Guidance on Shore Side Electricity

to Port Authorities and Administrations

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Ship Safety

EALING Workshop

25 February 2021

Information

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Objective

Support Port Authorities and Administrations with reference elements to assist Planning, Technical and Operational Decision-Making on Shore-Side Electricity

Structure

Part 1

A. Technology and Equipment

Part 2

A. SSE Options
B. Governance
C. Planning/ Technical Feasibility/ Power Demand Calculations
D. Operation
E. Safety
F. Competencies & Qualifications
G. Certification

Scope

What is included

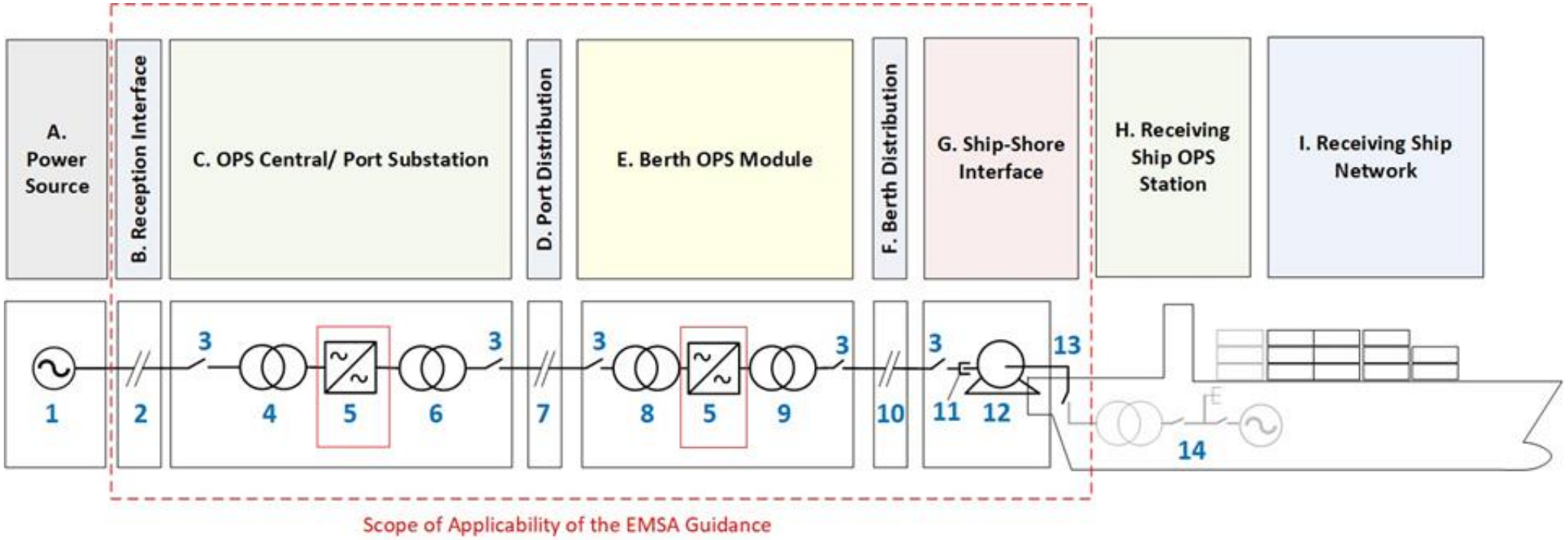
- Concepts and Technology
- Regulatory Framework + Standards
- Ship-specific aspects
- Feasibility
- Power Demand Calculations
- Compatibility Assessment guide
- Operation
- Risk Assessment, Safety & Emergency
- Accreditation
- Competencies & Qualification

What is not included

- Utility Grid aspects
- Cost/ Economic/ Finantial Valuation of Projects
- Environmental/Sustainability aspects
- System-specific details

GENERAL

Scope



1. Power Source
2. Reception interface
3. Circuit Breaker
4. Incoming step-down transformer
5. Frequency Converter (Depending on specific infrastructure arrangement)
6. Output Transformer
7. Port Distribution cabling
8. Transformer
9. Transformer (output/ galvanic isolation)
10. Bert Distribution cabling
11. Socket-Plug Connection
12. Cable reel/ Cable management system

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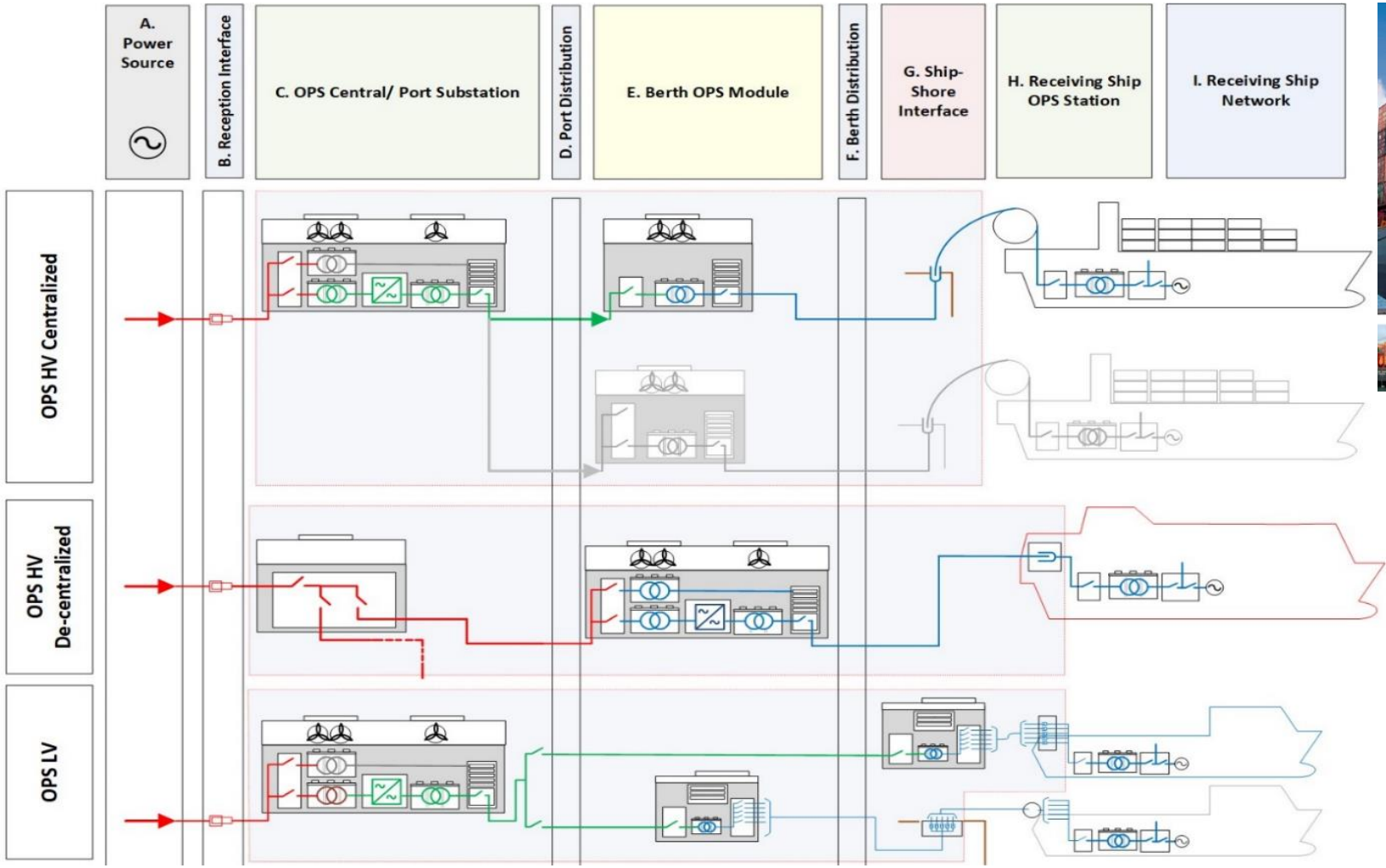
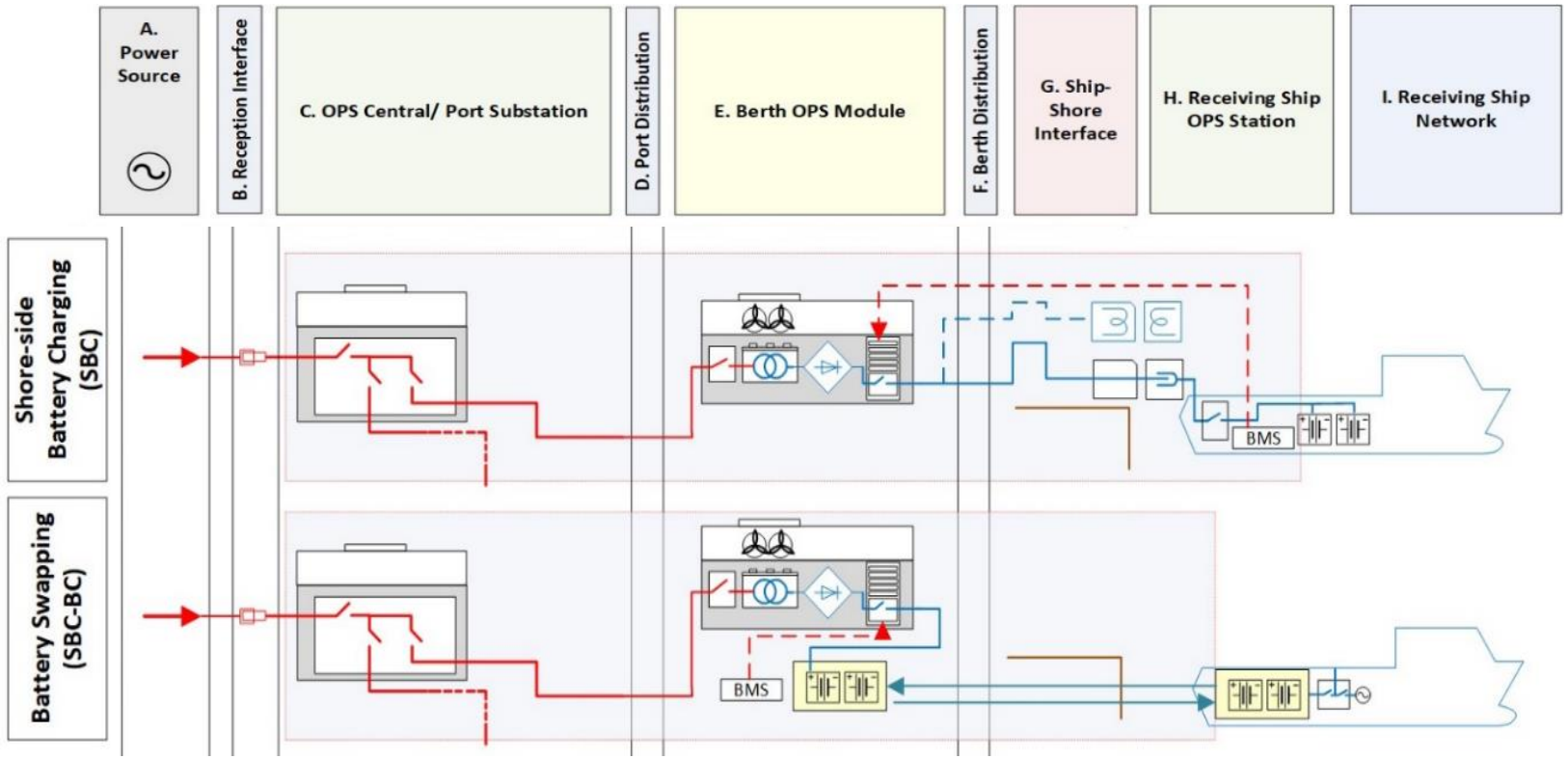
GENERAL | **Onshore Power Supply**

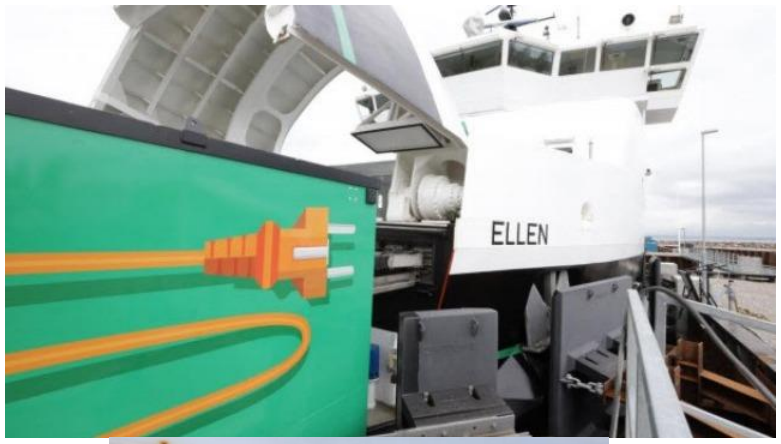


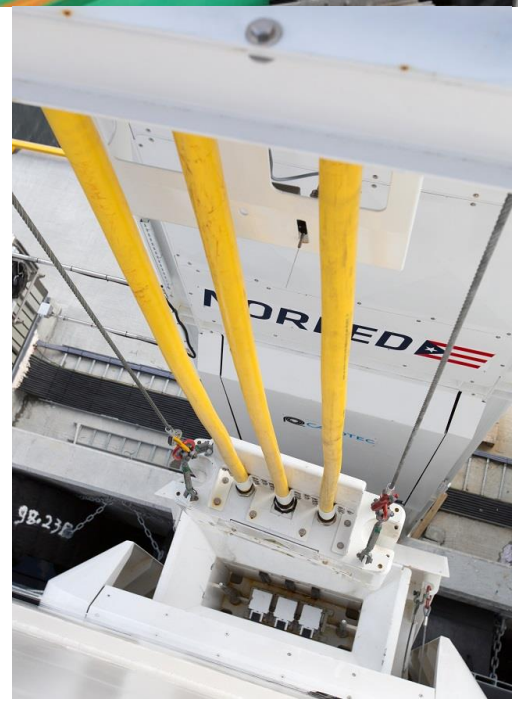
- High Voltage/ Low Voltage
- High Voltage intra-port distribution
- Frequency and Power Quality
- Centralized VS Decentralized OPS
- Compatibility
- Socket-Plug connection
- Operational aspects
- Cable management
- Best Practices
- Substation control

GENERAL

Shore Side Battery Charging







- Electric/ Hybrid Plug-in Ships
- DC and AC charging
- DC Power Charging – MW Charging

- Charging connection arrangements
- Mechanical VS Induction charging
- Battery management System connectivity.
- Ship-Shore Data Exchange

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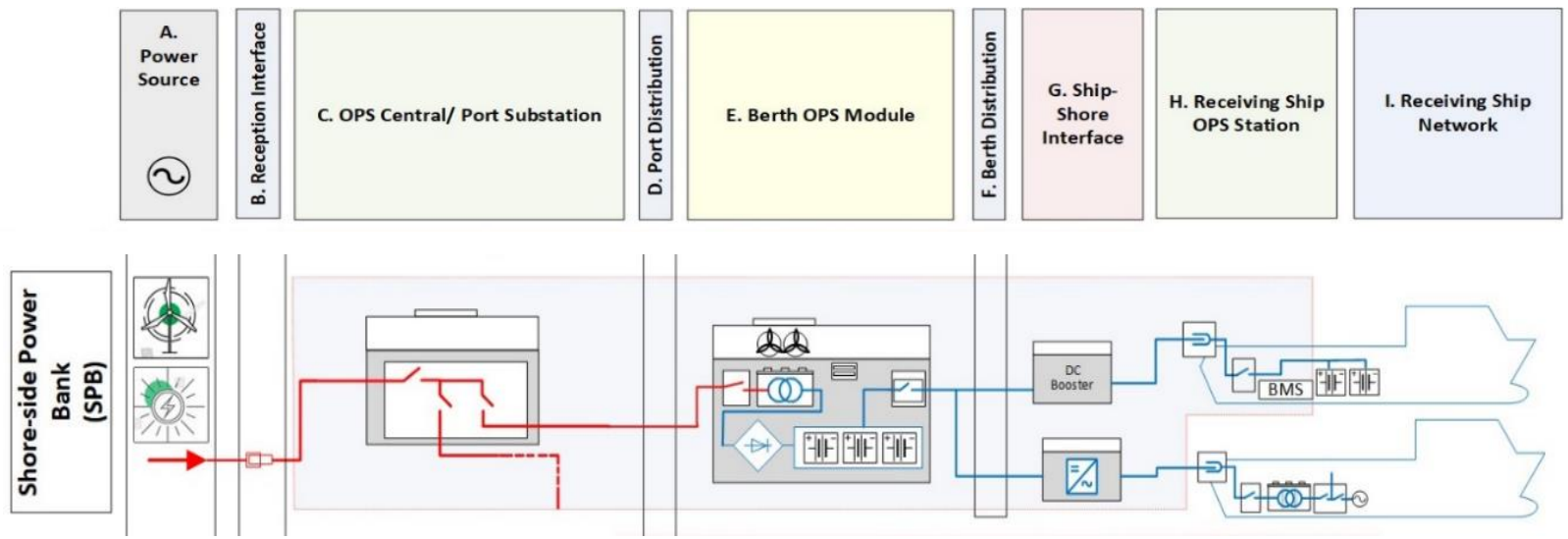
GENERAL

Shoreside Power Bank



- Renewable Microgeneration in port requires Energy Storage
- Production and Supply are out-of-phase
- Large infrastructure footprint – requires substantial Spatial Planning
- Substation level Inverter Station required for AC Supply
- Smart-Grid management possible (integrating the whole port area)

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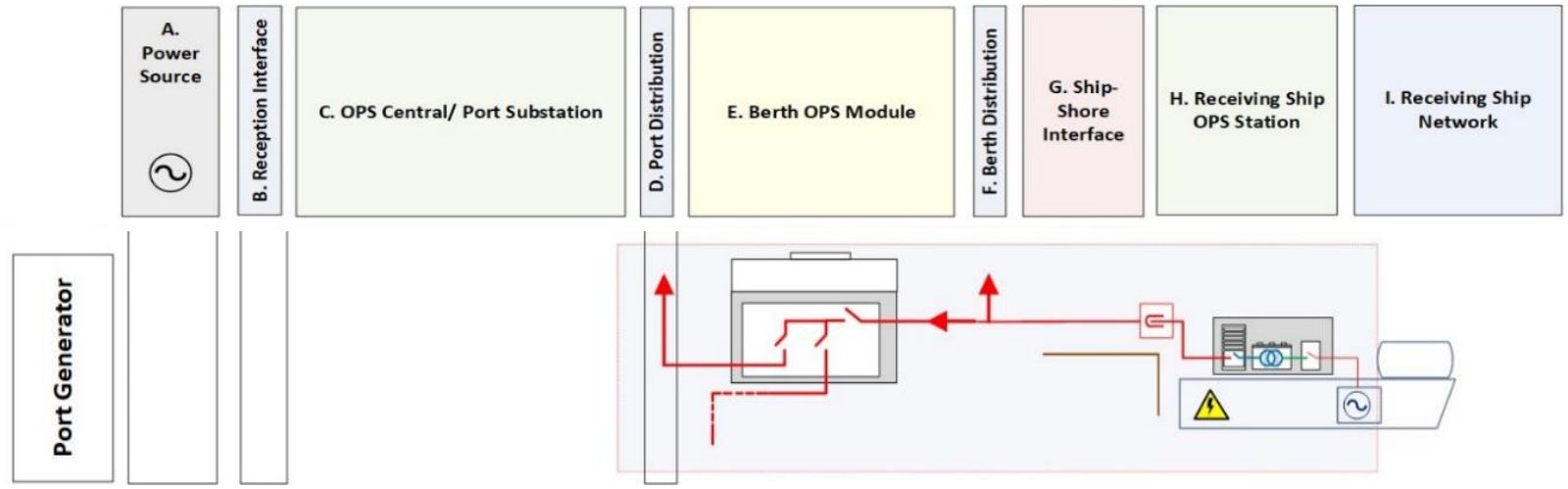
GENERAL | **Port Generator**



- Port Generators already in operation in different ports
- Floating or shore based infrastructure
- Not exactly SSE but importante Technology facilitator/option for ports with limited access to Electricity Grid.

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Governance

Interoperability/ Interconnectivity

SSE Mode		Interconnectivity	Interoperability	Data Communication	Enforcement framework
	HVSC	IEC 62613-2:2016	IEC/IEEE 80005-1	IEC/IEEE 80005-2	IMO OPS Guidelines EU AFID Comm not enforced
	LVSC	IEC 60309-5 – LVS	IEC/IEEE 80005-3	IEC/IEEE 80005-2	Not enforced
	LVSC - IW	EN 15869-2:2019 (up 125A) EN 16840: 2017 (above 250A)		Possible application of IEC/IEEE 80005-2	CCNR CESNI – ES-TRIN2019
	SBC-AC	IEC 60309-5/ IEC 62613-2 as OPS	IEC/IEEE 80005 series As OPS – blind charging	Possibility for future development for IEC/IEEE 80005-2 or ISO15118	Not enforced
	SBC-DC	Not standardized	Not standardized		Not enforce – No standard instrument

Governance

Interoperability/ Interconnectivity

SSE Mode		Interconnectivity	Interoperability	Data Communication	International/EU Regulatory
	HVSC	IEC 62613-2:2016	IEC/IEEE 80005-1	IEC/IEEE 80005-2	IMO OPS Guidelines EU AFID (Comm not enforced)
	LVSC	IEC 60309-5	IEC/IEEE 80005-3	IEC/IEEE 80005-2	Missing
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	SBC-DC	Not standardized	Not standardized		Missing

Work Ahead | **Plan for Finalization**

Development	Consultation	EMSA Workshop SSE	Finalization	Publication
2020/21	From next week until 16April	26 March	April	TBD

Interested to get more info?

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