69th NTHS

# Official Report NTHS Stockholm 2016

THE NORWEGIAN DELEGATION

MANNHULLET

NORWAY

# Rolls-Royce

## Rolls-Royce – serving the marine market

Rolls-Royce has a world leading range of capabilities in the marine market, encompassing vessel design, the integration of complex systems and the supply and support of power and propulsion equipment. We are leaders in mission-critical systems for offshore oil and gas rigs, offshore, merchant and naval vessels.
Today the Rolls-Royce marine product range is one of the broadest in the world. 70 of the world's maritime forces and over 30,000 commercial vessels use our equipment. Our global support network underpins all activities and continues to expand with 50 centres in 28 countries with more planned.

## Market sectors

We provide a range of capabilities and expertise for offshore vessels and oil and gas platforms, merchant vessels and naval surface ships, with support provided by our global service network.

## Offshore

We are active both in exploration/production and supply/service sectors, supplying systems that range from facilitating seismic research to keeping a rig safely in position. Our UT-Design vessels are an industry benchmark – over 650 are now in service or in build. Advanced designs that benefit from the integration of new technologies required for successful exploration and operation in deeper and more hostile waters.

## Merchant

Equipment and systems are supplied for vessels that range from luxury yachts and cruise ships to ferries and tugs. We continue to expand our range of innovative and efficient cargo vessel designs, and lead the sector in environmentally friendly LNG propulsion solutions.

## Naval

Our experience in naval propulsion spans over 50 years for both surface ships and submarines. We have developed the MT30, the world's most powerful marine gas turbine at sea, powering the U.S. Navy's monohull Littoral Combat Ship, and also selected by Korea and the UK for future naval programmes.

69th Congress
Stockholm, Sweeden

# Words from the President

Another conference is in the books, and yet again, it turned out to be an excellent experience.

Through hard work and many hours of planning, the Swedish delegation presented Stockholm and its surrounding maritime industry in an exquisite manner. I would like to extend my thanks to the students at KTH for their effort and steady guidance throughout the week.

This trip would not have been possible without the contributions from our sponsors. With their help, we were able to fund this bridge building congress, and I cannot emphasize enough how important this is. NTHS have played an important role for the maritime students in the Nordic countries now for over 69 years. This is a remarkable achievement, which have proven itself throughout history as a significant factor in building long lasting relationships between fellow marine engineers.

In this report, we will present the delegation, our sponsors, the program as well as an introduction to our magnificent student union, Mannhullet.

Again, thanks to everyone who made this week so special and unforgettable. I look forward to seeing you in Trondheim next year.

Best Regards

Aleksander Vold Kristiansen

NTHS President
Mannhullet, Norway

| Laivanraken-tajain Kerho | Nul-kryds | Mannhullet | Kungliga Skeppsällskapet | Chalmers Skeppsbyggare |
|---|---|---|---|---|
| Finland | Denmark | Norway | Sweden | Sweden |

69th Congress
Stockholm, Sweeden

# The Delegation from NTNU

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| Aleksander Vold Kristiansen<br>5th year<br>President | Jørgen Rørvik<br>5th year<br>Vice President | Marte Shetelig<br>5th year<br>Head of procurement | Jørn Larsen Ringvall<br>3rd year<br>Sponsor Associate | Mari Jensen<br>3rd year<br>Head of Sponsorships |
|  |  |  |  |  |
| Amund Helvik<br>3rd year<br>Sponsor Associate | Tom-Erik Abildgaard<br>3rd year<br>Financial Officer | Andrea Langli<br>4th year<br>Participant | Hans Jakob Vik<br>5th year<br>Head of Awards | Simen Mildal<br>3rd year<br>Participant |

SEATRANS

# The Congress - day by day

69th Congress
Stockholm, Sweeden

| Time | Tuesday 12/4 | Wednesday 13/4 | Thursday 14/4 | Friday 15/4 |
|---|---|---|---|---|
| 06:30 | Departure **VÄRTAHAMNEN** **(Finns)** **T-Centralen (Everyone else)** | | Breakfast at Lodge32 | |
| 06:45 | Departure **T-Centralen** | | | |
| 07:30 | Breakfast on bus | Breakfast at Lodge32 | Departure Lodge32 | Breakfast at Lodge32 |
| 09:00 | | Departure Lodge32 | | |
| 09:30 | | | **Sandvik** | Departure Lodge32 |
| 10:00 | | **FMV** | | |
| 10:45 | | | | Ferry to Rindö |
| 11:00 | **Rolls Royce** | | | **James Fisher Defence** |
| 12:00 | Lunch with **Rolls Royce** | Lunch at KTH | | |
| 12:30 | | | Lunch with **Swedish Steel Yachts** | |
| 13:00 | | **Wallenius** | | |
| 13:15 | | | | Ferry to Vaxholm |
| 13:30 | | | **Swedish Steel Yachts** | Departure Vaxholm Chairman's Lunch at Waxholm |
| 13:45 | | **DNV-GL** | | Lunch at bus |
| 14:00 | | | | Arrival af Chapman |
| 14:15 | | | | Prepare for banquet |
| 14:45 | | | | |
| 15:00 | Departure Kristinehamn | **DOLPROP** Workshop | **AGA** | |
| 15:30 | | | **Alderholmens mekaniska** | |
| 16:00 | | | **Marine Jet Power** | |
| 16:30 | | | **Inresol** | |
| 17:00 | | | **Clockwork** | Departure af Chapman |
| 17:30 | | | Dinner with **Swedish Steel Yachts** | Ferry to Banquet |
| 18:00 | Arrival KTH | Dinner at TC w. **Anecdote telling** | | **BANQUET** |
| 18:15 | Dinner at TC with **DOLPROP** | | | |
| 20:30 | | | Departure Gävle | |
| 22:45 | | | Meet the old-timers | |
| LATE | **Sleep at Lodge32** | **Sleep at Lodge32** | **Sleep at Lodge32** | **Sleep at af Chapman** |

69th Congress
Stockholm, Sweeden

**Tuesday 12. April**

Early in the morning we met up with the all of the congress members in Stockholm. After a pleasant bus ride getting to know the rest of the participants, we arrived at the Rolls-Royce site in Kristinehamn.

Starting out with a company presentation from Göran Grunditz, we learned about Rolls-Royce in general, markets, their production and research of propultion in Kristinehamn, and how Kristinehamn has been central in the industry for many years. After the presentation we all enjoyed the tour in the assembly halls where we could see the different parts and components making up propellers of both controllable and fixed pitch, in addition to water jets systems. We were able to see how the large rough metal pieces arriving at the production site were grinded, worked, controlled and transformed into shiny blades of correct dimensions, custom fitted to each vessel. Then they were assembled with the hub and axle, ready to be transported out to the customers worldwide.

After lunch we were shipped by bus to the research facility at Höje. We were given a tour of the site, and saw their two huge cavitation tunnels in action. Learning about cavitation and challenges related to designing propellers, and how Rolls-Royce tested their designs in model scale.

Back in Stockholm for the evening, we had dinner at the cool student bar at KTH, decorated with boats, planes and trucks. Dolprop gave a short presentation of their idea of how to revolutionize propulsion systems based on fins inspired by dolphins and their ability to effortlessly gain high speeds. Not all of the audience were convinced this would be able to replace conventional propellers in the future, but most people were definitely intrigued by the idea!

**Wednesday 13. April**

This day the company presentations were given at KTH, The Royal Technical School, in Stockholm. First, we got a short tour of the campus, before the first presentation started. The first presentation of the day was held by FMV – Swedish Defence Material Administration. They introduced us to their docking systems of AUV and ROV, their A26 project and submarine focusing on the different platforms.

Stockholm truly showed us its best side with sun and we could enjoy our lunch outside. The second presentation, about Wallenius Shipping, introduced us to the company and their car carriers and their focus on sustainable shipping.

A presentation of DNV GL was the third and last presentation of the day. Here, we were shown a good illustration of where the offices, manufacturers, suppliers, and sales and service where located in Sweden, to better understand the relationships between them.

After enjoying some cakes and coffee, we were ready for a workshop together with Dolprop. The workshop was divided in two parts. The first part included a presentation held by each delegation, presenting the study at each home university. For the second part of the workshop, we were divided into groups. Different problems, regarding for instance a SWOT analysis of Dolprop's fins, were distributed to the groups. This was a fun and educational workshop.

On this evening we had what we call the Anecdote evening, meaning that each of the participating delegations have prepared something to show for the other delegations. Our topic for the evening was to discuss whether Finland should have the mountain Halti as an anniversary present from Norway. The Anecdote evenings is always a success with a lot of laughter.

69th Congress
Stockholm, Sweeden

69th Congress
Stockholm, Sweeden

# The Master of Science in Marine Technology 2-year Study programme

NTNU – Tronc
Norwegian University of Science and Technology

**We are looking for people who want to challenge the ocean to improve human life.**
Through all times, the ocean has challenged human beings. In the ocean we find the resources that have made Norway's maritime industries grow fast. By using knowledge from marine technology, your imagination, creativity and sense of adventure, you can take part in this exploration. Those who want to join us have many exciting tasks and challenges ahead. Science always has an opening for new and better solutions to existing problems.

## WHY CHOOSE MARINE TECHNOLOGY?

Do you want to challenge the ocean to improve the life of the world's population? The Marine Technology study at NTNU is your choice. We wish you welcome on board. The Marine Technology Centre (MTS) at NTNU in Trondheim is the largest research and educational centre of the marine industry in the western part of the world. Students are participating actively in international marine research projects. If you are thinking globally, are willing to push boundaries by using your imagination, creativity and environmental awareness, and appreciate working with people from different countries, the marine industry wants you.

## CAREER PROSPECTS

The marine industry is characterised by varied tasks, high activity and large investments. The need for skilled people is great. Most of our students have received a work position before they graduate. A majority of new employees complete an internal training programme and several are employed as trainees. As a trainee you will be working while you are being trained. Contracts usually last for up to 3 years and include a longer stay abroad (Brazil, China, the Persian Gulf, the USA etc.).

## FEEDING THE WORLD'S POPULATION

Norway is the second largest exporter of seafood, thanks to the wild catch resources and growing aquaculture production in the sea that surrounds us. These marine resources are among the richest in the world. The seafood production is based on renewable resources and it will make a breadbasket for the world's population for perpetuity.

## UNIQUE LABORATORY FACILITIES

The NTNU Department of Marine Technology is located together with the research environment MARINTEK, which is well reputed internationally. The NTNU has huge marine laboratories that are made available to the PhD and master level students at the Department of Marine Technology. These laboratories are the Towing Tanks I and II, Student Towing Tank, Ocean Basin, Cavitation Tunnel, Circulating Water Tunnel, Marine Structures, Marine Cybernetics, Hydrodynamics and Machinery Laboratories.

## STUDENT ENVIRONMENT

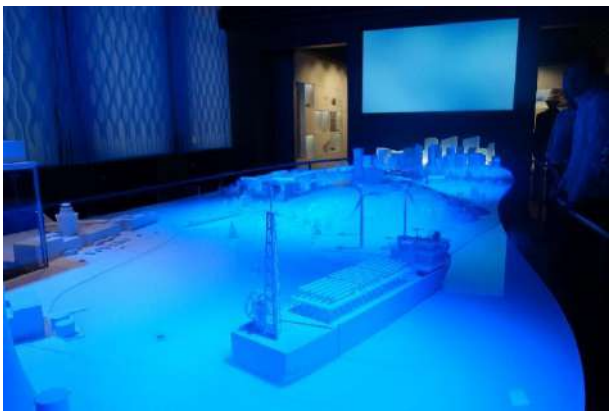
The NTNU Department of Marine Technology is known for its fantastic student environment. The fact that marine students have their own campus at Tyholt is probably one of the reasons why strong ties are made between the students at the marine technology study programme. The Marine Technology Centre (MTS) has its own library with marine technical literature available. In addition, students have their own computer labs, study rooms and seminar rooms. For the last year of the study programme, students are given student offices at the

Centre. The student association "MANNHULLET" is run by the stud
offers great friends and great fun. It also organises meetings with representatives from the marine industry, so-called business presentations.

Read more about the study programme at: http://www.ntnu.no/studies/msn1/

**Thursday 14. April**

The day started with an early bus trip to Sandviken. We started the day by a company presentation by Sandvik AB. We learnt a lot about stainless duplex steel through multiple lectures. Topics were ranging from applications of duplex steel to welding theory of duplex steel. Between the lectures we had a really nice lunch in the Sandvik cafeteria.



After the lectures we had a short bus trip to Gävle. Here we met with Swedish Steel Yachts (SSY). SSY is an entrepreneur who makes yachts in hyper duplex stainless steel. This have many benefits including lower steel weight and no need for painting due to no corrosion even in sea water. After a short presentation we got to see their impressive prototype.

The program ended with short presentations given by SSY partners and other local firms. AGA presented their company and products, and linked them to the productions of duplex steel and manufacturing of steel plates. Alderhomens mekaniska presented how they used lasers to cut plates for SSY, and some other products and customers. MJP held a presentation on how waterjets work and their products and benefits. Inresol presented a stirling engine, and possible use cases where stirling engine were beneficial. They also brought physical engine which we were allowed to inspect. The last presentation of the day was given by Clockwork. They are a recruitment company, and they told us about the opportunities in “södra Norrland”, but also gave us general career tips.


The day ended by a dinner at SSY together with the companies which held presentations. After a nice dinner it was another bus trip back to Stockholm to meet the old-timers.

**Friday 15. April**

Friday had a shorter program than the rest of the week due to the banquet. The day started as usual with a bus trip to Vaxholm. From Vaxholm we took a ferry to Rindö where we met James Fischer Defence (JFD). They gave us a presentation on the company's history and their products. JFD is a large company with focus on delivering equipment and services to military submarines.

On Rindö they designed and manufactured transport devices for naval special forces. We were shown the SEAL Carrier which is a hybrid high speed surface boat, which can swich mode to semi-submergible and submergible. The craft is propelled by a water jet in surface mode, and electrical thrusters when submerged.

JFD gave us a live demonstration of both surface mode and semi-submerged mode. Afterwards we were allowed on board and given a short demonstration on how to operate the craft.

In the evening there was the traditional banquet. The banquet was held at AQUARIA Vattenmuseum. This was a nice scenery for the last night. Participants, old-timers and company representatives enjoyed an evening filled with good food and drinks.

# Presentation of Mannhullet

**Mannhullet**

Est. 1917

The Norwegian Delegation represents Mannhullet, the student association at the Department of Marine Technology at the Norwegian University of Science and Technology (NTNU) in Trondheim.

Mannhullet is a very central part of the student lives of those seeking marine engineering for the future. Leisure time can be spent on the sailing boat Steinbiten III or the motorboat Havfruen IV. These boats also give the students experience with the sea – an element that every marine engineer must master.

Social gatherings, such as quizzes, company presentations, sports on TV and those crazy parties only marine students know how to make are situated in Mannhullet's "basement"; Skipslogen. Every year

there are festivals such as Tyholt Rock Festival, the Regatta or RUKA, and the cabaret of Mannhullets Interne Teater (MiT), which are highlights of the semester.

However, beer contains calories, and for those who want to burn it away Mannhullet has a gym at Tyholt Campus called “Kraftgangen”. The sporty students of Mannhullet have access to a range of wildlife equipment, and annual trips to the woods and the mountains have become a tradition. Recently Mannhullet also started an own football club, FK Marin. The supporter club, Bulben, contributes to a good environment at the football matches.

There are constantly things going on in Mannhullet, and the choir Tåkeluren (The Fog Horn) makes every gathering unpredictable. Luckily, the marine students have the newspaper Marina to keep track of it all – especially the gossip.

**Mannhullet consists of the following subgroups:**

## Coma

This group is responsible for trips to the great outdoors. They arrange cabin trips and hiking trips to keep the marine technology students active.

## Skipslogen

Almost all engineering student unions in Trondheim have their own bar, but ours is indisputably the largest and the best. Skipslogen just celebrated its 30th anniversary.

## MIT – Mannhullets Interne Teater (Mannhullet's Internal Theatre)

One show every year, always sold out and always a huge success! The members of the Mannhullet board are always part of the jokes...

# MARINTEK

## Tåkeluren

Our own maritime choir; highly energetic, not choreographed, nor talented, but extremely charming. They managed some years ago to be thrown out of a choir festival, so now they participate in band camps instead.

## Marina

The newspaper for the students, by the students. Gossip and rumors true or untrue, it is all in there. If your name is in there, it is never a good thing.


## The Motorboat Committee

Havfruen IV is our own motorboat. It is used for maritime activities such as waterskiing, diving, fishing, swimming and tanning (when the weather in Trondheim allows for it).

## The Sailboat Committee

Yes, we have our own sailboat, Steinbiten III. It is a Hanse 370, new in 2006, and we are very proud of her!

## Bedriftskontakt (The industry contact)

Bedriftskontakt arranges company presentations where companies present themselves for the marine technology students. They are also active in advertising summer internship, and every now and then Bedriftskontakt takes us on excursions.

## FK Marin

We are proud to have our own football club. FK Marin competes against other student teams, and if they do not always win, they still have support from the best fan club ever; Bulben (the Bulbous Bow).

# Statutes of the NTHS

**Regulations of NTHS as approved by the board of the 66th NTHS congress hosted by Nul-Kryds, Denmark in 2013**

§1. The name of the association is "NORDENS TEKNISKA HÖGSKOLORS SKEPPSBYGGARE".

§2. The members of the association are composed of students from the following universities:

- Danmarks Tekniske Universitet (DTU), Copenhagen
- Chalmers Tekniska Högskola (CTH), Gothenburg
- Kungliga Tekniska Högskolan (KTH), Stockholm
- Norges Tekniske Naturvitenskaplige Universitet (NTNU), Trondheim
- Helsinki University of Technology (HUT), Helsinki

§3. The purpose of the association is to improve the contacts between the members and to act as a provider of knowledge in ship building in the Nordic countries.

§4. The board of the association consists of 10 members. Two from each delegation, chosen by student unions.

§5. The congress

- Every year a congress is to be arranged in one of the four Nordic countries. Each university hosts the congress every fifth year.
- Each university is allowed a delegation of ten participants. The host university may allow more participants if desired.
- The congress must comprise of:
  - Presentations followed by discussion and excursions to laboratories, shipyards and other industrial enterprises.
  - A board meeting with the board and the next Chairmen from each university. The following issues will be on the agenda:
    - Election of the president for the following year
    - Determination of time and place for the next congress
    - Probable changes in the rules
- Invitations must be sent no later than two months prior to the congress. A preliminary schedule should be attached.

§6. The official language of the congress is English.

§7. A member fee cannot be demanded. To cover costs for the congress it is however possible to collect a participant fee. The association may not take on economic responsibility.

§8. When electing a new Chairman at one of the universities the other universities should be informed as soon as possible. The latter also applies for changes in names, addresses and/or telephone numbers.

# A note from next year's President

69th Congress
Stockholm, Sweeden

The 69th NTHS in Stockholm is now over, and I want to thank the delegation from Det Kungliga Skeppssällskapet for an interesting and exciting week. NTHS is a proud tradition where we gain knowledge of the maritime industry, as well as establishes relations with new friends and companies within the Nordic countries. As we have seen in this report, the congress in Stockholm was a success and ten of Mannhullet's finest made sure that Norway was represented in the best way possible.

I want to thank all of our partners for your support this year, and we are looking forward to further cooperation's with you. Next year is the 70th year anniversary of NTHS, and we will have the honour to invite the delegations from Sweden, Denmark and Finland to Norway. We cannot wait to show them our proud maritime industry. Inputs from the companies and people from the industry is very helpful and valuable, and we invite you to give us suggestions and ideas so we are able to create the best programme possible for the anniversary.

The next year's delegation will be complete in the next couple of weeks. I am excited to see who will be joining Julie, Sondre, Peter, Johanne, Anders and myself for the organising and fun during the next year to come.

Best Regards,

**Andrea Aarseth Langli**

President, NTHS 2017

Please visit us at our web pages:
*Official*
http://nths.se/
*The Norwegian Delegation* http://mannhullet.no/nths/