Go LNG. Competence Building in Northern Germany, Emerging Needs & Capabilities. Case of Interdisciplinary Co-Working Ecosystem

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Vilnius

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Agenda

- Emerging LNG Needs
- Build up LNG Talents and Capabilities
- HSW & LNG – Capacity & Capabilities
Emerging Needs for LNG Competence in the BSR
Emerging LNG Needs in Northern Germany

- There is no specific bunkering infrastructure yet available in Northern Germany in terms of LNG,

- But the need is emerging:
  - Increasing demand for LNG competence in reflected by industry requests, institutional cooperation work and increasing numbers of knowledge absorbers, e.g. students, researchers, industry partners, port operators.
  - Studies on LNG bunkering infrastructure and facilities, e.g. fuelling stations and small-scale LNG.
  - Focus on LNG as fuel in maritime & road freight transport, combined with other modes of transportation.
Emerging Needs for LNG Fuelling Stations in DE

Source: [https://shop.dena.de/sortiment/detail/prod...](https://shop.dena.de/sortiment/detail/prod)
LNG Competence Building & Exemplary Key players

- M-V → HSW, MV Werften, AIDA Cruises, Port of Rostock, Wismar, Stralsund

- HH → Logistik Initiative e.V., Port of Hamburg, National LNG Platform, Shipyards, Shipbuilding companies, e.g. Becker Marine Systems, Nauticor, etc.

- S-H → Port of Kiel, Brunsbüttel Ports GmbH, Maritime Cluster Northern Germany, etc.

- HB → bremenports GmbH & Co. KG

- N → AG Ems, MARIKO, Meyer Werft GmbH & Co. KG
Case of Interdisciplinary & Emerging Co-Working:

Creating Shared Value Through Understanding

Multiple Needs, Challenges & Finding Joint Solutions
Hanseatic town Wismar –
Hochschule Wismar. Technology and Research Centre
Area of Maritime Studies in Warnemünde
Three Faculties at A Glance

Faculty of Engineering
- Maritime Studies
- Mechanical Engineering/Process and Environmental Engineering
- Electrical Engineering and Computer Science
- Civil Engineering

Wismar Business School
- Business Administration
- Business Informatics
- Business Law

Faculty of Architecture and Design
- Architecture
- Interior Design
- Design
Knowledge society and global change markets, trade and shipping traffic

Fields of competence:

- Trade and law in the Baltics
- Societal changes in Eastern Europe
- Economic sustainability
- Efficient shipping for safe, secure and environment friendly multimodal transport
- Short sea shipping and maritime logistics
- Sustainable Supply Chain Management
- Green transport areas
- Innovative and environmental friendly technologies in shipping
- Resource-efficient procedures and processes as part of the energy turnaround
- Creating sustainable objects and urban structures
Faculty of Technology (branch Rostock-Warnemünde)

- Nautical Science/Transport Operations, Bachelor (field of study: Nautical Science/ Maritime Traffic or Transport Operations/Logistics)
- Ship’s Operation Technology/Plant and Supply Technology, Bachelor (fields of studies: Ship’s Operation Technology or Plant and Supply Technology)
- Marine Electrical Engineering, Bachelor dual degree course Ship’s Operation Technology, Bachelor
- Operation and Management of Maritime Systems, Master
- Marine Engineering, Bachelor (exclusively in Indonesia)
- International Cruise Ship Management
Knowledge Developing & Transfer Institutions in LNG Competence and Capacity Building

- Department of Maritime Studies // HSW
- Department of Mechanical Engineering / Processing and Environmental Engineering // HSW
- Wismar Business School // HSW
- FGW – Forschungs-GmbH Wismar
- Maritime Institute Warnemünde e. V. // HSW
- ISSIMS – Institute for Maritime Theory, Simulation and Maritime Systems // HSW
- MATVAV – Institute for Maritime Automation Technology and Navigation e. V.
- Maritime Simulation Centre Rostock (Warnemünde)
- Maritime Education and Training Centre Rostock (Warnemünde) // HSW
- ATI Küste GmbH
- Navigation School Rostock (Warnemünde)
- European Cruise Academy
- Institute for Safety Engineering and Ship Safety e. V. Warnemünde (ISV)
LNG Competence & Capacity Building Fields

- **Department of Maritime Studies // HSW**
  - Nautical Science / Maritime Transport courses – provides necessary competences to future ship’s master or a navigational officer with the highest certificate of competence according to the requirements of the (STCW-Code 1995).
  - Transport Operations / Logistics provides training for a traffic or logistic-related occupation in the onshore business of the maritime industry or other enterprises.

- **Other courses provide:**
  - Practical trainings for occupation of e.g. technical officer on-board a ship
  - Safe, secure and ecological operation, legal, technical and economic aspects of maritime systems
  - Simulation of the maritime systems
  - Integrated manoeuvring / propulsion and navigation systems
  - Operation, monitoring and maintenance of technical systems
  - Operational and strategic management in shipbuilding
LNG Competence & Capacity Building Fields

- Department of Mechanical Engineering / Processing and Environmental Engineering // HSW
- Mechanical Engineering
- Process and Environmental Engineering
- Safe and effective shipping
- Modern technologies in shipping and
- Shipbuilding
LNG Competence & Capacity Building Fields 3

- **Maritime Simulation Centre (MSCW) // HSW**
  - Only one worldwide offering the possibility of combining the simulation of nautical and technical ships operation with the shore-based support of the VTS system

- MCW possesses:
  - **SHS / Ship Handling Simulator**
  - **SES / Ship Engine Simulator**
  - **VTSS / Vessel Traffic Services Simulator**
  - **SST / Ship Safety & Security Trainer**
MSCW Interior View
Ship Handling Simulator SHS Scheme
Ship Engine Simulator SES

- Engine Control Room
- Engine Room
- Instructor Room
- Instructorless Training
- Briefing/Debriefing
Vessel Traffic Service Simulator VTSS
### LNG Competence & Capacity Building. Further Machinery & Plants 1

#### Room 1 - Auxiliary machines

- **Compressor plant**
  - Hydraulic system work station
  - Pneumatic test station
  - Pumps test station
  - Ambient air cabin
  - Bilge water separator
  - Diesel engine - 8NVD36
  - Diesel engine - 4NVD26

#### Room 2 - Workshop

- Workshop with work stations

#### Room 3 - Main engine room

- Main engine room
- Separator
- Main Engine Control Room (ECR)
### LNG Competence & Capacity Building. Further Machinery & Plants 2

**Room 4 - Lecture room**
- Lecture room with 36 seats

**Room 5 Power generator laboratory**
- Power generator laboratory
- Main switchboard

**Room 6 - Steam boiler laboratory**
- Steam boiler
- Heating plant test bed
- Condenser

**Room 7 - Steam turbine test plant**
- Steam turbine
- Automatic filter
- Cavitation test bed
- Steering gear
- Screw compressor
- Fuel pumps station
- Sea water evaporator
LNG Competence & Capacity Building Technologies

- Multisensor-based motion control system in the limited sea areas
- Navigation assistance through integrated communication
- Development of assistance functions for avoidance of ship collisions or ground contacts
- Autonomous pilot assistance
- Development of new fields of application through employment of AIS technology for shipping: investigation of transit routes in the Baltic Sea
- Traffic technical evaluation of historical AIS data
- Development of the “Advances Tanker Sailing Management System” in the Baltic Sea
- New innovative ship concepts
- Highly developed container ships and specialised tankers
- Efficient design tools and methodology
- Modern production technology and logistics
- Development and application of new materials and processes
LNG Competence & Capacity Building. Research Focus

- Safer and more effective shipping is underpinned by research focus on:
  - Manoeuvring systems simulations in sea and inland waterway transport
  - Investigations on channel constructions and manoeuvring technologies
  - Maritime navigation and information systems and services
  - Development and testing innovating means of transportation and ship modules
  - Further development of simulation systems and scenarios
  - Development and application of methods and procedures in terms of simulation for training and research
  - Maritime casualty investigations and examinations of impact of the human factor on the safe ship operations
LNG Competence & Capacity Building. Training Focus

- **Maritime Institute Warnemünde e. V. // HSW**
  - Training for officers working on bulk carriers and high speed vessels
  - Simulator training for ship officers and security
  - ARPA radar training
  - Training for the acquisition of ABZ (GMDSS testimony)
  - Training in German maritime law
  - Training for staff on land-based maritime facilities: simulator and safety training for pilots and cyclical training for pilots
  - Training for sports and traditional shipping
  - Maritime casualty investigations and examinations of impact of the human factor on the safe ship operations
Contact

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