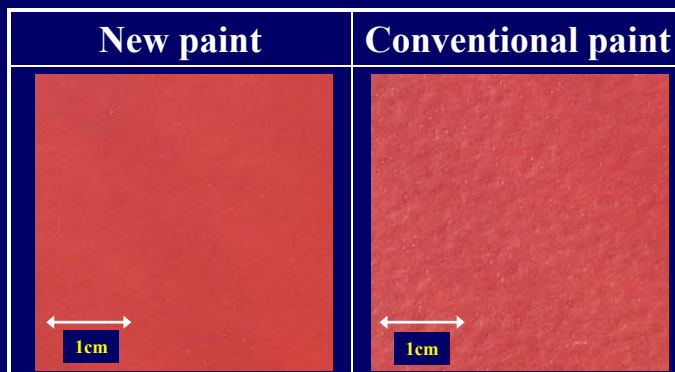
- 1. Studies on frictional resistance acting on painted flat plate**
 - Experiments in circulating water channel
 - Future study plans on roughness effects
- 2. Sloshing phenomena in YNU towing tank by earthquake on March 11**
- 3. Introduction of a book to educate ship and ocean**

Contents

- 1. Studies on frictional resistance acting on painted flat plate**
 - Experiments in circulating water channel
 - Future study plans on roughness effects
- 2. Sloshing phenomena in YNU towing tank by earthquake on March 11**
- 3. Introduction of a book to educate ship and ocean**

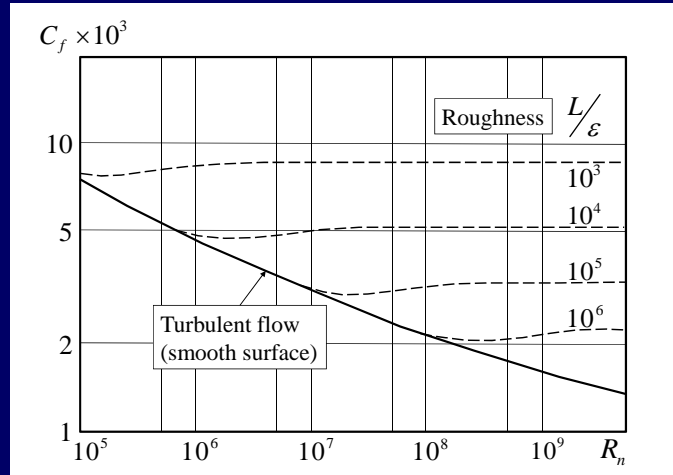
New anti fouling paint

- To reduce roughness based on control of paint viscosity etc.
- To keep smoothness based on new self polishing technology



Kansai Paint /
NKM Coatings

Frictional resistance for sand roughness

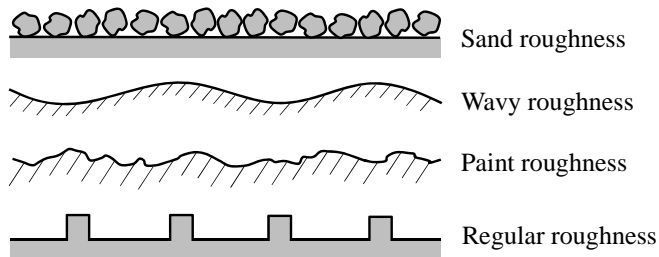
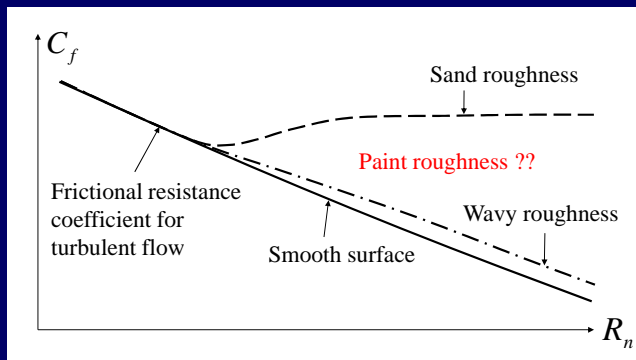


C_f of flat plate with fully roughness suggested by Schlichting

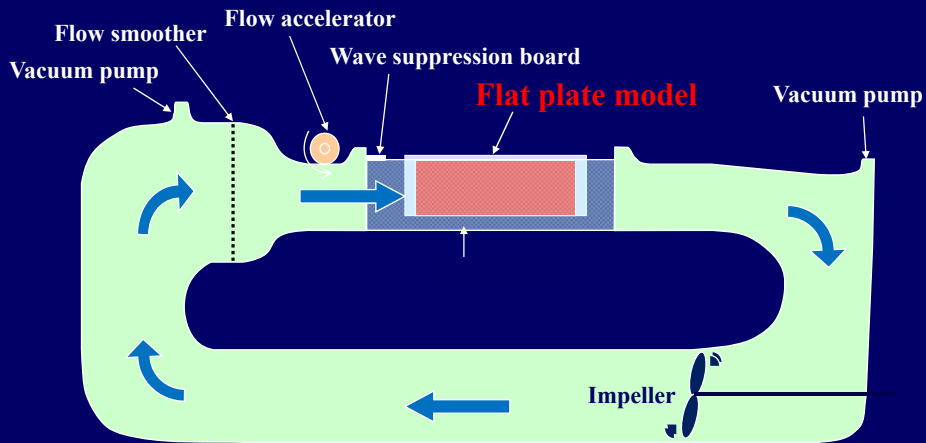
$$C_f = \left(1.89 + 1.62 \log_{10} \left(\frac{L}{\epsilon} \right) \right)^{-2.5}$$

Types of roughness

Schematic curve of C_f



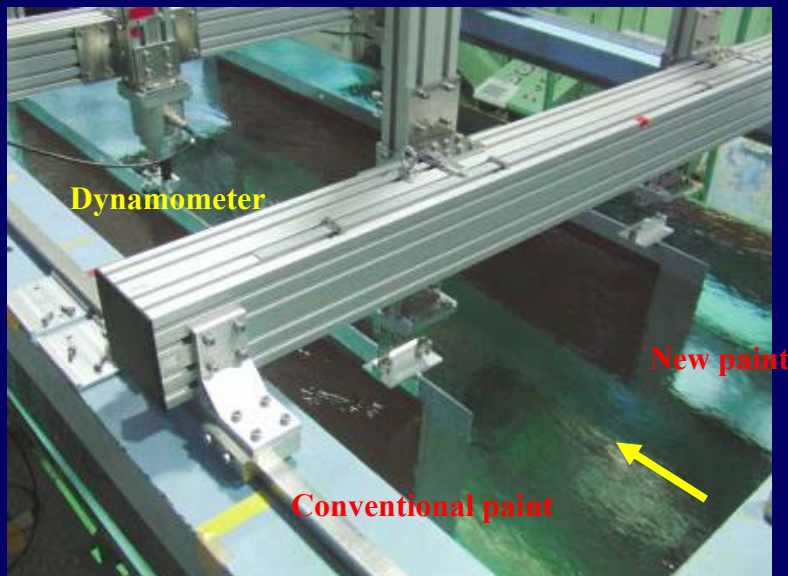
Experiments on frictional resistance acting on flat plate in circulating water channel



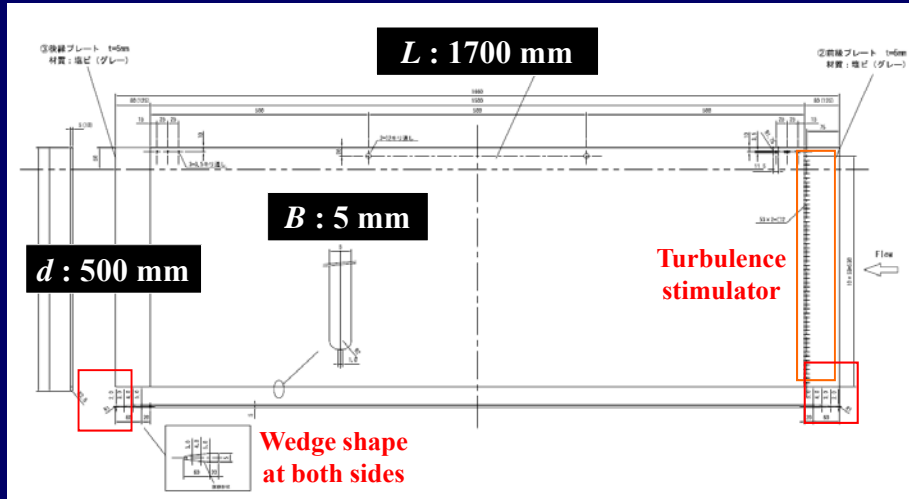
Particulars of testing part of CWC:

Length 3.0 m, breadth 1.2 m, depth 0.6 m

Flat plate models in circulating water channel

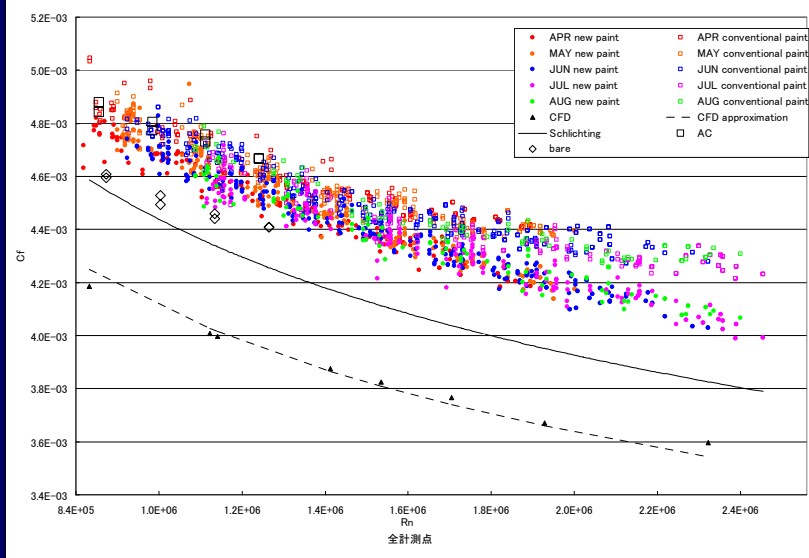


Particulars of flat plate model

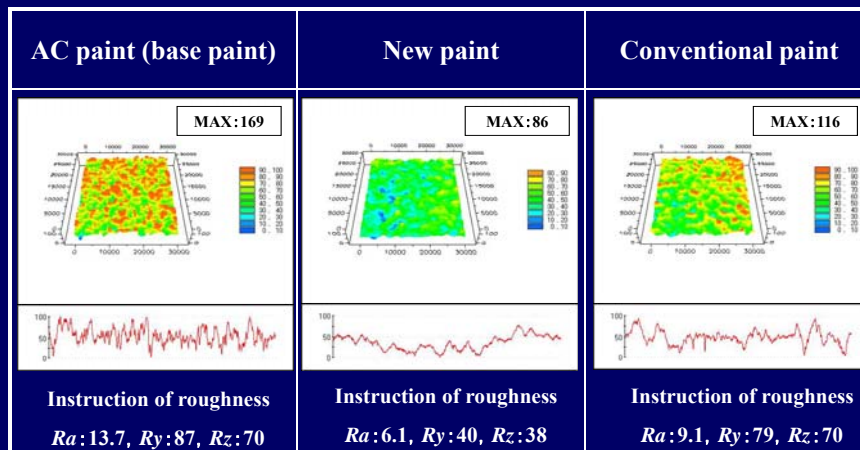


Experimental results

Measured data from April to August, 2011



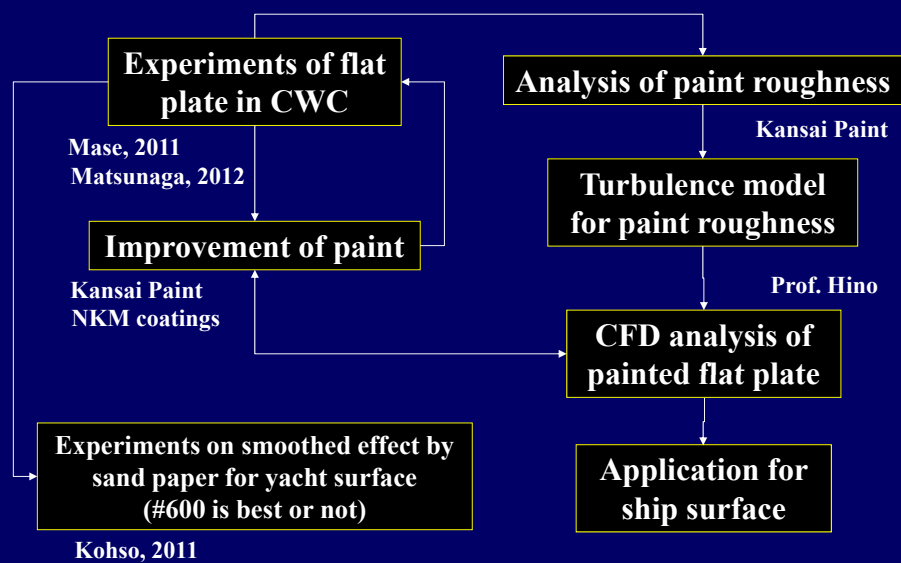
Analysis of paint roughness



Unit μm

(measured by Kansai Paint using laser device)

Future study plans on roughness effects



Contents

1. Studies on frictional resistance acting on painted flat plate
 - Experiments in circulating water channel
 - Future study plans on roughness effects
2. Sloshing phenomena in YNU towing tank by earthquake on March 11
3. Introduction of a book to educate ship and ocean

Earthquake on March 11, 2011

Tectonic plates around Japan



Towing tank



YNU map

YNU towing tank on March 11, 2011



Particulars of towing tank in YNU:
Length 100 m, breadth 8 m, depth 3.5 m

Contents

- 1. Studies on frictional resistance acting on painted flat plate**
 - Experiments in circulating water channel
 - Future study plans on roughness effects
- 2. Sloshing phenomena in YNU towing tank by earthquake on March 11**
- 3. Introduction of a book to educate ship and ocean**

Title & index

[目次]

1. 海の中の世界
(海は暗黒空間、深海探査船 他)
2. 海面へ浮上
(陸海空の乗り物、巨大な船他)
3. 未来の船
(垂直な船、潜水商船 他)
4. 船飛べ!
(飛ぶ船とは?、水と空気の密度他)
5. 宇宙(そら)へ
(宇宙船、マストライバー 他)



Thank you for your attention.

**If you have a question,
please ask me slowly!**