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Author: Mr. Aris Golemis
Luleå University of Technology, Sweden, aris.golemis@ltu.se

Mr. Cristóbal Nieto Peroy
Luleå University of Technology, Sweden, chris.nieto@ltu.se
Mr. Edvin Lindkvist
Luleå University of Technology, Sweden, edvinlindkvist98@gmail.com
Mr. Jimmy Gustavsson
Luleå University of Technology, Sweden, jimmy.gustavsson91@gmail.com
Mr. Olle Persson
Luleå University of Technology, Sweden, olle.persson@ltu.se
Dr. Olle Norberg
Luleå University of Technology, Sweden, olle.norberg@ltu.se
Prof. Rene Laufer
Luleå University of Technology, Sweden, rene.laufer@ltu.se
Dr. Heidi Kuusniemi
Finland, heidi.kuusniemi@uwasa.fi
Mr. Antti Kinnunen
Finland, antti.kinnunen@uwasa.fi
Mr. Kendall Rutledge
University of Vaasa, Finland, kendall.rutledge@uwasa.fi
Mr. Antti Nasila
VTT Technical Research Centre of Finland, Finland, anorin@gmail.com

KVARKENSAT: MISSION CONCEPT AND TECHNICAL OVERVIEW OF A 2U SWEDISH - FINNISH CUBESAT

Abstract

Kvarken Space Eco is a project conducted by a consortium of Finnish and Swedish academic institutions aiming to enhance the economic activities of the Kvarken region shared by the two countries, by improving the regional competence in space technology. In this framework, the consortium is developing a first 2U CubeSat, namely KvarkenSat, with the goal of exhibiting the regional capabilities in satellite development via performing science and in-orbit demonstration of Finnish payloads. Since the main areas of interest are forestry and sea transportation, the CubeSat will integrate a multi-spectral camera for forest health and seawater quality analysis and an AIS receiver for sea vessel tracking. In addition, the spacecraft will perform the in-orbit demonstration of a miniature water-based resistojet thruster system. KvarkenSat's last payload will comprise a GNSS receiver that will extract raw data in order to conduct precise point positioning (PPP) algorithm research. This work is meant to present the mission concept, objectives and technical overview of the current design. The launch of KvarkenSat is planned for Q4 2022 from northern Sweden.