Requirements and technologies on Protection Against Noise on Board Ships

(2011, Busan)

Overview

The Maritime Safety Committee decided at its 83rd session to include in the work programme of the Sub-Committee a high-priority item on "Protection against noise on board ships". The Sub-Committee commenced work at its fifty-third session, and agreed at its 54th and 55th sessions to establish a correspondence group under the co-ordination of Denmark to progress the work.

(23 Members participate in the work of CG:China, Denmark, Finland, France, Germany, Japan, Liberia, the Netherlands, Norway, Republic of Korea, Sweden, Turkey, the United States, Vanuatu, BIMCO, CESA, EC, ICS, IFSMA, IMCA, INTERTANKO, ITF and OCIMF)

Overview

The correspondence group worked mainly on the following two aspects:

1）Finalize the draft amendments to the Code on noise levels on board ships (Target Date :2012);

2) Consider re-structuring the Code into a mandatory and a non-mandatory parts

The main amendments to the code

In the report to DE56 submitted by the CG , substantial contents in the draft amendments to the Code as follows:

1）The Code will be mandatory for new ships of 1,600 tons gross tonnage and upwards;

2）The Code applies to ships in service, i.e. at sea or in port with seafarers on board. And measurement of noise levels and exposure are required at sea and in port;

3）The number of Cabins should be measured not less than 40% of the total number of cabins;

4） The noise exposure are required to be calculated in high-noise cabins or work spaces prior to delivery of the ship;

The main amendments to the code

5）Verification are required of acoustic insulation between accommodation spaces . And the airborne sound insulation properties for bulkheads and decks within the accommodation should comply at least with the following weighted sound reduction index (Rw)

Cabin to cabin	**Rw = 35**
Messrooms, recreation rooms, public spaces and entertainment areas to cabins and hospitals	**Rw = 45**
Corridor to cabin	**Rw = 30**
Cabin to cabin communicating door	**Rw = 30.**

The main amendments to the code

6）In order to facilitate the selection of ear protectors (HML method), the C-weighted sound level need to be measured for spaces which noise level equal or exceed 85dB;

7）limits are required on acceptable maximum noise levels for all spaces to which seafarers normally have access.

The main amendments to the code

Designation of rooms and spaces	Ship size	
	1. 600–10. 000 GT	⩾10. 000 GT
4.2.1Work spaces		
Machinery spaces	110	110
Machinery control rooms	75	75
Workshops	85	85
Non–specified work spaces (other work areas)	85	85

90

The main amendments to the code

Designation of rooms and spaces	Ship size	
	1. 600–10. 000 GT	⩾10. 000 GT
4.2.3Accommodation spaces		
Cabin and hospitals	60	55
Mess rooms	65	60
Recreation rooms	65	60
Open recreation areas (external recreation areas)	75	75
Offices	65	60

60
65
65
65

The main amendments to the code

8）the following specific parts should be considered as mandatory:

Chapter 1	**Scope, application, definitions**
Chapter 2	**Measuring equipment**
Chapter 3	**Measurements**
Chapter 4	**Maximum noise level limits**
Chapter 5, section 5.1	**Noise exposure, general**
Chapter 6, section 6.1	**Acoustic insulation between accommodation spaces,**
Chapter 6, section 6.2	**Sound insulation index**
Chapter 7, section 7.4	**Warning signs**
Appendix 1	**Format for noise survey report**

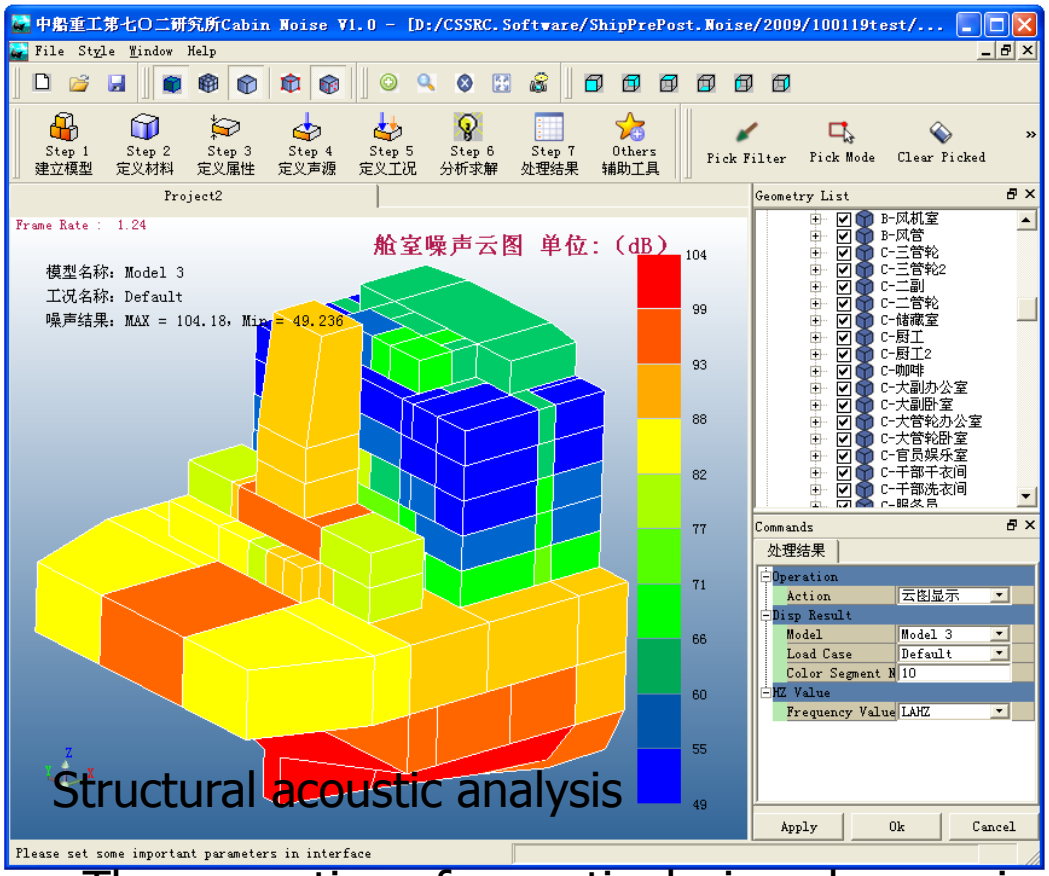
The main amendments to the code

9） the following specific parts should be considered as recommendatory:

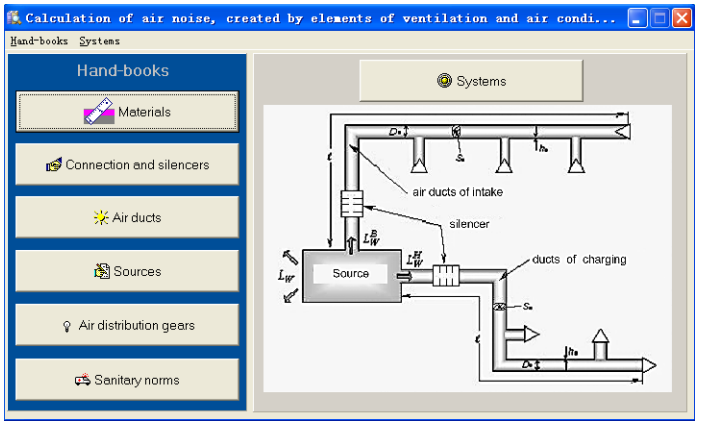
Chapter 1, section 1.3.2	**Application to existing ships**
Chapter 3, section 3.4.3	**Noise exposure during loading/unloading of vehicle carriers**
Chapter 7, section 7.3	**Selection and use of hearing protectors**
Appendix 2	**Guidance on inclusion of noise issues in safety management systems**
Appendix 3	**Suggested methods of attenuating noise**

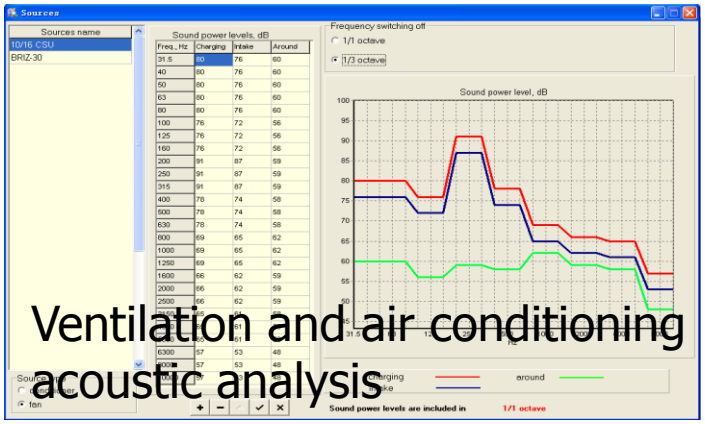
Technology on Vibration and Noise Control

Acoustic design and prediction



Structural acoustic analysis

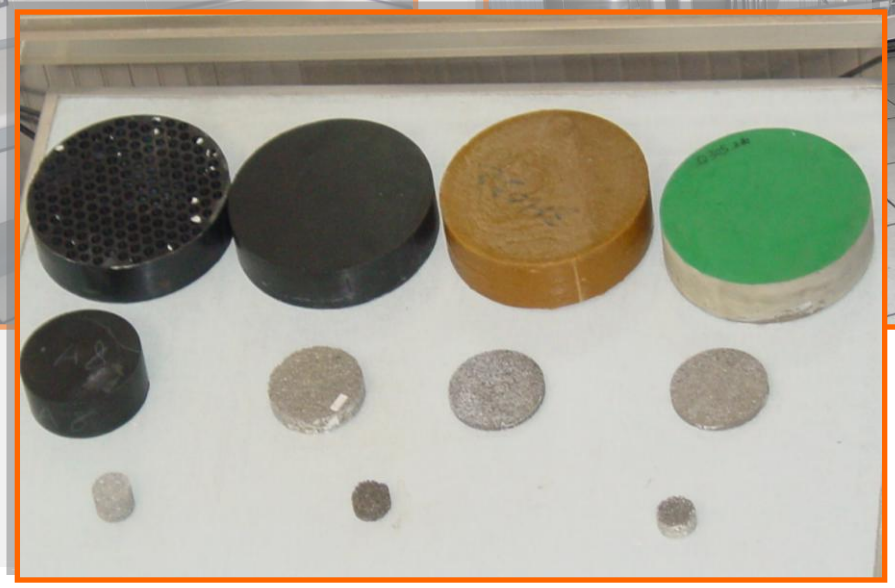




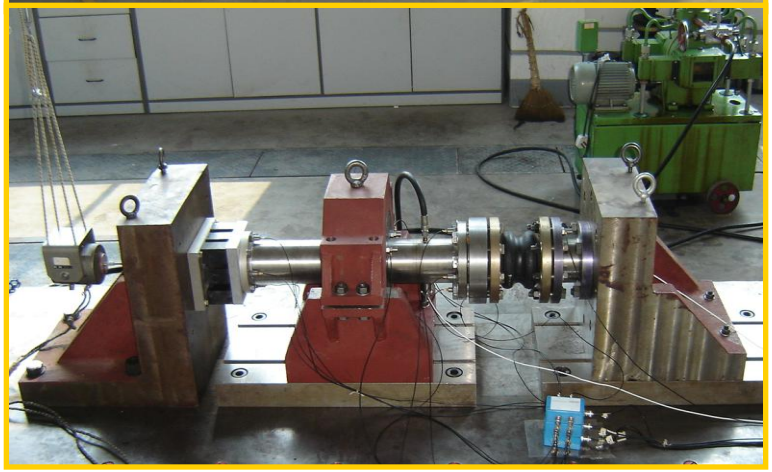
Ventilation and air conditioning acoustic analysis

The promotion of acoustic design also requires a lot of input data accumulation

Measurement of material sound insulation and absorption



measurement of absorber properties



The noise and vibration source levels testing of machine

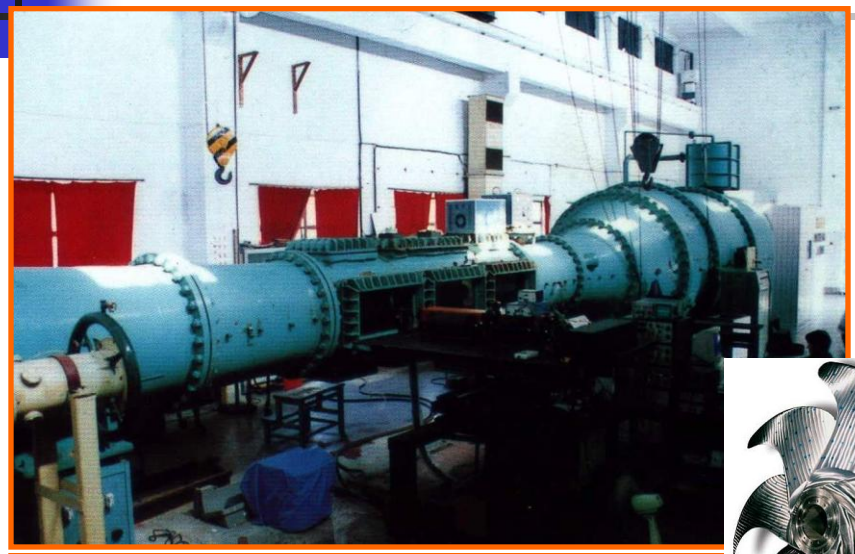
Technology of Vibration and Noise control

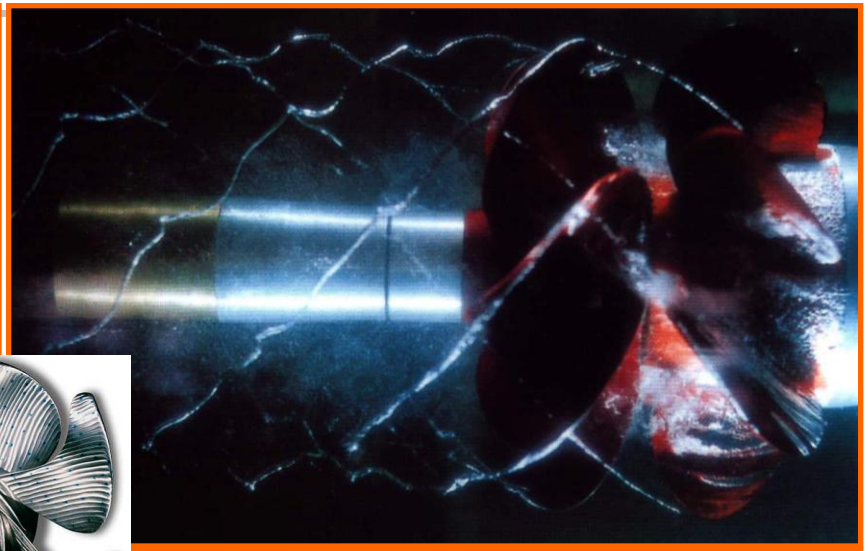

sound insulation

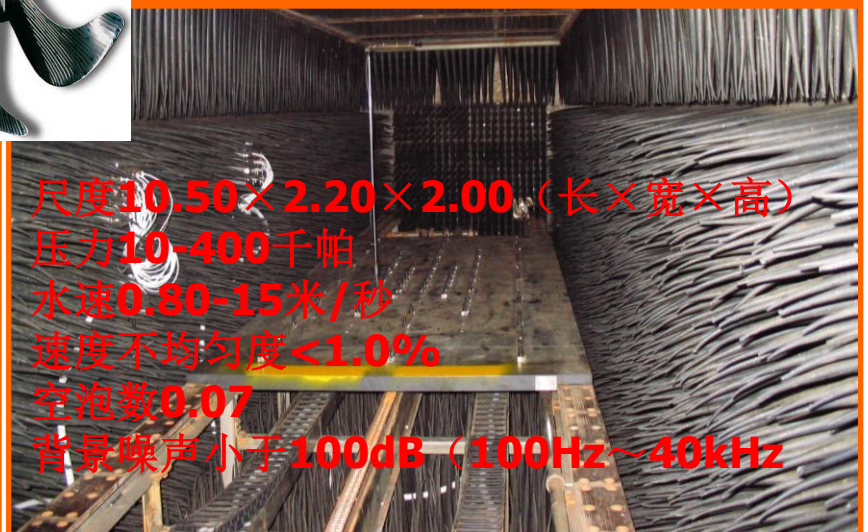

muffle


absorption

Design of lower noise propeller







尺度10.50×2.20×2.00（长×宽×高）
压力10-400千帕
水速0.80-15米/秒
速度不均匀度<1.0%
空泡数0.07
背景噪声小于100dB（100Hz～40kHz

The potential impacts

1） Shipbuilders

- **Acoustic design need to be considered, and the current design procedure of ships may be amended ;**
- **The cost of design, production and management could increase;**
- **The period of delivery could increase due to acoustic design, production, checkout and measurement ;**
- **Acoustic performance of ship may improve, and competitive ability of enterprise could be enhanced ;**
- **Vice versa ,The risk of penalty and abnegating .**

The potential impacts

2） Ship owners / operators

- The period of order could increase;
- The cost of purchase and maintaining could increase;
- The cost of ship management could increase;
- Safty And Comfortable performance of ship could be enhanced ;
- Rent and resale value of the ship could increase.
- Litigation of the employee for labor insurance could reduce;

suggestions

1）All partites of shipbuilders ,ship owners and Classification Society should cooperate in efforts to seek the balance of their interests. As far as possible, all partites should be actively involved in the revision of IMO standards as the IMO's representative, put forward reasonable proposals to amend the code ,and reduce the adverse factors;

2）All partites should prepare to adapt to the amendment of code as early as possible. E.g.shipbuilding enterprises should enhance their ability of ship acoustic design and noise control.

3） All partites should strengthen international technological exchanges and cooperation, jointly cope with problems caused by technology upgrades due to amendment code.

Thanks For Your Attention !

Tel：+86 510 8555 5209
Fax：+86 510 8555 6896
Email：Wuww@CSSRC.COM.CN
Address：No.222 East Shanshui Road, Wuxi Jiangsu, China (214082)
Url：http://www.cssrc.com.cn

concern

In the near future, with the continuous improvement of human consciousness on protection of the marine environment and biological, the ship underwater noise emission limit will also be on the agenda.