



GENERATION BALT

Whether maritime education
offered by GUT
Faculty of Ocean Engineering and
Ship Technology
meets the requirements of
changing job market for a new
generation ?

Linking maritime education
with the changing job market
for a new generation
of Baltic Sea experts

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Presentation outline

- 1. Educational offer of GUT Faculty of Ocean Engineering and Ship Technology**
- 2. Application of aquired maritime knowledge for solving of bulk carrier safety shipping measures**
- 3. Application of good engineering knowledge and practice for solving of giant container carriers safety shipping measures**
- 4. Conclusions**
- 5. References**

Ongoing evolution of GUT Faculty of Ocean Engineering and Ship Technology



Traditional maritime affairs:

- Theory and Ship Design
- Ship Manufacturing Technology, Quality Systems and Material Science
- Mechanics, Construction and Strength of Ships

and future oriented educational programmes responding on challenges in:

- Offshore wind energy
- Exploration and exploitation of the seabed
- Innovative marine industries
- Marine equipment



Linking maritime education with the changing job market for a new generation of Baltic Sea experts

Polish design, Polish shipyard and Polish owner (1970)

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Gdynia Kwiatkowski Conference -09.10.2014"



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From under class bulk carriers to GBS Goal Based Standard vessels

1. **Statistic** – between 1978 and 1987, 425 bulk carriers were lost. Some 1 698 seafarers were dead or missing as a consequences of these losses
2. **Reasons** – poor light – weight design
3. **The most possible sinking scenario:**
 - loss of side shell integrity
 - progressive collapse of the bulkhead
 - collapse of the first hatch cover
 - progressive ship flooding of the hold (s)
 - loss of ultimate strength of the girders
 - and in result: **SINKING**

Bulk carriers other safety measures

(see free-fall life boats of ANNA-BARBARA vs. BERLIN)



Comparison of standard European bulk carrier vs. light-weight Japanese bulk carrier

	European built bulk carrier 1963	Japanese built bulk carrier, 1986
DWT	44 260	45 263
Number of holds	9	5
Length L pp	207,50 m	188,00 m
Breadth	30,00 m	30,50 m
T	11,00 m	11,00 m
Light ship	12 084 t	7 933 t

Bulk carriers in Polish terminals

Fot.: Cezary Spigarski



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IMO and IACS long-term corrective action for safer shipping

- **IMO** Member States decided to establish Goal Based Standards (**GBS**) for ship design and construction of bulk carriers revealed in 2002 at MSC 76.
GBS it is the first time in history that IMO is setting standards for ship construction.
- Adopted by **IMO GBS** will enter into force on July 1, 2016
- Instead of currently existing **CSR-BC** for bulk carriers and **CSR-OT** for oil tanker new **CRS-H** harmonised Common Structure Rules became obligatory

Era of the giants

MSC Napoli and MOL Comfort cases as a challenge for new regulations of containers vessels safety shipping



Brief reminder of MSC Napoli and MOL Comfort accidents

- 1. MSC Napoli** – according to MAIB (Marine Accident Investigation Branch) Report No 9 / 2008, the 4419 TEU container ship suffered a catastrophic failure of the hull in way of her engine room on 18 January 2007 in English Channel.
- 2. MOL Comfort** – according to MLIT , a committee established by Japan's Ministry of land, Infrastructure, Transport and Tourism 8,000 TEU class container ship suffered a crack amidship on 17 June 2013 in Indian Ocean.
The ship split into two halves, which were adrift before sinking.

MOL Comfort - results of initial investigation revealed by Interim Report :

Interim Report have concentrated on following possible causes:

- Fire
- Explosion
- Grounding
- Collision
- Metal fatigue
- Welding failure

Container vessels in Polish terminals



MOL Comfort – preliminary conclusions for further investigations:

After elimination that leaves structural failure two points from Interim Report that require further investigation:

- the insufficient accuracy of the actual loading conditions of the vessel
- simulation of hull strength

Following the loss of the vessel **IACS** will update its rules on hull girder strength by developing of wave bending moment and shear force rules, new buckling approach and ultimate hull girder strength calculations with a new rules expected to be finalised by the end of the year, subject to IMO approval.

MSC Napoli accident - MAIB final conclusion on the investigation of the structural failure

The effect of the discrepancies in the declared weights of the containers.

- In result – reduction of the safety margin between the total bending moment experienced and the strength of the hull. The stress acting upon container ship hull cannot be accurately controlled unless containers are weighed before embarkation.
- Although it is likely that the wave loading experienced by MSC Napoli was increased by whipping effect
- In view of the potential increase in wave loading due to whipping effect, further research is required within industry to ensure that the effect is adequately covered by ship design and structural analyses.

Forthcoming legislation

Development of measures to prevent loss of containers

- Mis – declared container weight has been the cause or a contributing cause to operational and safety reported accidents in the past few years by adverse affect the ship's overall stability.

Implication:

- Owners need to have the correct weight of the container provided by the shipper and ports/terminals worldwide will either need to provide calibrated measurement equipment or confirm with the shipper that the weight has been calculated prior to the container arriving in port to avoid ship delays or containers being cut in a dispute.

Tools for introducing of a new legislation

Corrective action

- DSC 18 agreed draft amendments to SOLAS regulation VI/2 introducing mandatory verification of the gross mass weight of containers and associated guidelines for its implementation.

Relevant instruments

- Draft amendments to SOLAS regulation VI/2 to require mandatory verification of container weight MSC Circular MSC.1/Circ.1475 -Guidelines regarding the verified gross mass of a container carrying cargo.
267 Estimated entry into force 1 July 2016 (might be postponed subject to futher change)

Conclusions

1. Whether maritime education offer of GUT Faculty of Ocean Engineering and Ship Technology meets the requirements of changing job market for a new generation ?
2. Is educational offer of GUT Faculty of Ocean Engineering and Ship Technology sufficient in solving of safety shipping measures ?

- On the basis of :

- knowledge achieved in 1966 – 1973 (GUT)
- dealing with matters as come (postgraduate studies GUT and other universities)
- professional experience reached so far (1973 - 2014) in high scale and high technology international environment
- The answer is :

“ YES “

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**Thank you
for your attention**

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