

A&M Offshore Power Cables

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Agenda



**PROBLEM
DEFINITION**



**RESEARCH
APPROACH**



**RESEARCH
FINDINGS**



**CONCLUSIONS AND
RECOMMENDATIONS**

Problem Definition



Times are changing



A&M Recycling – bringing value

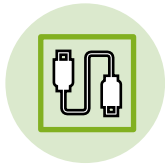


The need for a new business plan



The project

Research Approach



The Cable: 220kV direct current HVDC offshore power cable



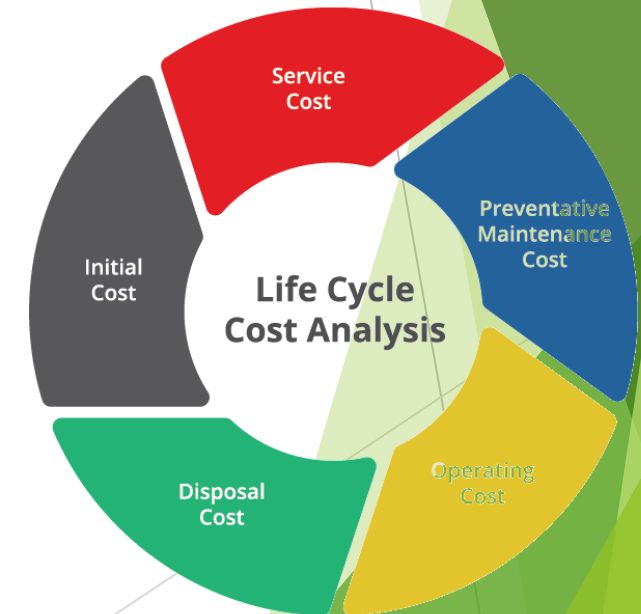
The Scope: End-of-life stage



The Frameworks: LCA and LCCA



The Goal: Analyzing the current situation and proposing an alternative, more circular, business plan.



Main findings

- ▶ 10R-model
- ▶ Not designed for second life
 - ▶ product is not modular
 - ▶ high residual value
- ▶ Findings LCA
- ▶ Findings LCC
- ▶ Possible repurposing options

Levels of circularity: 10 R's



Total value in 1 m of offshore powercable				
	price per kg	mass percentage	value	value percentage
Cu	€ 4,60	27,0%	€ 24,84	69%
Fe	€ 0,14	29,4%	€ 0,82	2%
AL	€ 0,60	10,0%	€ 1,20	3%
Plastic (XLPE)	€ 1,35	33,9%	€ 9,15	25%
total	-	100%	€ 36,02	100%

LCA offshore powercable 1m	
TOTAL CO2 Emissions in kgCO ₂ per 1m of cable	44,91 kgCO ₂
Total energy consumption per 1m of cable	0,60 MJ
total fuel consumption per 1m of cable	0,01212 L of diesel

Type of costs	cost for 1 meter of cable
Purchase costs	€ 18,00
Transport costs(inbound)	€ 0,07
Operational costs(unloading)	€ 0,01
Operational costs(cutting)	€ 0,04
Transport cost(outbound)	€ 0,16
Total	€ 18,28

Conclusions and recommendations

- Best option; recycling
 - Downside
- Repurposing option;
 - Industrial guard rail
- Value proposition A&M
 - Platform based model
 - In-house stripping cables – 2nd life plastic
 - Removing copper for recycling



Type of costs	cost for 1 meter of cable	Cost for guardrail
Purchase costs	€ 18,00	€ 18,00
Transport costs(inbound)	€ 0,07	€ 0,07
Operational costs	€ 0,01	€ 12,00
Operational costs(cutting)	€ 0,04	€ 0,04
Transport cost(outbound)	€ 0,16	€ 0,16
Total	€ 18,28	€ 30,27

option	selling price 1 meter
Recycle	€ 36,02
repurpose Guardrail	€ 35,11

Recommendations



Longer cables



**In-house stripping cables –
2nd life plastic**

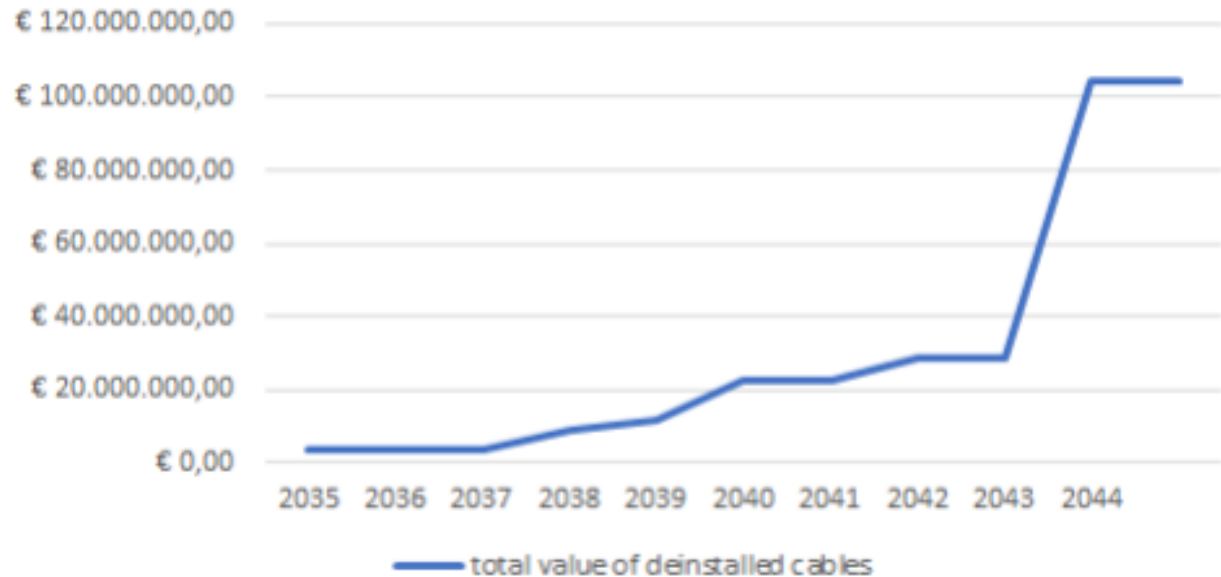
Recommendations



Further research

- Repurposing options
- technology

Min: total value of deinstalled cables





Q&A