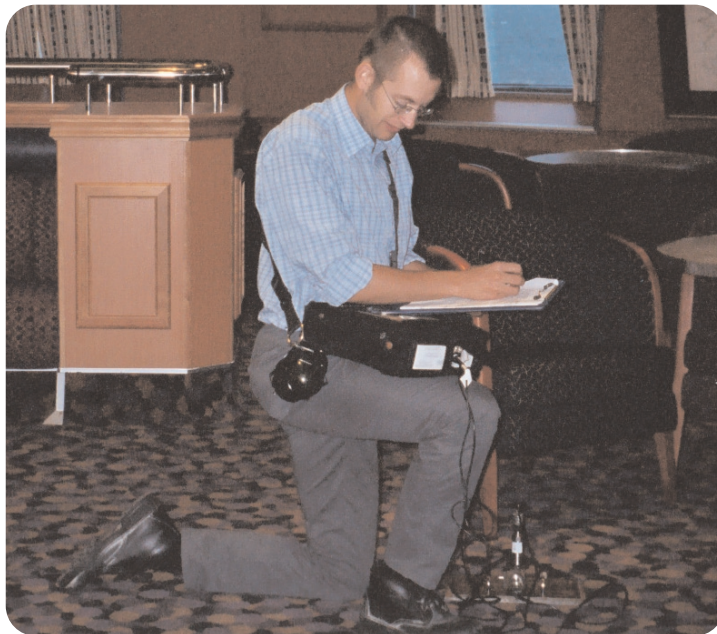


COMFORT FOR PASSENGERS AND CREW

MEASUREMENT AND CERTIFICATION SERVICES FROM LLOYD'S REGISTER

One of the risks that owners and operators face is that passengers and crew may find a ship 'uncomfortable'. This can diminish an operator's reputation and, in extreme cases, have an adverse impact on health and safety.

We can help to minimise this risk through our approach to passenger and crew accommodation comfort. We can also provide independent certification that your ship meets required comfort criteria.



Measurement of vibration onboard a passenger ship.

Shipboard habitability

The comfort and well-being of the passengers and crew – shipboard habitability – is an important issue. Cruise ship passengers accommodated in luxury cabins may have high expectations, based on experience of luxury hotels on land. For the crew, a bad living and working environment can contribute to fatigue, which affects work and health, and may have safety implications.

The noise and vibration environment is a significant part of shipboard habitability. International and flag state noise and vibration standards and recommendations may provide a baseline, but they are not comprehensive, being more concerned with crew living and working noise limits than passenger comfort. Shipowners and designers usually require stricter standards in many circumstances, especially for passenger areas. The optimum comfort standard for a ship depends on its market requirements.

Provisional Rules

Lloyd's Register's *Provisional Rules for Passenger and Crew Accommodation Comfort* (PCAC) aim to provide a noise and vibration comfort solution for all ships. PCAC combines criteria for the assessment of noise and vibration habitability on ships and special service craft based on recognisable performance standards. The *Rules* contain a measure of flexibility to accommodate market requirements and future technological innovation.

We also undertake measurements required by the *Rules* on a consultancy basis. After assessment of the noise and vibration levels, the optional PCAC notation may be awarded. The notation provides ship operators with an objective evaluation of a ship's habitability in accommodation and workspaces at the time of building.

Design

Build

Operate



Lloyd's Register's PCAC was awarded to *Queen Mary 2*.

Compliance

Compliance with the *Provisional Rules* involves: approval of the measurements test programme; noise and vibration measurements during sea trial; analysis of measurement results and assignment of a class notation; renewal surveys following modifications, alterations, or repairs including replacement of major machinery items.

Where any criteria are exceeded, we can advise you about the most appropriate course of remedial action.

Sea trials

The sea trial measurements, which are required as part of the assessment, can be carried out either by us or by an approved technical organisation, if witnessed by a Lloyd's Register Group surveyor.

Notation

Ships classed by Lloyd's Register that achieve the comfort standards specified in the *Provisional Rules* can be assigned one of the class notations PCAC, PAC, or CAC (passenger and crew, passenger, or crew accommodation comfort, respectively).

The severity of the acceptance criteria to which the noise and vibration levels have been assessed is indicated by a numeric suffix (1, 2, or 3). Special consideration can also be given to ships where additional or more stringent criteria are required, or where the ship has met the IMO code on noise levels on board ships.

Related services

We can also provide the following related services:

- prediction of noise levels in accommodation and workspaces, and advice on remedial measures
- measurement of the performance of general alarm and public address systems
- hydrodynamic and marine engineering analysis in support of the PCAC requirements.

SUMMARY OF BENEFITS

- Provides certification of a vessel's noise and vibration environment.
- Minimises the discomfort experienced by passengers.
- Helps enhance your reputation.
- Helps reduce the adverse impact on health and safety by diminishing crew discomfort and consequent fatigue, leading to improved safety and a better working environment.

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