AutoMated Vessels and Supply Chain Optimisation for Sustainable Short SEa Shipping

D.5.1: Adaptation of Trelleborg's AutoMoor unit to MOSES Innovations

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List of Acronyms

Abbreviation / acronym	Description
D1.1	Deliverable number 1 belonging to WP 1
DCS	Data Collection System
DIP	Detailed Implementation Plan
DSS	Deep Sea Shipping
EC	European Commission
EU	European Union
GHG	Greenhouse gas
ICT	Information and Communications Technology
IMO	International Maritime Organization
Lo-Lo	Lift-on/lift-off ships
MOSES	AutoMated Vessels and Supply Chain Optimisation for Sustainable Short SEa Shipping
Med	Mediterranean
MoS	Motorways of Sea
Ro-Ro	Roll-on/roll-off ships
SCADA	Supervisory Control and Data Acquisition
SSS	Short Sea Shipping
UK	United Kingdom
UN	United Nations
WP	Work Package

Executive Summary

Ports and their associated operations are a critical element in the logistics of international trade. The challenges to shipping, port and transfer systems have been highlighted over the 2020-2021 period and expose the need to make overarching changes to how these systems are managed and interact with one another. The scope of the MOSES project directly looks at methods to develop and provide innovative solutions to these problems.

The scope of Automated Mooring Systems within MOSES addresses the critical interface between shipping, port and transfer operations as this is ripe for innovation as the complexity lends well to Automation compared to traditional human orientated approaches. Automated mooring systems can be separated into three key aspects:

- A machine for creating a connection between a vessel and the jetty,
- A control system that automates and monitors each machine,
- And a supervisory control system that can interact with other autonomous systems within the port to ensure a safe and efficient mooring operation

The goal of this deliverable is to provide information on the Automoor system, what's required to adapt it to the MOSES project (both in form factor and to interface at an autonomous level with other autonomous systems) and innovations around passive damping and some energy harvesting of vessel motion.

The outcome is analysis of mechanical/electrical/control systems, considering ways to minimize the scale whilst generating the forces needed to hold the vessel at fender line and ensure integration with other autonomous systems. Other areas for better outcomes are minimizing environmental impact, including energy consumption, embodied energy (i.e. well optimized devices), and simplification of existing systems to improve reliability and maximize the life of the equipment, as well as improve safety and efficiency of operation.