SILENT LINE
SOUND AND VIBRATION CONTROL
by van Cappellen

Noise control:

Comfort Class Levels onboard Luxury Yachts.

Yacht – Owner and Guest Areas Noise levels in dB (A)						
Locations	*Comfort rating numbers (crn)*					
	In harbour condition			*Transit condition*		
	1	*2*	*3*	*1*	*2*	*3*
Guest Stateroom	30	35	40	45	50	55
Owner's Stateroom	25	30	35	35	40	45
Lounges | saloons	30	35	40	40	45	50
Outdoor re-creation areas	45	50	55	60	65	70
Navigation Bridge	35	40	45	40	45	50

If you ask us, based on over 30 years of experience onboard Luxury Yachts, ***what are the nowadays comfort class 1 levels*** we will refer to the above mentioned table abstracted (and modified) from DNV.

This paper will give you the most important steps to be carried out (studied) in order to meet the above mentioned targets onboard Luxury Yachts (displacement) *over 40 meter in length.* Please consult us in case your Yacht does not meet this size | displacement.

The below mentioned studies are carried out by Silent Line Engineering Department:

1. ***Propulsion Train related studies: main engine | gearbox | propeller***

   - *Elastic mounting system for main engine and gearbox*
   - *Selection of flexible couplings*
   - *Selection of exhaust components and flexible mounting system*
   - *Axial and Whirling related to the propellers shaft*
   - *Propeller design based on Pressure Fluctuation calculations*
   - *Noise and Vibration Levels*

2. ***Generator sets:***

   - *Elastic mounting*
   - *Transmission Loss values of the sound shield*
   - *Selection of exhaust components and flexible mounting system*
   - *Noise and Vibration Levels*

3. ***Secondary machinery:***

    - *Elastic mounting*
    - *Position of the units*
    - *Noise and Vibration Levels*

4. ***Engine Room Ventilation System:***

    - *Type of fans and fan speeds*
    - *Elastic mounting system*
    - *Position of the units*
    - *Noise and Vibration Levels*

5. ***Custom Build insulation plan:***

Silent Line Engineering Department designs (using AutoCAD) detailed insulation | installation plans. We use the latest technologies related to classification approved materials and we change single products into system products.

6. ***Noise prediction by Computer Simulation:***

Silent Line Engineering Department is using our in-house developed computer simulation model related to predicted noise levels in each or room during harbour and transit conditions. This model is using input related to the above mentioned main and secondary sound sources along with detailed information from our insulation plan(s).

The computer model generates dB levels versus frequency [1/1 octave band]. If the outcome exceeds the target we will fine-tune the model pending on the dominant sound source(s). Important parameters such as radiation from the portholes | windows are taken into account as well as room acoustics.

7. ***Air conditioning:***

This is a very important topic especially related to harbour condition. Silent Line Engineering Department will study (in an early stage) the position of the units | brand | position of air inlet / outlet grills | more.

8. ***Comprehensive Noise report:***

Ones all the studies are carried out we will summarize all outcomes and results into a comprehensive written report which is forwarded to our client.