

Summary

This report describes the research assignment which focuses on the applicability of RFID in dredge pipes. The Main research Question is: Is RFID-technology applicable for active wear measurements of dredge pipes?

A series of experiments was conducted to examine the RFID performance in a simulated dredging environment. The main problems in this environment are the steel flanges of the pipes and the seawater. The experiments showed that RFID-tags can not communicate through the steel flanges. The experiments also showed that the RFID-tags have great difficulty with salt water. The reading distance in salt water was reduced to six centimeter.

Therefore it is technologically possible to use RFID in dredge pipes, if and only if the tags are placed above the water in a straight line of sight. However, to use RFID for active wear measurement of the pipe, there is a huge downside. The tags equipped with the sensors that are most significant, at the bottom of the pipe, need to transmit through salt water. Since the experiments have shown that this is currently impossible, this data can not reach the ship. A way around this problem is to wire all the sensors to all the tags. In this way the data reaches a tag above the water, which is capable of transmitting this data to the ship. This kind of beats the purpose of RFID. Therefore RFID is currently inapplicable for active wear measurements of dredge pipes.