Newsletter March 2020

Dear participants of CoolFish,

We hope you all are well. At SINTEF and NTNU we are staying away from each other, all working in our home offices. This makes things a bit different, but we try to maintain the work as normal as possible. In this newsletter, we will sum up activities that has been conducted and which we are working on.

Work package 1 (Energy Efficiency)

Last news from work package (WP) 1 is that we support the planning to help MMC First process to assemble and operate their CO_2 system.

NTNU is setting up a dynamic simulation model, which will enable us to examine different alternatives for a CO_2-system to be integrated in future fishing vessels. Integration of low temperature cold storage will be an option.

The start-up of the post doc takes longer time in these corona times, but we hope he will be able to come to Norway after Easter. His name is Engin Soylemez and he is from Turkey.

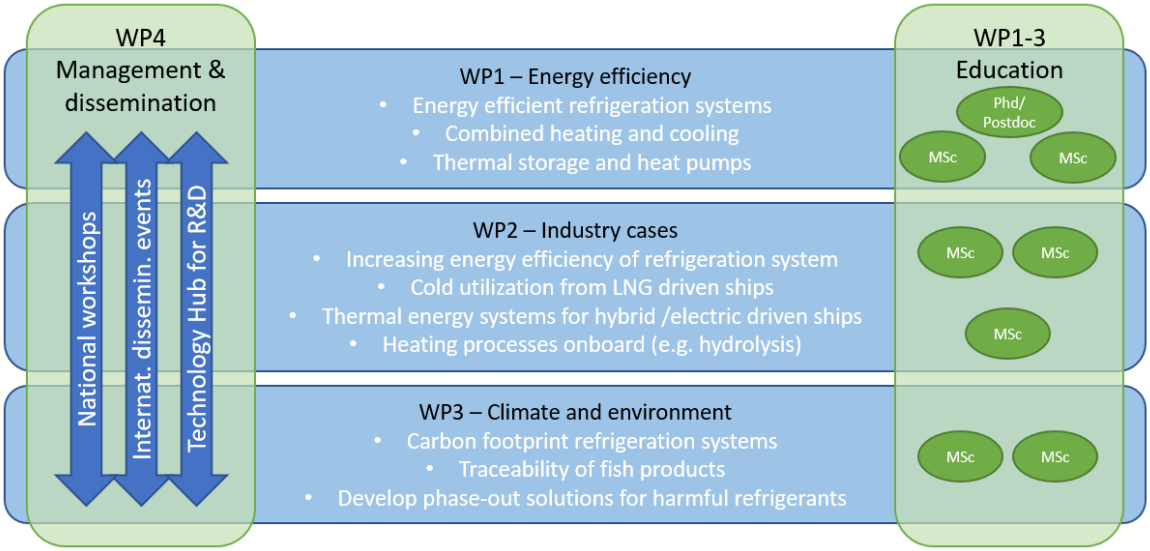
Zahid's master thesis "Energy efficient integrated thermal systems for fishing vessels" is well underway. Main objective of the thesis is to model thermal systems producing hot and cold thermal energy to consumers such as plate freezers, chilling tanks, fish oil production equipment (hydrolysis process), storing of cold thermal energy and utilization of "free" cold thermal energy from LNG. A case is formed with basis in a freezer trawler. So far base models of the different sub-systems have been developed, and now remains the task of coupling the systems together to an integrated overall solution. Besides the thesis itself, a scientific paper will be written and submitted to the Gustav Lorentzen 2020 conference which will take place in Kyoto in December.

Work package 2 (Industry cases)

We started the year with skype meetings with some of the partners, to increase understanding of what they find important to focus on now. The plan was to follow this up with discussions during the workshop, but since that was postponed, we will seek other solutions.

At the workshop last year, it was discussed if we should change the contents of the cases in WP2. We have decided to keep the original plan, but more details on this work will be communicated.

Here is a short overview of the project, with the cases briefly described:



Work package 3 (Climate and environment)

We are currently writing three state-of-the-art reports aiming to describe the status quo of propulsion systems and refrigeration systems, as well as methods for calculation of carbon footprint. The reports should form a basis for further work within the project.

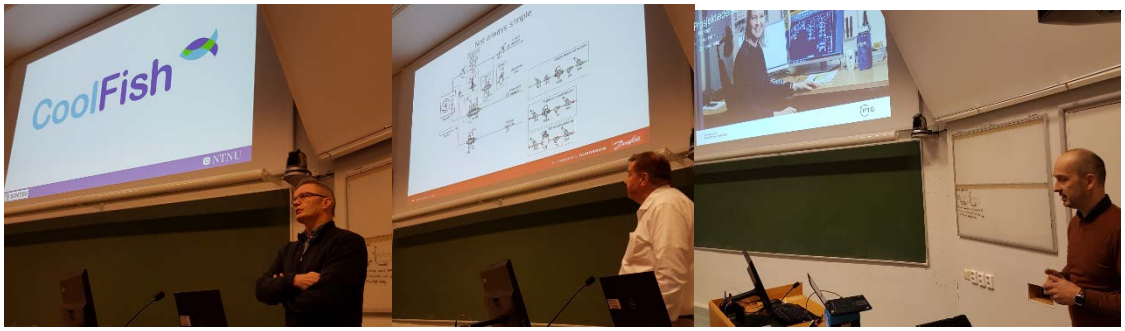
Propulsion systems and alternative fuels: This report will present an overview of new and upcoming propulsion systems and fuels which are set to replace the conventional diesel engines. Focus will be centred around Norwegian, new-built and commissioned fishing vessels. Different operational modes in relation to hybrid propulsion / power supply are also described, since these implies changes for the thermal energy systems onboard, such as reduced access to surplus heat. Furthermore, some examples from the international fishing fleet and future scenarios for the uptake of alternative fuels are presented. The report is due in April.

Calculation of carbon footprint: This report will present an overview of different calculation methods, tools, standards and certification programs available for estimating the carbon footprint for seafood in general and specifically for fishing vessels and refrigeration systems. Included in the report are results from former related projects, and it will also address current discussions revolving calculation methods of carbon footprint. The report is due in April.

Refrigeration systems and refrigerants: This report will present an overview of different types of refrigeration systems and refrigerants, which are used onboard fishing vessels in Norway and globally. The report is currently under progress, but a large share of the required data acquisition will be finalized through a student assignment (summer work and prolonged as a student project work this autumn).

Work package 4 (Management and dissemination)

NTNU, SINTEF, Danfoss og PTG had a meeting on Feb. 27 in Tromsø to discuss possible areas for cooperation within CoolFish. We also had presentations at the University about CoolFish and possibilities within refrigeration sector. The goal was to inform bachelor student within processing and automation about career possibilities within refrigeration sector. We hope some of them find their way to partners of CoolFish when they have finished their 3-year bachelor program.



Photos from presentation at the University of Tromsø, 27.2.2020 Photos: A. Hafner, NTNU

The plan was to have a workshop on March 23 with Norwegian industry partners. Due to the Corona situation, it was cancelled, but we will rearrange it when possible. We had also planned to attend a conference (International conference on sustainability and the cold chain) in April, but this has been postponed and will take place after the summer. At this conference, we will present research related to CoolFish and organize a workshop for the scientific community. We have also sent 3 abstracts to the Gustav Lorentzen conference, which will be held in Japan in December. We are also planning to send articles to trade journals in Norway and to participate in Nor-Fishing (a fair in Trondheim in August for the fishing industry).

This is a list of the partners in the project:

Management group

- Sintef Ocean
- NTNU
- Sintef Energi

Industrial reference group

- MMC First Process
- Ulmatec Pyro
- Selvåg Senior/Sørheim Holding
- Gasnor
- Øyangen
- Perfect temperature group
- Danfoss
- Isotherm Inc. (USA)

Scientific reference group

- International Institute of Refrigeration
- London South Bank University
- Johnson Controls Denmark