

Case Study: MV & HV Cable Terminations on an Offshore Wind Substation

1. Executive Summary

MGH was selected by Semco Maritime (the client), a world-renowned international engineering and contracting company in the Energy sector, to undertake a complex programme to complete the MV (66kV) and HV (235kV) cable termination services for a new offshore substation fabricated in Denmark.

The MGH team delivered safe, high-quality final terminations, including Pre / Post termination testing and associated documentation, supporting the timely delivery of the substation to Semco Maritime's end customer.



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2. Scope of Work

MGH provided supervision personnel and skilled operatives, qualified and competent to undertake MV and HV terminations, as outlined in the Scope of Works (SoW):

- Sheath testing of all cable sizes from 400mm² to 800mm²
- Heating and straightening preparation
- Cable Preparation and Installation of Pfisterer/Nexans termination kits and plugging-in
- Post Termination Testing
- Completion of QA packs, including imagery of all critical stages of testing & terminations
- Production of the final termination certificates
- Provision of support during Hi Potential & Soak Testing.

The terminations consisted of Pfisterer sizes 3A & 4 66kV, Pfisterer size 6S 235kV, and NEXANS R909PB/G & IM2545I 42mono 66kV, as detailed in the table below:

Rating	Brand	Size/type	Cable	Amount
235kV	Pfisterer	Size 6	630mm ²	36pcs
66kV	Pfisterer	Size 4	800mm ²	54pcs
66kV	Pfisterer	Size 4	630mm ²	36pcs
66kV	Pfisterer	Size 4	400mm ²	15pcs
66kV	Pfisterer	Size 3A	630mm ²	36pcs
66kV	Nexans	R909TB/G	400mm ²	11pcs
66kV	Nexans	R909PB/G	400mm ²	1pcs
66kV	Nexans	IM2545I 42mono	400mm ²	9pcs
Total Joints				198pcs

Table 1: Cable Jointing Ratings, Sizes and Quantities



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3. Delivering Value & Operational Excellence


Our experienced operatives, who follow MGH's strict approach to Safety, Quality and Excellence, successfully delivered all 198 terminations which passed Semco Maritime's third-party testing at first pass with no faults recorded.

Hi-potential (Hi-POT) testing was completed on the 162 MV terminations which confirmed a 100% pass rate with no failings or partial discharges recorded.

On the remaining 36 completed HV terminations, a 24-hour soak test was completed on the 3 individual power trains with no faults recorded.

These third-party major tests were pre-booked by Semco Maritime with a fixed date for the vessel load-out. This generated tight deadlines and no room for failings. MGH achieved both major test dates, completing all terminations in advance of the vessel load-out stage, demonstrating significant confidence in the quality and reliability of the work performed.






EHV Installation Serving Checks

VF-B n/a	VF-C n/a	VF-R n/a	VH n/a	VR n/a	VS n/a	VB n/a	VGE n/a	VL n/a	VI ✓	Shared Services n/a
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General										
Project description: TIL11										
Site address: Sesaco, A										
Job number:										
Equipment used: Megger MIT1525 (Serial no: 102378312) (Calibration expiry: 5/5/26) (Cert no: INLH116842)										
Precautions taken to prevent unauthorised access into the test areas: Personnel on both ends of the cable										

Measurements										
Apply A Voltage Of 10kV D.C For A Duration Period Of 60 Seconds Exactly. Onerous Results Must Be Reported To The Site Manager.										
Section #	Circuit ID	End Location 1	End Location 2	Ω After 60 Seconds	Date					
66-630	AFA11 WA001 WB01	Sesaco	MV GIS	33.0G	14/08/25					
66-630	AFA11 WA001 WB02	Sesaco	MV GIS	6.31G	14/08/25					
66-630	AFA11 WA001 WB03	Sesaco	MV GIS	22.1G	14/08/25					



							
EHV Record of Terminating							
Project Description: [REDACTED]			Client: SEMCO MARITIME				
Project Location: [REDACTED] DENMARK							
Jointing Sub-Contractor: MGH			Contract:				
Cable Description:			Type	Voltage	Cross section	Sheath	Manufacturer
Location: MV GIS 2			Termination Type: PHASE 4				
Phase Identification: L1, 2, 3			Cable I.D. Number: AFA11 WA001 - WB01 - 3				
Weather Conditions:			Scaffold Sheet:				
Quality Assurance Inspection			Red Ø	Yellow Ø	Blue Ø		
Serial # Stress cone:			2016580026	2016580026	2016580015		
Date started:							
Date completed:							
Declaration: I confirm that the work associated with this record has been carried out in a safe and efficient manner.							
Designation		Company Name		Print Name	Signed	Dated	
Technical Support Supervisor or Representative		MGH		[REDACTED]	[REDACTED]	13/9/25	
EHV Cable Fitter		MGH		[REDACTED]	[REDACTED]	13/9/25	
Customers Representative		SEMCO		[REDACTED]	[REDACTED]	14/9/25	

The project was completed safely, with zero LTI's, and to an exceptionally high quality, enabling the client to:

- Achieve 100% successful MV and HV test results, with PD readings well below OEM thresholds
- Reduce rework risk thanks to zero faults during testing

4. Customer Testimonial

Feedback from Semco Maritime following request to publicise MGH's involvement in this major project:

'We have been very pleased with the cooperation we have had with MGH throughout the whole project. Your team has delivered top quality in due time. We hope to have future cooperation opportunities'

*Maria Lindskov Alsø
Project Procurement Lead*

5. Lessons Learned / Best Practices

- High quality MGH supervision and multi-disciplinary interface coordination between MGH and Semco Maritime teams significantly reduced downtime/delays
- Pre-Mobilisation site visit / survey by supervision personnel is essential to assist in the planning of installation works and the identification of potential complexities and bottlenecks which could lead to unexpected delays.

