



FEATURES	
Client	ELY Centre for Southwest Finland
Project	Lillmälö and Prostvik ferry harbour project
Location	Parainen-Nauvo ferry berth, Finland
Period	April 2016 – May 2017
Contractor	Terramare Oy

SCOPE

Modification and improvement work at the two ferry harbours, facilitating the installation of energy-charging technology for the new hybrid vessel.

The contract included abutment renewals, construction of mooring points equipped with power and mooring equipment, transformer substations, raising of breakwaters, embankment cladding, harbour accessory installations, and harbour field surfacing work, such as asphaltting, barrier and railing installations, and light fittings.

A View of the worksite at Lillmälö and Prostvik ferry harbour. The photo shows casting work being carried out for the mooring point being built on a caisson foundation.

Terramare Oy
Laurinmäenkuja 3 A
PO Box 14, FI-00441 HELSINKI, FINLAND
P +358 9 613 621 | F +358 9 6136 2700
www.terramare.fi

QUANTITIES DREDGING	
Dredging, total	2,800 m ³
QUANTITIES TWO RENEWED ABUTMENTS	
Caissons 7 x 7 x 10 m each	2 pcs
Caissons 7 x 7 x 7 m each	2 pcs
Concrete structures, total	638 m ³
Reinforcement steel, total	45.5 tonnes
QUANTITIES TWO MOORING POINTS	
Concrete structures, total	950 m ³
Reinforcement steel, total	110 tonnes
QUANTITIES BREAKWATERS AND EMBANKMENTS	
Raising of two breakwaters, length	80 m & 120 m
Blasted rock filling, total	3,100 m ³
Two embankments cladding, length	60 m & 600 m
Blasted rock filling, total	8,000 m ³
MAIN PLANT	
Floating crane	Nosto-Pekka
Backhoe dredger	Kuokka-Pekka 5
Towable barges	Palko 1 & Palko 2
Work pontoons	Upi, Lossi ja Bolle III
Tug	Spark
Other plant, on land	Cranes and excavators

Parainen, Lillmälö



INTRODUCTION

Finland's first hybrid ferry operates on the ferry route between Parainen and Nauvo in the Turku archipelago. In a project for the ELY Centre for Southwest Finland, Terramare implemented the upgrading of the ferry berths at Lillmälö on the Parainen side and Prostvik on the Nauvo side. Terramare's contract

included, among other things, abutment renewals, construction of mooring points equipped with power and mooring equipment, transformer substations, raising of breakwaters, embankment cladding, harbour accessory installations, and harbour field surfacing work, such as asphaltting, barrier and railing installations, and light fittings.

The project began with dredging work. Preliminary work also included the castings of four caisson foundations for the mooring points to be constructed at the location. These castings took place at Turku's Pansio harbour. The caisson elements were transported to the locations by barge, after which they were installed in their designated positions to serve as foundations for the two mooring points. The mooring points are around 14 metres long on the ferry side and 7 metres wide.

The implementation of the mooring points included mooring plates installed on top of the superstructures for the charging towers and automooring equipment. The mooring point works included installations of fender plates, bollards and ladders as well as cables running to the mooring points and approximately 30 metres long maintenance walkways.

Alongside the mooring points, the ferry berth abutments were also renewed. The old structures were removed and replaced with new ones.

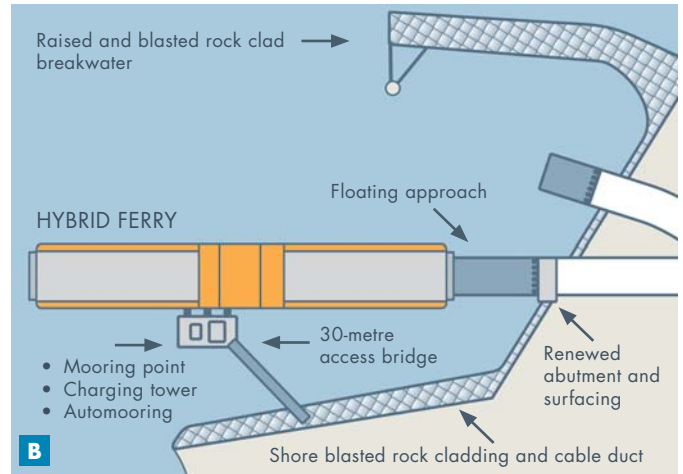
The abutment projects on the opposing shores differed from each other. On the Parainen side, the concrete slab of the abutment was cast on top of bored piles. On the Nauvo side, the abutment was cast and anchored directly into the bedrock. After the installation of the abutments, which are equipped with hinge brackets, the contract also included surface work and accessories, such as barriers, railings, lights, electrical fittings and control cabinets.

In the harbour area, the contract also included rock waste cladding of embankments and the raising of breakwaters. At the end of the contract, the harbour and vehicle traffic fields were asphalted and protected with roadway barriers.

Terramare began the contract in April 2016 and the work was completed by the end of May 2017. The site employed around 15 people.

Terramare Oy
Laurinmäenkuja 3 A
PO Box 14, FI-00441 HELSINKI, FINLAND
P +358 9 613 621 | F +358 9 6136 2700
www.terramare.fi

PARAINEN-NAUVO FERRY BERTH, FINLAND
FERRY HARBOUR PROJECT FOR THE HYBRID VESSEL



- B** Artist's impression of ferry harbour being renewed at Lillmälö, Parainen.
- C** The caissons intended as the mooring point foundations were cast at Turku's Pansio harbour.
- D** Pictured is a ready-cast mooring point.
- E** An abutment, ready except for surfacing work.