



PROSJEKT/MASTER OPPGAVE

Fag: Fysikk/**Teknisk fysikk/Sivilingeniørutdanning**

Oppgavens tittel (norsk): Videreutvikling av avanserte Er- og Tm- Fiber Laser for posisjonering og fjernmåling; test av prototyp system med øyesikker 1550 nm Er+ Fiber laser teknologi.

Oppgavens tittel (engelsk): Further development of advanced Er- and Tm- fiber lasers for positioning and remote sensing applications; test of prototype system with an eyesafe 1550 nm Er+ Fiber laser technology.

Oppgavens tekst:

Kongsberg Seatex manufactures an optical positioning/DP system named SpotTrack®. The 905 nm laser diodes used in the system are limited in output power. If we want to keep the system absolutely eyesafe and at the same time increase the output power and ranging distance, we need to change the wavelength to above 1400 nm and adjust it to the transmission window of the atmosphere. The goal is to make the laser “see” at long distances (2-5 km) in a normal clear atmosphere as well as in rain and fog, increasing the present range capability by a few times.

A laboratory prototype has been built. The further adjustment of laser parameters (wavelength, pulse characteristics, power) to achieve desirable performance will lead to a novel compact ready for testing fiber laser. The testing will be carried out in the Pir 1 and 2 area overlooked by the Kongsberg Seatex premises at Brattøra.

The task is to:

- To make analysis, leading to the optimum physical/optical laser parameters to achieve the desirable performance, and realize it experimentally at the Laser Lab at NTNU.
- Carry out field tests at Kongsberg
- Summarize and conclude with respect to a set of achieved technical performance.

Oppgaven gitt:

Besvarelsen leveres innen:

Utført ved Inst. For Fysikk

Veileder: Irina T. Sorokina (Inst. F. Fysikk) & John O. Klepvik (Kongsberg)

Kontaktinformasjon: Irina.Sorokina@ntnu.no, tel. 91897909