Heavy Transport, Lifting & Shipping Seminar/Masterclass

This extensive three day Course is focused on Construction Managers, Warrantee Surveyors, Operators, Project Engineers, Sales Engineers, Freight Forwarders, QHSE Engineers, Project Managers, Cargo Superintendents and anyone who is involved in daily movements and lifting operations of heavy loads.

STOP COSTLY ACCIDENTS AND IMPROVE YOUR PERFORMANCE

13 Chapters will be presented:

- General Knowledge on transport & lifting equipment
- Mass, Forces, Centre of Gravity
- Heavy Transport with Hydraulic Platform trailers, SPMT’s, correct trailer selection for a particular load
- Lifting loads with one, two or more cranes
- Maintenance & Inspection of equipment
- Skidding & Jacking Techniques
- Set-up of a Project Planning
- Preparation of a Cost Estimate and conclude a deal
- Load-outs of Extreme Heavy Loads onto barges
- Heavy Lift Shipping
- Safety & Risk analysis
- Accidents & How to avoid them + a BONUS:
- „The Do’s & Don’ts in Lifting“

Since 2008 more then 2300 persons attended my Seminars/Masterclasses, dealing with „Heavy Transport, Lifting, Shipping & Offshore“.

As the pioneer in presenting „Heavy Transport & Lifting“ Seminars, now new Chapters have been added, such as “Heavy Lift Shipping” and „Offshore Lifting & Installation Techniques“. „In Company” as well as Public Seminars can be offered. Ask for more details and possible adaptations to suit your needs.

„LEARN HOW TO HANDLE HEAVY LIFTS SAFELY“

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Check the Seminar Schedule on the website: www.heavyliftspecialist.com
1. General Knowledge and Introduction (15 pages)

- Difference in lifting & transport means
  - Transport Means
  - Cranes
  - Large mobile Cranes available
  - Mammoet Platform Twin Ring Containerised PTC-200 DS SSL
  - Various cap. and charts and applications of PTC-DS-140 and DS-200
  - Trailers
  - Different types of trailers
  - Platform trailers
  - Different Crane Types
  - Offshore Installation and repair availability
  - Terms & Abbreviations
  - Some definitions:

2. Forces, Mass and Center of Gravity (33 pages)

- Difference between mass (kg) and force (N)
  - Newtons three laws of motion
  - First Law of Newton (Law of Inertia)
  - Second and Third Newton (Force Changes Motion)
  - Forces acting on a body
  - Some formulas to calculate forces
  - Calculation of Centrifugal Forces
  - Standard triangles
  - Something about forces
  - Videos illustrating "No control of forces"
  - Converting of forces
  - Head-Tail Method (Summary of composing of forces)
  - Summary (composing of Forces)
  - Principle of moment of inertia (moment equation)
  - Principle of Center of Gravity
  - Calculating Outrigger Loads of a crane
  - Wind force (video shots on accidents due to wind force)
  - Wind Force (Scale of Beaufort) + Video Milwaukee Accident
  - Water force
  - Accelerations and decelerations
  - Friction forces when sliding
  - Forces on vessels
  - Calculation of axle loads
  - Estimating of Weight of different loads
  - Ratio between mass and volume of different loads
  - Essential information for Transport & Lifting Projects

3. Heavy Transport with Hydraulic Platform trailer (50 pages)

- USA Dolly compared to Platform trailer
- Principle of a hydraulic platform trailer
- Capacity / Specification of Conventional platform trailers
- Platform trailer selection for 460 tons load
- Platform trailer selection for 810 Tons load
- Capacity / Specification of Self Propelled Modular Transporter (SPMT)
- Estimating of 1050 Tons Load for SPMTs trailer
- Platform trailer selection for 495 tons load
- Stability of Trailers (Hydraulic Stability)
- Stability of Trailers (Tipping Lines)
- Stability of Trailers (Hydraulic Stability)
- Stability: 3- and 4-point suspension system
- A load placed on a flat bed trailer
- Stability of a SPMT 3-point versus 4-point suspension
- Symmetrical and A-symmetrical Stability of SPMT's (double wide)
- Alternative 3-Point stability system of Platform trailers (SPMT's or Conventional)
- Critical Stability of a single SPMT used in dolly configuration with turntables
- Tipped Transport Law Configuration
- Stability of a Conventional Hydraulic Platform Trailer
- Axle loads (A-Symmetrical suspension)
- Calculation of axle loads
- Calculating the average ground pressure
- Realistic ground pressure profile
- Load on ground surface or steel deck
- Goldhofer Faktor 5 Girder trailer configuration video
- Steering principle of platform trailers Conventional and SPMT's
- Principle of Steering (SPMT's)
- Video: Difference between suspension of cranes and trailers
- Heavy duty tractor versus required pulling force
- Video: 230 tons Generator roll-on and roll off example
- Calculation of the required pulling force in Tons
- Estimation of the pulling force of a HD Tractor
- Choice of Trailer configuration for 520 tons load
- Video: Transport of 420 tons column by barge and SPMT's
- Job site preparation
- Selecting the right trailer configuration for a particular load
- Choosing the right trailer configuration for a 16 m diameter Sphere 260 ton
- The Transport Plan
- Recommendations

4. Lifting of loads with two or more cranes (72 pages)

- Difference in lifting of Loads
- Crane Capacity rating (Load moment)
- Quick Reference capacity Chart for Hydraulic cranes
- Difference in crane types
- Setting up of a Lift plan side view, top view, back view
- Setup of a lift plan for the erection of a 320 tons reactor
- Excel Program "Boom clearance"
- Setting of a lift plan in projection between tail crane and main lift crane
- Video: Lifting of a 320 Tons reactor
- The Moment equation and the application in the field
- The Stability of the load on the location of CoG and angle with horizon
- Location of CoG in relation to the lift points
- The 10 Golden rules for lifting a Load
- Operator signals
- Tail crane and distri acting on the main lift crane
- Video: program for calculating Tail load and main lift crane load
- The lifting of 2 large refinery columns with 3 cranes
- The inclinometer (Continue lifting a two refinery columns with 3 cranes)
- Video: Lifting 520 tons column
- Top angle never more then 120 degrees
- Standard triangles
- The Cog is always suspended straight under the hook
- Calculation of the force in each sling (equal and unequal lengths)
- Use the graphical method in defining sling forces
- Calculate sling forces S1 and S2 at different elevations of the lift points
- Define the force in each sling
- Calculate the forces in the spreader beam
- Stability criteria of a crane
- Stability of a load to be lifted
- The Stability Range
- The Moment equation and the load
- The Stability of the Load to be Lifted
- The Stability of the load with 3 lift points below the CoG
- Lift beam (600 Tons) and Topreader (1000 Tons)
- Use of lifting- and spreader beams
- Loading directions of lift points
- Work factors (Safety Factors)
- Utilization factors for steel slings
- Utilization factors for fiber slings
- Identification of CE Marks

5. Maintenance and inspection (11 pages)

- Inspection criteria for Mobile Cranes
- Inspect, Check and Test
- Inspections for Barge
- Excessive wear on Crane sheaves
- Maintenance recommendations for transport equipment
- Work factors (Safety Factors)
- Utilization factors for fiber slings
- Identification of CE Marks

6. Skidding, Jacking & Moving Techniques (24 pages)

- Skidding-Moving: Flexibility and effectiveness
- Hydraulic-Skidding systems
- Stainless Steel on PTFE Blocks
- Enerpac Skidding solutions
- Hydraulic and Moving technologies
- Skidding, Jacking & Moving: Flexibility and effectiveness
- AL-E Skid shoe system SKS-1000 (1000 T Cap.)
- Skid system for extreme heavy loads
- Load-out of 9,500 tons Utility Module on Skids
- Skidding float pads of 200 tons each
- Using Strand jacks as lifting devices
- Working principle of Strand jacks
- CARE Super Crane SK-190/350 using strand jacks
- Jacking and skidding Systems
- AL-E's Mega Jacking systems (up to 40,000 tons) + Mammoet Push-Up System
- Airbags, Water skates, Air Pallets

7. Set up of a Project planning (8 pages)

- Making a Project Planning
- What is a "Bar Chart" planning schedule
- Example: Lifting a 320 Tons reactor
- Example: Lifting an traffic gantry over a Highway
- Critical path in a Planning Schedule
- Another example

8. Forces, Mass and Center of Gravity (33 pages)

- Difference between mass (kg) and force (N)
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- First Law of Newton (Law of Inertia)
- Second and Third Newton (Force Changes Motion)
- Forces acting on a body
- Some formulas to calculate forces
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- Forces on vessels
- Calculation of axle loads
- Estimating of Weight of different loads
- Ratio between mass and volume of different loads
- Essential information for Transport & Lifting Projects
8. Preparation of a cost estimate (9 pages)
- Why a Cost estimate ............................................................... 8.2
- Essential to cost estimates ..................................................... 8.3
- Make a Lift plan and Transport plan and find out what is needed ...... 8.4
- On basis of a plans make a Planning Schedule .............................. 8.5
- Prepare cost estimate on basis of Planning Schedule ...................... 8.6
- Example of Cost estimate ..................................................... 8.7
- Recommendations ............................................................. 8.8

9. Load-outs of extreme Heavy Lifts (Part 1) (51 pages)
- Various Ro-Ro operations .................................................... 9.2
- Necessary information for Ro-Ro operation ................................. 9.3
- Something about Tide Tables and Tides .................................... 9.4-9.5
- Make use of the tidal conditions ........................................... 9.6
- Roll-on to free floating barge (Tidal) ...................................... 9.7-9.11
- Roll-on to free floating barge (Non Tidal) ................................. 9.12-9.15
- Roll-on via steel plates (Non Tidal) ........................................ 9.16-9.20
- Roll-on to barge fixed aground ............................................. 9.21-9.23
- Beach landing, barge fixed aground ...................................... 9.24-9.27
- Examples of a beach landing ................................................ 9.28-9.30
- Positioning of SPMT’s under the load ..................................... 9.31
- Technical data of Goldhofer SPMT’s ...................................... 9.33
- Roll-off with a 2400 Tons HRG Module ................................... 9.34
- Identification of six plates .................................................. 9.35
- Configure right Transport Combination for 1865 Tons Module ....... 9.36
- Configure right Transport Combination for 12,800 Tons Topside .... 9.37-9.38
- Video: Load-out 12,800 Tons Topside: Transport beams-Sea fastening combined ........................................ 9.39
- Load-out of 12,800 Tons Module ........................................... 9.40-9.41
- Load-out of Special Structures ............................................. 9.42-9.43
- Transport & Load-out of a large Module (2350-4800 Ton) .......... 9.44
- Load data for Heavy Lift Modules ........................................ 9.45
- Load diagrams of Platform trailers ....................................... 9.46
- Moving various Heavy Loads ............................................. 9.47-9.50
- Recommendations ............................................................. 9.51

10. Safety and Risk Analysis (46 pages)
- Video: BP Safety video ........................................................... 10.2
- Part of Hoist both’s Safety Policy ......................................... 10.2-10.3
- Part of JQHE Policy Statement ............................................. 10.4
- Slips and Falls cause the majority of injuries on board ship ............ 10.5
- What is right and what is wrong in these pictures ....................... 10.6
- Excessive Noise can damage your hearing ................................ 10.7
- Accidents still happen ....................................................... 10.8
- Safety improvement Program ............................................. 10.9
- What is safety: Culture, Planning, Procedures ......................... 10.10
- Safety Awareness Culture Ladder ...................................... 10.11
- Safety Awareness Culture Ladder Explanation ......................... 10.12
- The Law Theory ............................................................... 10.13
- How do we Record & Analyze? ........................................... 10.14
- Some Definitions ............................................................. 10.15-10.16
- What are our goals? ............................................................ 10.17
- Safety Culture and Awareness ............................................ 10.18
- How? .................................................................................. 10.19
- Use Proper PPE=Personal Protective Equipment ....................... 10.20
- Requirements of cause of accidents .................................... 10.21
- Keep Welding and Cutting equipment in Good Condition .......... 10.22-23
- Use proper PPE = Personal Protective Equipments ................... 10.24-25
- PPE and good access to lashing points ................................ 10.26
- Accident & Incident Reporting and Analysis ........................... 10.27
- Video: Stay Focused ............................................................ 10.28
- Use a Risk Matrix .............................................................. 10.30
- Safety Culture and Frequency of Price x Risk .......................... 10.31
- The theory of the Swiss Cheese ........................................... 10.32
- Guide line Job Hazard Analysis .......................................... 10.33
- Job Hazard analysis(LoLo) .................................................. 10.34
- Safety Awareness Posters .................................................. 10.35
- Is it all OK? ......................................................................... 10.36
- Identification of Hazards .................................................... 10.37-10.38
- Why, When and How a “Toolbox Meeting” ............................. 10.39
- Last Minute Risk Analysis (LMRA) ....................................... 10.40
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- Examine of well secured Transport saddles .............................. 10.42
- Examples of badly secured Transport saddles + Video ............... 10.43-44
- Conclusion: Things To Remember ....................................... 10.45

11. Heavy Lift Shipping (52 pages)
- Various Types of Heavy Lift Ships: Lo-Lo ................................ 11.2
- Various Types of Heavy Lift Ships: Flo-Flo ............................... 11.3
- Various Types of Heavy Lift Ships: Ro-Ro ............................... 11.4
- Major Heavy Lift Ships, Crane Types: Lift-on / Lift-Off .......... 11.5
- Difference between Pedestal crane and Mast crane ................. 11.6
- Heavy Lift Mast Cranes: 600 tons on J-Type Jumbo ................. 11.7
- Cargo Types: Petrochemical, Offshore, Floating Equipment ..... 11.8
- Cargo Types: Pressure vessels, Modules, Gasturbiners .......... 11.9
- How to lift a Heavy Load with a floating vessel ....................... 11.10
- How to rig a Trafo to a Lifting Beam ..................................... 11.11
- Using 5 Bullet tanks over barge board to location of GoG ......... 11.12
- How to prepare a Loading/Unloading Operation (Lo-Lo) ......... 11.13-11.14
- Check Stability of the Load ................................................ 11.15
- Examples of Sea fastening Calculations ............................... 11.16-11.18
- Stability of Heavy Lift Ships - Basics ................................... 11.17
- Stability of Heavy Lift Ships - Introduction ......................... 11.18
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- Calculation of Metacenter of a ship .................................... 11.23
- Calculation of GM Value ................................................... 11.24
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- Stability of Heavy Lift Ships: Free Surface Area ................. 11.26
- Arm of Stability - Uprighting Moment ................................ 11.27
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- Check list for Lashing & Securing ..................................... 11.37
- Examples of Sea fastenings (Jumbo)(Lashing wires + Stoppers) .. 11.38-39
- How to fasten a Hull........... 11.39
- Lashing & Securing Methods ............................................ 11.40
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- Calculation of Sea fastening Forces ................................... 11.42
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- The Salvage ........................................................................ 12.27
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- Some transport accidents .................................................. 12.53

13. BONUS CHAPTER: The Do’s & Don’ts in Lifting (30 Slides)
NOTE: This lecture schedule and items presented are subject to changes.
All Participants will Receive a Certificate with a rating depending on their score during the evaluation test at the end of the Course.

**WHO SHOULD ATTEND:**
- Freight Forwarders
- Crane & Transport Contractors
- Module Fabrication Yards
- EPC Contractors
- Power Plant Builders
- Shipyards
- Marine Warrantee Surveyors
- Oil Companies
- Plant Construction
- Cargo Superintendents
- Operators
- Offshore Installation Contractor
- SURF Contractors
- FPSO Builders
- Civil Industry
- Petrochemical Industry/Refineries
- Rigging & Transport Supervisors
- Lift Directors, Banks men

**Some Testimonials:**
- Facilitator is a highly experienced engineer and excellent on the subject matter. An excellent program, if targeted at participants with suitable background.
- It was a great experience. Clearly brought about how even in our own homes, we do things wrongly without accessing the risk. It has given me different perspective to working on project/heavy lift cargo. The Presenter indeed is a specialist with a very broad and wide knowledge in the Industry.
- Just right in time. You may consider to present this Seminar in 3 days.
- As engineer the part about lifting stability was most interesting after all a great Seminar!!
- I love to learn, this learning in two days was great, lot of information, well delivered in a very limited time. Feel confident in practical application, Thank you!!

**REGISTER NOW**

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