2023 HMH Drilling Equipment Technical Training Catalog 147

HMH in Brief

HMH is a leading global provider of first-class drilling solutions and services designed to offer our valued customers with the safer, more efficient and reliable alternative. Our knowledge and technologies span from reservoir to production and through the life of the field.

Our company vision drives an unparalleled commitment to quality and major economic advantages for our customers and stakeholders.

With a remarkable legacy founded more than a century ago, HMH has transformed into a brand reflective of our robust company strategy and compelling ambitions.

Our reputation is preserved through a winning combination of values, people and innovative technologies, proven by a respected track record and a vast collection of customer success stories. HMH has a global reach covering five continents with offices in 14 countries. Drawing upon our global market success, we continue to seize opportunities through an established strong regional presence.

Our dedicated professionals consistently strive to enhance customer satisfaction and form meaningful collaborations by creating a personalized experience.

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Performance With a Purpose

HMH's values are a testament to our commitment to each other, our customers and our stakeholders. We strive for excellence without compromising on integrity. These four values serve as a roadmap towards cultivating a positive workplace and fulfilling our corporate strategy with pride. Our brand proposition is empowered through the consistent adoption of these values.





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HMH Training Center

HMH provides proven training that is built on a strong pedagogical foundation and developed over years. We have highly qualified instructors with years of relevant experience in all the fields covered by our courses. This results in high quality training delivered in a global and uniform way.

HMH is organized with regional centers located all over the world. With our global training perspective, we are able to meet the customers where it is most convenient for them. With our four regional hubs in Europe, USA, Brazil, Azerbaijan and Singapore, we are located close to most of the operating drilling rigs and perform training where our customers prefer. If a rig is moving, we are able to start the training in one location and continue from another.

Our organization consists of regional training managers, course coordinators and planners and highly qualified instructors. We also have a professional production department, where we produce course material (textbooks and instruction material). We work closely with our customers in order to understand their needs and to provide them with the best possible training services.

Why is training so important?

Professional training and competence are key success factors in maximizing uptime and ensuring the safe and efficient operation of drilling equipment and drilling rigs. Just as important, an extensive and realistic training program will increase the profit of the drilling rigs. A well performing crew will utilize the equipment in the best possible manner, resulting in increased uptime and reducing wear and tear on the machines.

Potential results of an untrained crew working with complex machinery and systems are poor performance, equipment problems and serious incidents. This is just the beginning of a list of issues that can be greatly minimized with the correct training.

Professional training and competence are key success factors in maximizing uptime and ensuring the safe operation of drilling equipment



Our Training Concept

A well trained crew is essential in order to optimize rig performance. A harmonized crew, from operators in the driller's chair to maintenance personnel, will keep the rig operational.

By making the training rig specific at all levels and as close to real life as possible, we provide personnel with the possibility to be ready for action without any delay. Trained personnel will be able to prevent down time as well as reduce the time needed to get the rig up and running if incidents occur.

Pedagogical foundation

The variability in personality and learning styles among the training center's course participants is large. Achieving the best possible skills and competence to operate and maintain HMH's advanced drilling equipment are critical in order to achieve safe and efficient operation of the rig. We take these pedagogical challenges seriously and have developed a training concept that meets these challenges. Our excellent facilities provide the perfect learning tool for our skilled instructors and enable us to offer customers a good learning experience. With advanced technology, we are able to provide practical training that realistically matches the equipment and the challenges the employees meet on a rig. Our facilities are standardized all over the world so the participants and instructors meet the same technology and design regardless of the course location.

Our facilities

- Well-equipped classrooms
- Full-scale simulators
- Single-equipment simulator
- Technical training laboratory (TTL)

We are able to offer training onboard the rig, in our workshops or at other locations when it is appropriate and beneficial and in close collaboration with the customers' needs.

Full-scale simulators

Our full-scale simulators give a unique opportunity to train personnel in a rig specific and realistic environment. The simulators have a full scale human-machine interface (HMI) to match the equipment and the operator interface you meet on a rig. Our simulators use advanced software and high-quality animation technology to provide 3D visualization. 3D models are imported directly from engineering systems and connected to the actual control system.

All our courses can be delivered as tailor-made training for your rig

Enrollment

Course language

The standard spoken language in all our courses is English. By inquiry, courses can be carried out in other languages.

Facilities

Our classrooms are fully equipped with modern technology to ensure the best technical understanding for the course participants. We have three projectors in each classroom and use smartboards and whiteboards to illustrate equipment and to show animations, pictures and films. Lunch and refreshments are included in the fixed course rate. Travel time and accommodation expenses are not included in our prices.

Terms and conditions

Participants must sign up for the course at least three (3) weeks prior to the course start date.

HMH reserves the right to cancel a course if less than six (6) participants have signed up two (2) weeks prior to the course start date.

Cancellation by buyer less than two (2) weeks before scheduled course date will be charged one hundred percent (100%) of the fee.

To maintain a professional atmosphere and adhere to the safety standards, personnel attending classes will be required to wear long pants and shirts with sleeves - short/long. We provide steel-toed boots, safety glasses and protective clothing for training performed in our shop area or TTL. Shorts, tank-tops, sandals, flip-flops, or any open-toed shoes are not allowed at our training facilities.

For courses in Singapore, prices is subjected to additional 7% GST.

All other issues are according to HMH AS Terms and Conditions.

For enrollment and information: helge.haugland@hmhw.com





Introduction to Drilling

Overview

Theoretical classroom training about drilling basics.

Course description and learning objectives

- Give a basic understanding of the different drilling units in use, the drilling operation and tools in use for drilling an oil well.
- Give the students a basic understanding of the equipment, design and operational sequences applicable for a typical offshore drilling rig.

After this course you will have a general understanding of drilling operations and the applied technologies.

Training content

- Introduction to Drilling (History, Geology)
- Rig types
- Drilling equipment
- Operational sequences
- Drillsting components (inkl BHA and Rotary Steering Systems)
- Casing and Cementing
- Drilling Fluid System
- Well Control

Duration

1 day

Course capacity

Min. 5 participants Max. 12 participants

Target group All job professions

Prerequisites No prerequisites required.



Rig Operation

This course provides a good understanding of the operating philosophy of HMH pipe handling and drilling equipment systems on typical packages including individual equipment and system topics.

Course goal

This course aims to increase understanding of individual pipe handling and drilling equipment, its functions and related systems.

Course Topics

- HSSE
- System Introduction
- HPU
- Drillfloor Equipment
- Mud Pump
- Vertical Pipe Handling Equipment
- Horizontal to Vertical Pipehandling Equipment
- Pipedeck Pipehandler
- Riser Handling Equipment
- Compensating Equipment
- BOP Handling Equipment
- X-Mas Tree Handling Equipment
- Utility Equipment

Duration

5 days

Course capacity

Maximum 12 participants

Target Group

All operations and maintenance personnel working in relation to HMHpipe handling and drilling equipment.

Prerequisite skills and knowledge



Conventional Rig Simulator

HMH simulators offer a unique opportunity to train personnel in a realistic environment. The course gives a good understanding of HMH drilling and pipehandling equipment operating philosophy.

Course goal

The course aims to increase the understanding of HMH's operation philosophy, how the drilling and pipehandling equipment functions, and how to operate it in a safe manner. This is achieved through theoretical and practical training using a typical conventional rig training simulator.

Course topics

The main topics for the course are:

- HSSE
- Introduction to operator chair, DrillView, smart zone management system and review of operational sequences.
- Pick up sequence
- Lay down sequence
- Trip in sequence
- Trip out sequence
- Drilling connection
- Backreaming sequence
- Standbuilding sequence

Target group

Operational personnel on the rig:

- Tool pusher
- Driller
- Assistant driller
- Derrickman/assistant derrickman
- Roughneck

Course duration

5 days

Course capacity

Maximum 4 participants

Prerequisite skills and knowledge



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RamRig Simulator

HMH simulators offer a unique opportunity to train personnel in a realistic environment. The course gives a good understanding of HMH's drilling and pipehandling equipment operating philosophy.

Course goal

The course aims to increase the understanding of HMH operation philosophy, how the drilling and pipehandling equipment functions, and how to operate it in a safe manner. This is achieved through theoretical and practical training using a typical RamRig training simulator.

Course topics

The main topics for the course are:

- HSSE
- Introduction to operator chair, DrillView, smart zone management system and review of operational sequences.
- Pick up sequence
- Lay down sequence
- Trip in sequence
- Trip out sequence
- Drilling connection
- Backreaming sequence

Course duration

5 days

Course capacity

Max. 4 particiapants

Target group

Operational personnel on the rig:

- Tool pusher
- Driller
- Assistant driller
- Derrickman/assistant derrickman
- Roughneck

Prerequisite skills and knowledge





Equipment Maintenance

The course provides a theoretical understanding of how to perform maintenance and troubleshooting in a safe manner, including a theoretical understanding of how the system is functioning and how to use the documentation for the equipment. DDM and HRN are used as reference machines on the course.

Course goal

The course aims to give knowledge about the equipment and maintenance, such as:

- Main components and functionality on machines
- Maintenance system
- Increased understanding of hydraulic system on machines
- Good attitude regarding HSSE, oil purity and daily maintenance
- Maintenance according to API RP8B, seventh edition and API RP 8B earlier editions. Typically DDM and HRN

Course topics

The main topics for the course are:

- HSSE
- General system understanding
- Technical documentation
- Hydraulic components
- Mechanical components
- Condition monitoring

Course duration

4 days

Course capacity

The maximum number of participants is 8

Target group

Mechanical and hydraulic rig maintenance personnel

Prerequisite skills and knowledge

A general understanding of hydraulic and HMH equipment.



Hydraulic System

This course provides a theoretical understanding of hydraulic systems. This will increase the participants ability to maintain and troubleshoot the hydraulic system in a safe and effective manner.

Course Goal

The course will develop participants in maintenance and troubleshooting the hydraulic system by system understanding and use of flow diagram schematic drawings.

Course Topics

- HSSE
- General system understanding
- Technical documentation
- Technical system understanding; hydraulic
- Technical system understanding; mechanical
- Technical system understanding; electrical
- Maintenance
- HPU
- Drillfloor equipment
- Derrick equipment
- Vertical Pipehandling equipment
- Horizontal to vertical pipehandling equipment
- Riser handling equipment
- BOP and X-mas tree handling equipment
- Utility equipment

Duration

5 days

Course capacity Max. 8 participants

Target group Mechanical hydraulic maintenance personnel

Prerequisite skills and knowledge

A general understanding of hydraulic and HMH equipment.



Technical Training Laboratory (TTL)

The TTL is a training lab well equipped with tools and diagnostic equipment, as well as example equipment and full scale drilling equipment machines.

Our TTL's are located in:

- Kristiansand, Norway
- Erkelenz, Germany
- Katy, USA

The lab is built for safe training of maintenance personnel, with both an electro/instrument and hydraulic background. This type of training on components are very valuable for employees who plan on working with HMH equipment.

Training in the TTL means

- hands-on training on HMH live systems equivalent to those found on a drilling rig
- tailor-made training for both electro/instrument and hydraulic personnel
- an in-depth understanding of the most commonly used components on our equipment

We offer realistic work tasks closely connected to situations that could occur on equipment on a rig in operation, but without the harsh consequences of failure. Participants who have been through such cases in a safe training situation will be better prepared to handle the problem safely and more effectively. Through courses in the TTL, hydraulic and electro/ instrument personnel also learn more of each other's fields, and will be better able to communicate and collaborate when troubleshooting on a rig. We can offer realistic work tasks, closely connected to situations that are likely to occur on a rig in operation, but without the harsh consequences of failure



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How the training is conducted

During a typical week in the TTL, the electro/instrument personnel and the hydraulic personnel will work in pairs to solve tasks given by the instructors.

We start on the component level, building up to tasks involving combined components as the course progresses. The participants will learn how to adjust, connect and set up the specific components on the machines, and by the end of the week they will work on full-scale machines.

Course duration

5 days

Course capacity

The maximum number of participants is 8

Target group

Electro/instrument personnel and hydraulic personnel.

Prerequisite skills and knowledge

The students are expected to have technical competence and some operational experience from a rig in operation.



PDPH Operator

The course provides a combination of theoretical training, simulator- and offshore training, with focus on system understanding and safe operation of the machine.

Course goal

The learning goal is to give the participants understanding of the PDPH, as well as the operating philosophy, technical functionality, safe operation and first-line maintenance and troubleshooting.

Course topics

The main topics for the course are:

- Operator chair
- DrillView
- Smart Zone Management System (SZMS)
- Operation
- Maintenance
- Practical training on PDPH Simulator
- Test

Duration

1 days

Course capacity The maximum number of participants is 8

Target group

Operating personnel working in relation to the PDPH

Prerequisite skills and knowledge

The students are expected to have basic technical understanding and to understand technical English.



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Hydraulic Roughneck 1898

The course gives an understanding of the functions of the HMH hydraulic roughneck (HRN), its operating philosophy and how to operate and perform first line maintenance. This course will cover all options available for the HRN 1898, including:

- Manual operation from hydraulic remote pedestal and radio remote control panel
- Two grip torque wrench
- Three grip torque wrench

Course goal

The course aims to increase the theoretical understanding of how the HRN 1898 is functioning and how to operate it in a safe manner.

Course topics

- The main topics for the course are:
- HSSE
- Functional description of the machine
- General system understanding
- Operational description
- Technical documentation
- Daily maintenance
- Technical system understanding

The HMH HRN is designed for optimum performance, quality and reliability

Course duration

1,5 days

Course capacity Max. 12 participants

Target group Operators working in relation to the HRN 1898.

Prerequisite skills and knowledge

The students are expected to have some operational experience.



Hydraulic Roughneck 1899

The course gives an understanding of the functions of the HMH hydraulic roughneck (HRN), how to operate the machine and perform first line maintenance. This course will cover all options available for the HRN 1899, including:

- Automatic operation (sequence) from operator chair and radio remote control panel
- Two grip torque wrench
- Three grip torque wrench

Course goal

The course aims to increase the theoretical understanding of how the HRN 1899 is functioning and how to operate it in a safe manner.

Course topics

- The main topics for the course are:
- HSSE
- Functional description of the machine
- General system understanding
- Operational description
- Technical documentation
- Daily maintenance
- Technical system understanding

The new HMH HRN design incorporates the efficiency and handling capabilities of the original HMH torque wrench, into a new higher performance tong

Course duration 2 days

Course location Kristiansand, Norway

Course capacity The maximum number of participants is 12.

Target group

Operators working in relation to the HRN 1899.

Prerequisite skills and knowledge

The students are expected to have some operational experience.



RNX w/ Drilling & Casing Module

The course gives a good understanding of operating philosophy of the RNX, including how it is functioning and how to perform first line maintenance and troubleshooting. This course may include Drilling Module and Casing Tong.

Course goal

The course gives a theoretical understanding of how the RNX is functioning and operated it in a safe manner.

Course topics

The main topics for the course are:

- HSSE
- Functional description
- Operational description
- Periodic maintenance
- Theoretical test

Course duration 2 days

Course capacity Max. 12 participants

Target group All personnel working with the RNX.

Prerequisite skills and knowledge

The students are expected to have technical competence and some operational experience from a rig in operation.







Derrick Drilling Machine (DDM) 1000

The course gives an understanding of how the HMH Derrick Drilling Machine functions, its operating philosophy and how to operate and perform first line maintenance and troubleshooting in a safe manner.

Course goal

The course aims to increase the theoretical understanding of how the machine is functioning and how to operate it in a safe manner.

Course Topics

- HSSE
- Functional description of machine
- General system understanding
- Operational description
- Technical documentation
- Daily Maintenance
- Control system understanding
- Hydraulic system understanding

Duration

3 days

Course Capacity

12 students

Target group

Operating and maintenance personnel working with the HMH DDM.

Prerequisite skills and knowledge

The students are expected to have a technical competence and some operational experience from a rig in operation.



Derrick Drilling Machine (DDM) 650/750

The course gives an understanding of how the HMH derrick drilling machine functions, its operating philosophy and how to operate and perform first line maintenance and troubleshooting in a safe manner.

Course goal

The course aims to increase the theoretical understanding of how the machine is functioning and how to operate it in a safe manner.

The HMH DDM is designed for rough conditions and complies with the strictest approvals for the drilling industry

Course topics

The main topics for the course are:

- HSSE
- Functional description of the machine
- General system understanding
- Operational description
- Technical documentation
- Daily maintenance
- Technical system understanding

Course duration 2 days.

Course capacity

Max. 4 participants

Target group

Operating and maintenance personnel working with the HMH DDM.

Prerequisite skills and knowledge

The students are expected to have a technical competence and some operational experience from a rig in operation.



PTD 500 AC

The course gives an understanding of how the HMH PTD 500 AC functions, its operating philosophy and how to operate and perform first line maintenance and trouble-shooting in a safe manner.

Course goal

The course aims to increase the theoretical understanding of how the machine is functioning and how to operate it in a safe manner.

Course Topics

- Functional Description
- Operational Description
- Technical Documentation
- Maintenance Operators
- Technical system understanding Hydraulic
- Technical system understanding Instrumentation and control system
- Trouble shooting

Duration

2 days

Course capacity Maximum 12 participants

Target Group

All operations and maintenance personnel working in relation to HMH PTD 500 AC $\,$

Prerequisite skills and knowledge

The students are expected to have some operator competence and be able to talk and read English.



Manrider Winch

The course gives an understanding of how the HMH Manrider winch functions, its operating philosophy and how to operate and perform first line maintenance and troubleshooting in a safe manner.

Course goals

The student shall after classroom information and self-study:

Understand the use of the HMH Manrider winch, as well as the operating philosophy, technical functionality, safe operation and first-line maintenance.



Course duration

1 day

Course capacity

The maximum number of participants is 12

Target group

Operators and technical personnel

Prerequisite skills and knowledge

Students (personnel) are expected to have basic operational and technical understanding and are expected to understand technical English.

Course location

Global

Test

The course has a written multiple choice exam.

Additional information

The course is held in the English language with course material in English.

Theoretical and practical training is to take place in a classroom.

Hydraulic Pump Adjustment HPU - Main Pump Tunig Procedure

The course covers the adjustment procedure of the main pumps in the Hydraulic Power Unit (HPU) for the HMH Ram Rig and Hydraulic Drawworks (DW). The course takes place in the Technical Training Laboratory (TTL) in Kristiansand, Norway, where the adjustment is executed on an actual variable axial piston pump through a computer in the lab. Hands-on training on a live system provides good practice and understanding of the procedure.

Course goal

The learning goal of the course is to give the students understanding of the HMH HPU hydraulic pump adjustment procedure and understand how to electrically adjust the pump.

Course topics

The main topics for the course are:

- HSSE
- Mechanical and electrical setup
- Adjustment of the servo valve and pump
- Parametrization in BODAC (Bosch Rexroth Operator Interface for Digital Axis Controller) software and DrillView
- Automatic zero adjustment of the pump
- Saving BODAC and DrillView parameters



Course duration 1 day

Course capacity Maximum 2 participants

Target group Technical personnel

Prerequisite skills and knowledge

The students are expected to have basic operational and technical understanding and are expected to understand technical English.



The course gives a good understanding of the operating philosophy of the drillstring compensator (DSC) system, including how it functions and how to perform first line maintenance and troubleshooting. This course is held both for DSC with Bosch Rextroth and Olmsted isolation valve.

Course goal

The course aims to increase the theoretical understanding of how the drillstring compensator system functions, and how to operate it in a safe manner.

Course topics

The main topics for the course are:

- HSSE
- Functional description
- Operational description
- Periodic maintenance
- Theoretical test

Course duration

2 days

Course capacity

Max. 12 participants

Target group

All personnel working with the drillstring compensator system.

Prerequisite skills and knowledge

The students are expected to have a technical competence and some operational experience from a rig in operation.

HMH drillstring compensator keeps the vertical force virtually constant



Active Heave Compensator (AHC)

The course gives a good understanding of the operating philosophy of the active heave compensator system, including how it functions and how to perform first line maintenance and troubleshooting.

Course goal

The course aims to increase the theoretical understanding of how the active heave compensator system functions, and how to operate it in a safe manner.

Course topics

The main topics for the course are:

- HSSE
- Functional description
- Operational description
- Periodic maintenance
- Theoretical test

Course duration

1 day

Course capacity

The maximum number of participants is 12

Target group

All personnel working with the active heave compensator system.

Prerequisite skills and knowledge

The students are expected to have a technical competence and some operational experience from a rig in operation.



The course gives a good understanding of operating philosophy of the direct acting tensioner system, including how it functions and how to perform first line maintenance and troubleshooting.

Course goal

The course gives a theoretical understanding of how the direct acting tension system functions, and operating it in a safe manner.

Couree topics

- HSSE
- Functional description
- Operational description
- Periodic maintenance
- Theoretical test

Course duration 1,5 days

Course capacity

Max 12 participants

Target group

All personnel working with the direct acting tension system.

Prerequisite skills and knowledge

The students are expected to have technical competence and some operational experience from a rig in operation.



Crown Mounted Compensator (CMC)

The course gives a good understanding of operating philosophy of the crown mounted compensator, including how it functions and how to perform first line maintenance and troubleshooting. This course includes both active and passive compensating.

Course goal

The course gives a theoretical understanding of how the crown mounted compensator functions, and operating it in a safe manner.

Course topics

The main topics for the course are:

- HSSE
- Functional description
- Operational description
- Periodic maintenance
- Theoretical test

HMH crown mounted compensator keeps the vertical force virtually constant

Course duration 3 days

Course capacity

Max. 12 participants

Target group

All personnel working with the Crown Mounted Compensator system.

Prerequisite skills and knowledge

The students are expected to have technical competence and some operational experience from a rig in operation.



Wire Line Tensioner (WLT)

The course gives a good understanding of the operating philosophy of the wire line tensioner, including how it functions and how to perform first line maintenance and trouble-shooting. This course is primarily for WLT with Anti Recoil (AR)

Course goal

The course aims to increase the theoretical understanding of how the marine riser tensioner functions, and how to operate it in a safe manner.

Course topics

The main topics for the course are:

- HSSE
- Functional description
- Operational description
- Technical documentation
- Periodic maintenance
- Theoretical test

Course duration

1 day

Course capacity

Max. 12 participants

Target group All personnel working with the WLT system.

Prerequisite skills and knowledge

The students are expected to have a technical competence and some operational experience from a rig in operation.

The HMH marine riser tensioner maintains a pre-selected vertical tension in the riser when the vessel is heaving and rolling due to waves, currents and wind



Tailor-made Training

The HMH training center's philosophy is based on a four module training program that targets all relevant personnel groups and covering all their different job requirements.

The four modules are:

- eLearning
- Classroom training
- Simulator training
- Practical training

Training location

We offer a full training program in Kristiansand, Norway. Classroom and simulator training can also be provided in Stavanger, Norway as well as Macaé (Brazil), Houston, (TX), Singapore and Korea. The eLearning program is done on a personal computer with Internet connection at home or at work. For drawworks, mud pump and rotary table, training will be provided in Erkelenz, Germany.

eLearning

With a preparatory eLearning package, we know that when the participants have started their learning process, they will learn more and keep the knowledge for a longer period. Since eLearning usually is issued weeks or months before the classroom sessions start, each participant may use the necessary amount of time to harmonize with the learning goals before further training starts.

Classroom training

With our experienced instructors, and use of modern technology and material, the classroom training is an excellent and safe way to provide the students with a technical and theoretical understanding. Animations and films, in combination with skilled instructors, engage the participants in the classroom. This facilitates transfer of knowledge in an excellent way. High quality textbooks and a Rig Stick (USBstick) are handed out to the participants. The Rig Stick includes sequence animations, films, pictures, documentation and textbooks.

Rig operation course

 5 days for all personnel. Max number of attendees 12 per class

Equipment maintenance course

 4 days for maintenance personnel. Max number of attendees 12 per class.

Electro system course

 4 days for maintenance personnel. Max number of attendees 12 per class.

Hydraulic system course

5 days for maintenance personnel. Max number of attendees 8 per class

Control system course

5 days for maintenance personnel. Max number of attendees 10 per class

Compensating equipment for floaters

A full compensating package will consist of active heave (AHC), drill string compensator (DSC)/crown mounted compensator (CMC) and direct acting tensioner (DAT)/ wireline tension (WLT). Our course will be a combined course covering compensating equipment involved.

 5 days for all personnel. Max number of attendees 12 per class.

Simulator training

Chair operator training

5 days for operational personnel. Max 4 attendees per class

Fault finding Instrument & control system course

5 days for maintenance personnel. Max 4 attendees per class

Fault finding hydraulic system course

5 days for maintenance personnel. Max 4 attendees per class

Smart Modules

beAware[™] DEAL[™] Smart Module

The course provides a good operational understanding, with a combination of theoretical- and simulator training in the beAware platform and the relevant applications. This will increase the participants understanding of the interface philosophy, the ability to interact and navigate on this platform. beAware is an open interface, it collects, presents, and shares offshore operational information between all actors involved in the drilling process.

Course goal

The course gives a theoretical understanding and practical experience in the interface philosophy, interaction, and operational use of beAware in an efficient and safe manner.

Course topics

The main topics for the course in beAware and relevant applications are:

- HSSE
- Interface philosophy
- Navigation and interaction
- Operational use
- Administrational functions and settings

Course duration 1 day

Course capacity

Max 4 participants

Target group

All personnel working with planning, supervision or are directly involved with the drilling operation

Prerequisite skills and knowledge

The students are expected to have some operational experience from a rig in operation and basic knowledge of DrillView.



OPTIWOB™ DEAL™ Smart Module

TThe course gives a good understanding of how to set up, activate and use optiWOB in various drilling operations. such as drilling, milling, directional drilling and coring.

Course goal

The course gives a theoretical understanding and some practical experience in the use of optiWOB in an efficient and safe manner.

Course topics

The main topics for the course are:

- HSSE
- Interface philosophy
- optiWOB preparations
- optiWOB initialization
- optiWOB activation
- optiWOB operation

Course duration

5 hours

Course capacity

The maximum number of participants is 12

Target group

All personnel working with and operating Drill string Compensators in various drilling operations.

Prerequisite skills and knowledge



eTally[™] DEAL[™] Smart Module

The course provides a good operational understanding, with a combination of theoretical- and simulator training in the eTally logistic software. This will increase the participants understanding of the interface, logistic functions, the ability to interact and navigate in this software. The course is divided into 3 modules, to cover different levels of the desired knowledge.

Course goal

The course gives a theoretical understanding and practical experience in the interface philosophy, interaction, and operational use of eTally in an efficient and safe manner.

Course topics

- The main topics for the course are:
- HSSE
- Interface philosophy
- Navigation and interaction
- Operational use
- Tally solutions and corrections.

Duration

Module 1: 1 day Module 2: 5 days Module 3: 2 days

Course capacity

Module 1: maximum 10 participants. Module 2: maximum 4 participants. Module 3: maximum 4 participants.

Target group

Module 1: All personnel involved with tally items. Module 2: Operational personnel working with the tally. Module 3: Operational personnel with eTally experience.

Prerequisite skills and knowledge



DA Drilling, DAD[™] DEAL[™] Smart Module

The course gives a good understanding of the functionality and operation of the DA Drilling (DAD) smart module. The course provides a good operational understanding, with a combination of theoretical- and simulator training, in the use of DAD smart module in drilling operations.

Course goal

The course will give the participants a good theoretical understanding and practical experience in the interface philosophy, interaction, and operational use of DA Drilling (DAD) in an efficient and safe manner.

Course topics

The main topics for the course are:

- HSSE
- Interface philosophy
- Navigation and interaction
- Operational use

Course duration

1 day

Course capacity Maximum 4 participants

Target group Driller, Assistant Driller and Toolpusher.

Prerequisite skills and knowledge





CADS[™], Drilling Connection

DEAL[™] Smart Module

The course gives a good understanding of the functionality and operation of the CADS Drilling Connection function in CADS.

The course provides a good operational understanding, with a combination of theoretical- and simulator training, in the use of CADS Drilling Connection in drilling operations.

Course goal

The course will give the participants a good theoretical understanding and practical experience in the interface philosophy, interaction, and operational use of CADS Drilling Connection in an efficient and safe manner.

Course topics

The main topics for the course are:

- HSSE
- Interface philosophy
- Navigation and interaction
- Operational use

Course duration

1 day

Course capacity Maximum 4 participants

Target group Driller, Assistant Driller and Toolpusher.

Prerequisite skills and knowledge





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Tailor-made Training - Norway

The HMH training center's philosophy is based on a four module training program that targets all relevant personnel groups and covering all their different job requirements.

The four modules are:

- eLearning
- Classroom training
- Simulator training
- Practical training

Training location

We offer a full training program in Kristiansand, Norway. The eLearning program is done on a personal computer with Internet connection at home or at work. For drawworks, mud pump and rotary table, training will be provided in Erkelenz, Germany.

eLearning

With a preparatory eLearning package, we know that when the participants have started their learning process, they will learn more and keep the knowledge for a longer period. Since eLearning usually is issued weeks or months before the classroom sessions start, each participant may use the necessary amount of time to harmonize with the learning goals before further training starts.

Classroom training

With our experienced instructors, and use of modern technology and material, the classroom training is an excellent and safe way to provide the students with a technical and theoretical understanding. Animations and films, in combination with skilled instructors, engage the participants in the classroom. This facilitates transfer of knowledge in an excellent way. High quality textbooks and a Rig Stick (USB-stick) are handed out to the participants. The Rig Stick includes sequence animations, films, pictures, documentation and textbooks.

Rig operation course

 5 days for all personnel. Max number of attendees 12 per class

Equipment maintenance course

 4 days for maintenance personnel. Max number of attendees 12 per class.

Electro system course

 4 days for maintenance personnel. Max number of attendees 12 per class.

Hydraulic system course

 5 days for maintenance personnel. Max number of attendees 8 per class

Control system course

 5 days for maintenance personnel. Max number of attendees 10 per class

Compensating equipment for floaters

A full compensating package will consist of active heave (AHC), drill string compensator (DSC)/crown mounted compensator (CMC) and direct acting tensioner (DAT)/ wireline tension (WLT). Our course will be a combined course covering compensating equipment involved.

 5 days for all personnel. Max number of attendees 12 per class.

Simulator training

Chair operator training

5 days for operational personnel. Max 4 attendees per class

Fault finding Instrument & control system course

5 days for maintenance personnel. Max 4 attendees per class

Fault finding hydraulic system course

5 days for maintenance personnel. Max 4 attendees per class

Tailor-made Training - Erkelenz

Electrical troubleshooting training for drawworks

 4 days for electrical maintenance personnel. Max 6 attendees per class

Practical training

Practical training for maintenance personnel

- 5 days for maintenance personnel. Mixed class, max 8 attendees per class
- Practical training on board for operators 41301
- operator assistance
- experience transfer between operators
- operator evaluation program

Training packages for drawworks, mud pump and rotary table

Brake bedding course for drawworks

 1 day for maintenance personnel. Max number of attendees 12 per class.

Drawworks training

 4 days for all personnel but customized for electrical, mechanic/hydraulic or operational personnel. Max 6 attendees per class.

Mud pump training

 3 days for all personnel but customized for maintenance or operational personnel. Max 12 attendees per class.

Rotary table training

 1 day for all personnel but customized for maintenance or operational personnel. Max 12 attendees per class.

Training package for mud mixing, solid control and choke & kill

Introduction course

• 1 day for all personnel, maximum 12 attendees per class.

Equipment course

1 day for all personnel, maximum 12 attendees per class.

Simulator course

1 day for all personnel, maximum 12 attendees per class.



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Multi-Gear Drawworks

Overview

Theoretical and practical product training for multi-gear drawworks type GH4500 including

- Classroom training
- TTL training (Technical Training Laboratory)
- Simulator training based on HMH HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- The basic knowledge about the functionality of the different main components and their hydraulic systems.
- The features and functionality of the different control systems DICS, ZPS, DBS, ECS and ADS.
- How to execute routine and safety relevant maintenance work considering maintenance procedures, WKI documents and HSSE mindset.
- How all components mechanically/hydraulically interact and how the failsafe philosophy is realized.
- How to operate the multi-gear drawworks using IOC touch panel and joystick in different gears, setting working points and tool compensation as well as executing ZPS calibration run and using autodriller features.
- To understand the complex control processes, their failsafe philosophy and how the control systems communicate and interact to each other.
- How to execute maintenance work, based on relevant documents, safe and correctly.

Training content

- General arrangements, technical data and performance diagrams of drive and braking system
- Design and functionality of main main components
- Hydraulic system
- Operation of IOC touchpanel, joystick and DrillView (based on HMH HMI)
- Operation of DICS HMI (OP17 or MP377)
- Operation of Emergency lowering device
- Emergency stop handling
- Design and functionality of
 - DICS Drawworks Interface and Control System
 - ZPS Zone Positioning System
 - DBS Dual Brake System
 - ADS Auto Driller System
 - ECS Eddy current brake Control System
 - WPS Wireline Protection System

Duration

4 days

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about drilling technology
- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Electrical knowledge and ability to read electrical schemes and bus topology drawings is recommended



Electrical Troubleshooting Multi-gear Drawworks

Overview

Product training for multi-gear drawworks type GH4500 including

- Classroom training
- TTL training (Technical Training Laboratory)
- Simulator training based on HMH HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

Electrical maintenance personnel shall be able to carry out troubleshooting on multi-gear drawworks control software and HMI more effective but without in depth knowledge about the software functionality. This course covers theoretical classroom, practical TTL and simulator troubleshooting training.

After this course the participant shall be able to use failure & help messages, technical drawings and documentation for failure analysis in order to provide our 24/7 technical support hotline the required information in a professional manner. Furthermore the participant shall be able to monitor interface signals of control systems via ServiceLab/HMI. This course module is based on monitoring software ServiceLab 9. The training content for ServiceLab 9 is limited on monitoring of determined software interfaces but not the handling of the complete software.

Training content

- Safety instructions
- Functionality of control systems
- Introduction of control software structure
- Handling of failure messages and help texts
- Handling of Cause and effect list
- Electrical schemes and bus topology
- Electrical devices and their functionality
- Introduction of data blocks which are available for signal monitoring via ServiceLab 9
- Handling of ServiceLab 9 for signal monitoring
- Practical troubleshooting and failure analysis on simulator
- Practical work on control system cabinets

Duration

2 days

Course capacity

Min. 4 participants Max. 6 participants

Target group

Electrical maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about drilling technology
- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Electrical knowledge and ability to read electrical schemes and bus topology drawings is required
- Experience in troubleshooting and signal monitoring using data interfaces.
- Participation on Multi-gear Drawworks Training or comparable field experience with drawworks



Basic Hydraulic

Overview

Theoretical introduction into hydraulic basics.

Course description and learning objectives

In this course you get an introduction into physical hydraulic basics, HSSE, standardized symbols, hydro pumps, motors, cylinders, valves and the behavior of hydraulic fluids.

After this training you are able to understand the functionalities of basic hydraulic components and to read simple hydraulic schemes.

Training content

- Safety instructions
- Hydraulic fluid physics
- Setup of hydraulic system
- Oil cleanliness and contamination
- Hydraulic components
- Filter technology
- Oil sampling and monitoring
- Lubrication
- Practical exercises on our products with hydraulic drawings

Duration

1 day

Course capacity

Min. 5 participants Max. 12 participants

Target group All job professions

Language

Training execution and digital training material will be provided in English language.

Prerequisites

General technical and physical basic knowledge.



Single-Gear Drawworks

Overview

Theoretical product training for single-gear drawworks type GH9000 including

- Classroom training
- TTL training (Technical Training Laboratory)

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- The basic knowledge about the functionality of the different main components and their hydraulic systems.
- The features, functionality and redundancy of the different control systems DICS, DCS, ZPS, DBS and ADS.
- How to execute routine and safety relevant maintenance work considering maintenance procedures, WKI documents and HSSE mindset.
- How all components mechanically/hydraulically interact and how the failsafe philosophy is realized.
- How to operate the single-gear drawworks using IOC touch panel and joystick in different speed settings, adjusting working points and tool compensation as well as executing ZPS calibration run and using autodriller features.
- To understand the complex control processes, their failsafe philosophy and how the control systems communicate and interact to each other.
- How to execute maintenance work, based on relevant documents, safe and correctly.

Training content

General arrangements, technical data and performance diagrams of drive and braking system

- Design and functionality of main components
- Hydraulic system
- Operation of operator chair touchpanel, joystick and DrillView (based on HMH HMI)
- Operation of DCS HMI
- Operation of Emergency lowering device
- Emergency stop handling
- Design and functionality of
 - DICS Drawworks Interface and Control System
 - DCS Drawworks Control System
 - ZPS Zone Positioning System
 - DBS Disc Brake System
 - ADS Auto Driller System
 - WPS Wireline Protection System

Duration

3 days

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about drilling technology
- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Electrical knowledge and ability to read electrical schemes and bus topology drawings is recommended



Mud Pump

Overview

Theoretical and practical product training for mud pump type TPK2200 including

- Classroom training
- TTL training (Technical Training Laboratory)
- Simulator training based on HMH HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- The functionality of the different main components and their hydraulic systems.
- How all components mechanically/hydraulically interact and how the mud pump works.
- How to operate the mud pump using DrillView, IOC touch panel and joystick in different modes.
- How to execute maintenance work, based on relevant documents, safe and correctly according HSSE mindset.
- The design and functionality of HMH Mud Pump Control System MPCS

Training content

General arrangements, technical data and performance with different liner and piston sizes

- Design and functionality of main components
- Operation
- Practical exercises
- Handling of product documentation

Duration

2 days

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about drilling technology
- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Basic electrical knowledge and ability to read electrical instrumentation diagrams is recommended



Pump Monitoring System

Overview

Theoretical and practical product training for Pump Monitoring System type slurry and mud including

- Classroom training
- TTL training (Technical Training Laboratory)

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this course you will learn the technology, functionality and operation of the Pump Monitoring System as well as the understanding how the monitored data curves and fingerprints are being analyzed.

After this course module you know all main components and specifications. Furthermore you understand how the analysis and interpretation works. You will be familiar with the operation of PMS software.

Training content

- Safety instructions
- Main components and hardware specifications
- Functionality and features
- Analysing and interpretation of monitored data curves
- Interpretation of fingerprints
- Handling of PMS software

Duration

1 day

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about drilling or mining technology
- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Basic electrical knowledge and ability to read electrical instrumentation diagrams is recommended



Reverse Circulation Drilling

Overview

Theoretical product training for pile-top drilling rigs type PBA936 including

Classroom training

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- Basics of reverse circulation drilling technology
- The functionality of the different main components and their hydraulic systems.
- How all components mechanically and hydraulically interact and how the pile-top rig works.
- How to operate the rig using control panel in manual and auto mode.
- How to execute maintenance work, based on relevant documents, safe and correctly according HSSE mindset.
- How to troubleshoot different failure scenarios.

Training content

- General safety instructions
- General arrangements, technical data and performance
- Design and functionality of main components
- Operation
- Maintenance
- Handling of product documentation



Duration

3 days

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance and operational personnel

Language

Training execution and digital training material will be provided in English language.

- Basic knowledge about RC drilling technology
- General technical and physical understanding
- Basic hydraulic knowledge

Slurry Pump

Overview

Theoretical and practical product training for slurry pump type DPM/TPM2200 including

- Classroom training
- TTL training (Technical Training Laboratory)

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- The functionality of the different main components and their hydraulic systems.
- The functionality and features of control system DCS and PCS.
- How all components mechanically/hydraulically interact and how the slurry pump works.
- How to operate the slurry pump using local control panel LCP.
- How to execute maintenance work, based on relevant documents, safe and correctly.

Training content

- General arrangements, technical data and performance.
- Design and functionality of main components
- Operation
- Maintenance
- Practical exercises
- Handling of product documentation

Duration

2 days

Course capacity

Min. 5 participants Max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

- General technical and physical understanding
- Basic hydraulic knowledge is recommended
- Basic electrical knowledge and ability to read electrical schemes and instrumentation diagrams is required.



Individual Simulator

Overview

Practical product training for multi-gear drawworks, mud pump and rotary table including

Simulator training based on HMH HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this course module you will increase and intensify your operational experience with multi-gear drawworks, mud pump and rotary table using DrillView, operator chair touchpanel and joystick. You will review your basic knowledge about the functionality of the different main components and their hydraulic systems. After this course module you will be able to operate the multi-gear drawworks in different gears, setting working points and tool compensation as well as executing ZPS calibration run and using autodriller features. On mud pump you will be able to operate different SPM (Strokes per minute) and how to combine different operation modes.

Training content

- Operation of DrillView
- Operation of operator chair touch panel
- Operation of DICS HMI
- Operation of Drawworks
- Operation of Mud pump
- Operation of Rotary table

Duration

1 day

Course capacity

Max. 4 participants

Target group

All job professions

Language

Training execution and digital training material will be provided in English language.

Optional add on training modules

All open-class product training modules

Prerequisites

Participation on open-class training modules for multi-gear drawworks, mud pump or rotary table is required.



Drawworks Brake Bedding

Overview

Product training for multi-gear and single-gear drawworks including

- Classroom training
- TTL training (Technical Training Laboratory)
- Simulator training based on MH Wirth HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training module you will learn how to execute brake bedding according to maintenance procedure.

After successful participation on this course module and passed test you are certified to carry out brake bedding on a multi-gear and single-gear drawworks independently.

Training content

- Safety instruction
- Design and functionality of brake system
- Brake HPU and hydraulic system
- Introduction of maintenance procedures
- Bleed out air of hydraulic brake system
- Brake bedding procedure
- Change of brake pads
- Check wear of brake pad surface
- Check and adjustment of air gap
- Check of caliper spring force
- Brake performance tests
- Handling of product documentation
- Mechanical and hydraulical troubleshooting

Duration

1 day

Course capacity

min. 5 participants max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language

- General technical and physical understanding
- Basic hydraulic knowledge is recommended



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Rotary Table

Overview

Theoretical product training for rotary table type $75\frac{1}{2}$ "H and $49\frac{1}{2}$ "E including

- Classroom training
- Simulator training based on HMH HMI

This is an open-class training. The training content is not project specific or customized.

Course description and learning objectives

In this training package you will learn

- The basic knowledge about the functionality of the different components and their hydraulic systems.
- How all components mechanically/hydraulically interact.
- How to operate the rotary table in different speed and direction using IOC touchpanel.
- How to execute maintenance work, based on relevant documents, safe and correctly.

Training content

- General arrangements and technical data
- Design and functionality of main components
- Operation
- Maintenance
- Handling of product documentation

Duration

1 day



Course capacity

min. 5 participants max. 12 participants

Target group

Maintenance personnel

Language

Training execution and digital training material will be provided in English language.

Prerequisites

General technical and physical understanding and hydraulic knowledge is recommended.



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