

After sales services for design failure, poor quality workmanship and material failure

Maintenance & repairs
- Life Cycle Support Systems –

CIMAC Circle 2006
Seatrade Middle East Maritime (SMEM)
Dubai December 6, 2006

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Is it necessary to have after sales services ?

Unless the equipment in question is of throw away type, you need to have after sales services to avail the intended purpose for the intended period.

Fortunately or unfortunately the ships are built for 25 years of service life and it is not practical to throw away the equipment hence it is essential to have adequate qualitative and quantitative services available.

Stakeholders of after sales services ?

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- 1. ship owner**
 - 2. equipment manufacturer**
 - 3. shipbuilding yard**
 - 4. maritime authorities**

Ship owner's perspective ?

- **More robust & reliable equipment**
- **Equipment makers involvement in shipboard engineering**
- **Extended warranty (5 yrs min)**
- **Prompt availability of spares at reasonable cost**
- **Prompt availability of qualitative engineering service at reasonable cost**

Equipment manufacturer's perspective ?

- No or little profit in sale of equipment as yard drive prices down.
- Healthy profit essential for continued survival, research & development and expansion.
- The only way left to earn profit is to jack up prices of after sales services while keeping operating expenses to min.
- Undesirable to have robust and durable equipment

Shipbuilding yard's perspective ?

- **Mass production of same type of ships to save design and shipbuilding cost**
- **Buy equipment in bulk at lowest cost. Never mind even if outdated**
- **Provide absolute minimum guarantee & pass on to makers**
- **Have nothing to do with the ships after guarantee period**

Maritime authorities's perspective ?

- Do not wish to see any equipment breaking down or malfunctioning.
- If it does, owners must have it fixed yesterday
- Have nothing to do with techno-economic difficulties encountered by owners in maintaining the equipment

Debatable issues ?

1. **Reduced safety margins due to extensive use of computer aided design and simulation testing**
2. **Shipyards forcing equipment manufacturers to reduce prices leaving no or very little profit**
3. **Equipment manufacturers trying to cut corners to lower their prices**
4. **Extensive use of microprocessor based electronic components interfacing with mechanical / electrical components**

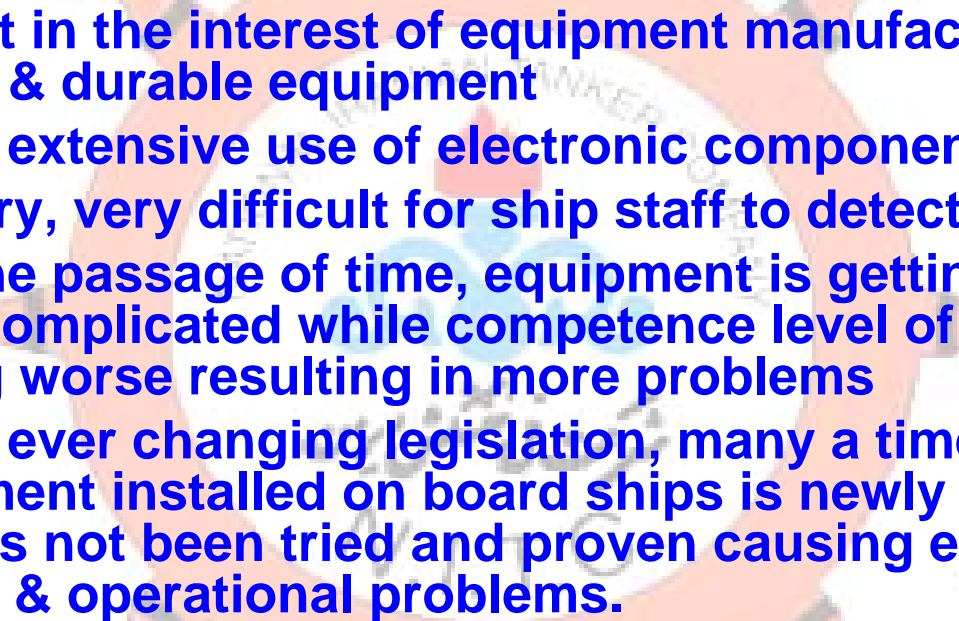
Debatable issues ? – cont..

5. In most cases shipyards are just buying the equipment and doing their own shipboard engineering which often is of poor quality causing lot of operational problems in service
6. Equipment manufacturers jack up prices of spares to compensate them for loss of profit caused by shipyards
7. Most equipment manufacturers do not wish to invest in stocking spares causing substantial delivery time for critical spares

Debatable issues ? – cont..

8. Fake and/or reconditioned parts ?
9. Scarcity of supply of certain metals such as titanium causing extensive problems
10. Availability of competent service engineers at convenient locations worldwide
11. Availability of competent service engineers from two different manufacturers where electronic equipment is interfacing with mechanical equipment

Debatable issues ? – cont..

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12. It is not in the interest of equipment manufacturer to have robust & durable equipment
 13. Due to extensive use of electronic components and circuitry, very difficult for ship staff to detect faults
 14. With the passage of time, equipment is getting more and more complicated while competence level of ship staff is getting worse resulting in more problems
 15. Due to ever changing legislation, many a times the equipment installed on board ships is newly developed and has not been tried and proven causing excessive design & operational problems.

**Thank you very much
for your attention**

