

# Green solutions for ports

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# Schneider Electric at a glance

**24**

billion € sales

**41%**

of sales in new economies

**140 000+**

people in 100+ countries

**4-5%**

of sales devoted to R&D

The global specialist in  
Energy management

Making energy:

- Safe
- Reliable
- Efficient
- Productive
- Green

Covering

**72%**

of world final energy consumption

up to  
**30%**  
energy saving



Energy production  
& transmission



Energy usage

A Recognised  
Sustainable commitment



# Summary

Where does air emissions in port come from ?

What is the impact of air emissions in port?

Is electrification of port a solution ?

Why investing in shore connection technology ?

What are Schneider Electric shore connection offer & references ?

Why choosing Schneider Electric for port electrification project ?



# The problem

**Air pollution in ports**

# Ships: a major source of air pollution



A cruise vessel (12 MW) emits during 8 hours

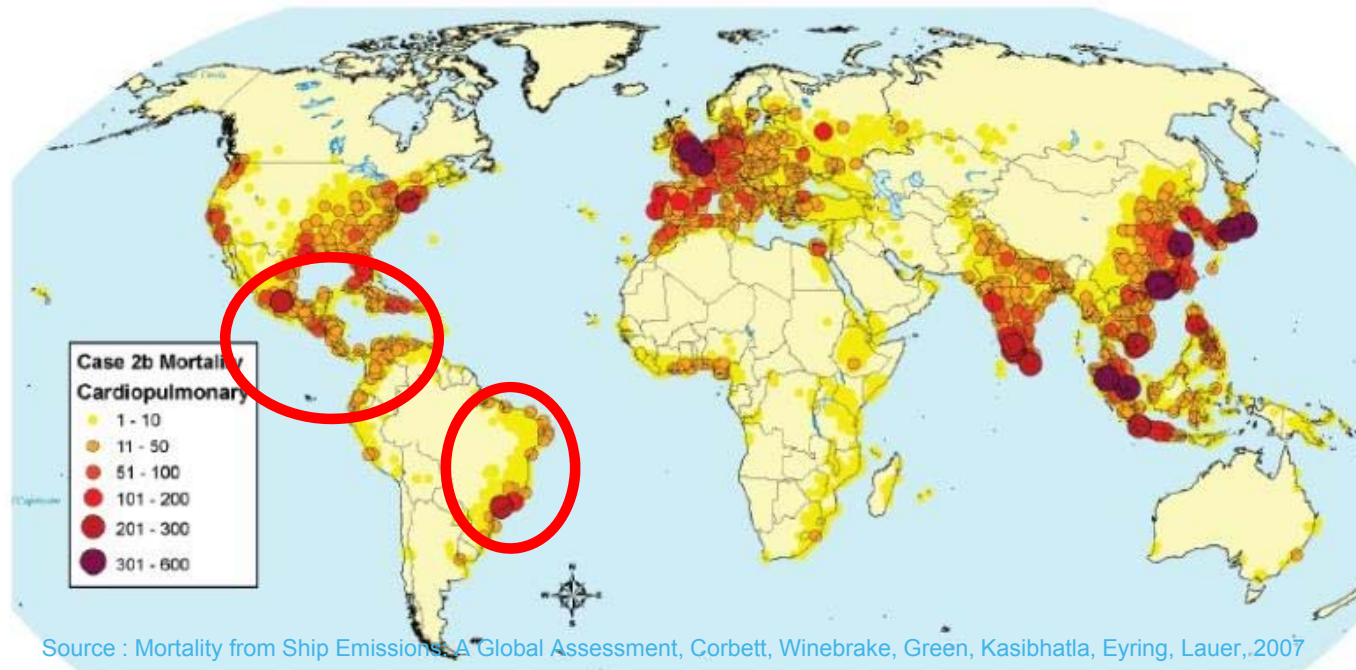


1.2 t NO <sub>x</sub>	equivalent to	10 000 cars
30 kg Particulate Matter	equivalent to	6 000 cars

in transit from Rio de Janeiro- to Brazilia

# Impact of air pollution in ports

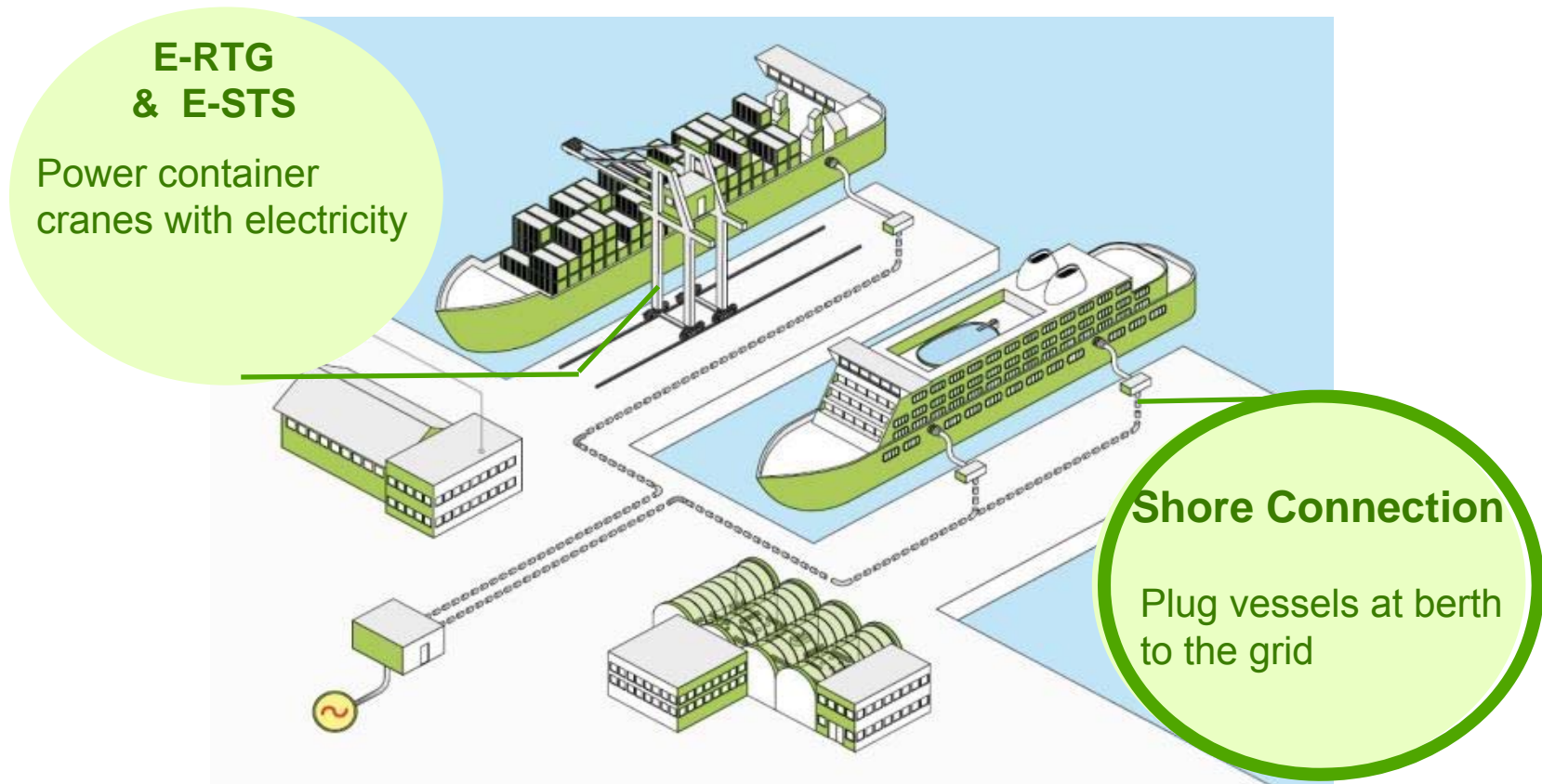
Shipping-related PM emissions are responsible for approximately 60,000 cardiopulmonary and lung cancer deaths annually worldwide in coastal zone



# The solution:

**Plug the ship into green power !**

# Major electrical consumers at port





# The benefits of shore connection

> Become a green port

O Nox, Sox, PM, CO2 emissions  
Noise  
Vibration



# The benefits of shore connection

> Help ships to comply with international regulation at lower costs



INTERNATIONAL  
MARITIME  
ORGANIZATION

## MARPOL 6 Regulation:

Regulation to limit air pollution from ships

In force since May 2005

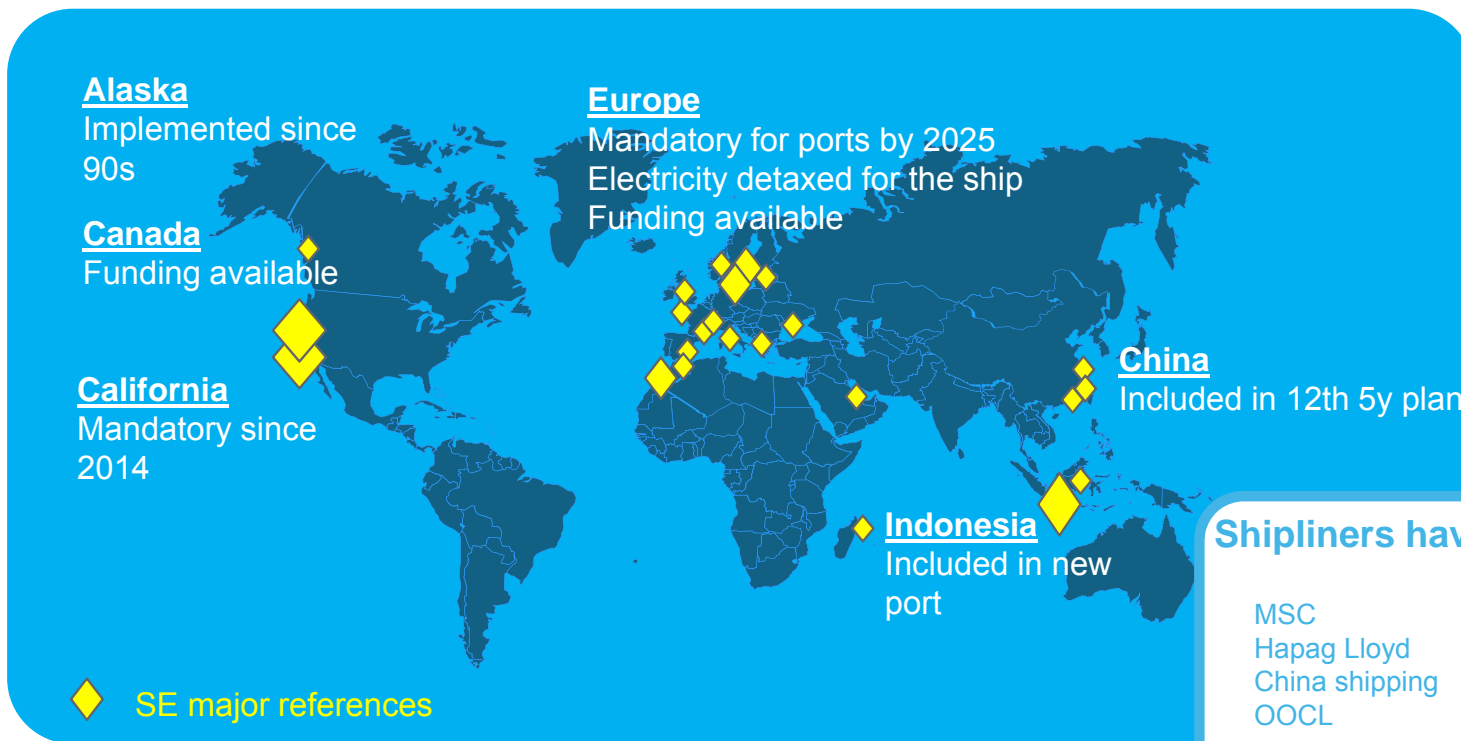
Ratified by 75 countries = 95% of WW ships traffic

Year	SO <sub>x</sub> limit in emissions (% m/m)		Maximum average NO <sub>x</sub> generated per kWh (g/kWh)
	MARPOL Annex VI		MARPOL Annex VI
	High sea and berth	SECA	High sea and berth
2009	4.5%	1.5%	11.8
2010			
2010, July	3.5%	1.0%	9.6
2011			
2012			
2015	0.5%	0.1%	2.3
2016			
2020			

Marpol VI SO<sub>x</sub> and NO<sub>x</sub> limitations

# The benefits of shore connection

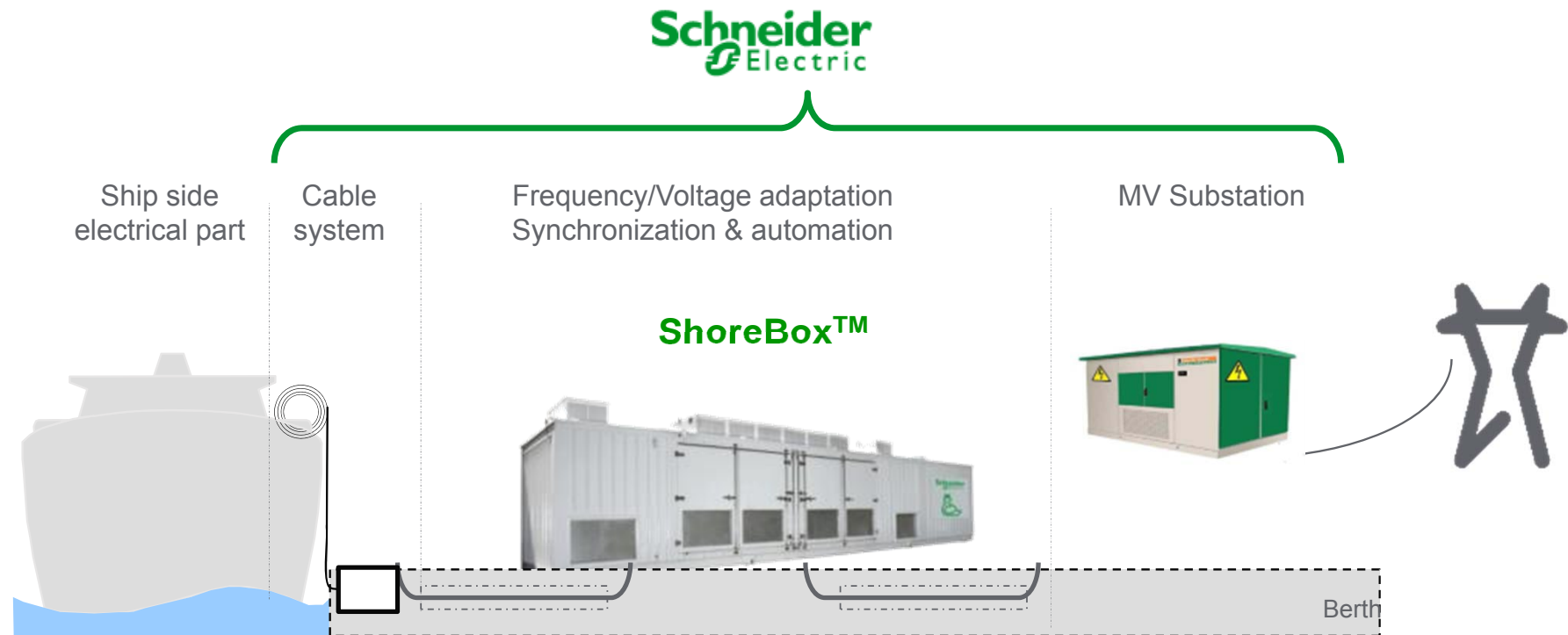
> Anticipate a world wide trend



**Shipliners have started to retrofit their vessels**

MSC	NYK	Princess Cruise
Hapag Lloyd	APL	Disney Cruise
China shipping	Maersk	Costa Cruise
OOCL	Evergreen	Holland America
	CMA CGM	Norwegian Cruise Line

# Shore Connection system overview



# Schneider Electric solution: ShoreBoX™

- All in one system
- Tested & Validated in factory
- Quick and easy installation
- Standard components
- Compliant to Shore Connection international standard
- Fully automated connection procedure
- Scalable and movable



# Schneider Electric experience

## MOROCCO



2x2MVA ShoreBoX  
Navv ships

## LATVIA



2x2MVA ShoreBoX  
Cargo ships

## USA, CANADA



- 23x7,5MVA for container
- 3x15MVA for cruise

## INDONESIA



9x5MVA ShoreBoX  
Container ships

## NORWAY



1x1MVA ShoreBoX  
Offshore Supply Vessels

## FRANCE



2x4MVA ShoreBoX  
Navy logistics ships

# Schneider Electric Scope of supply



**Start of Construction:** March 2013

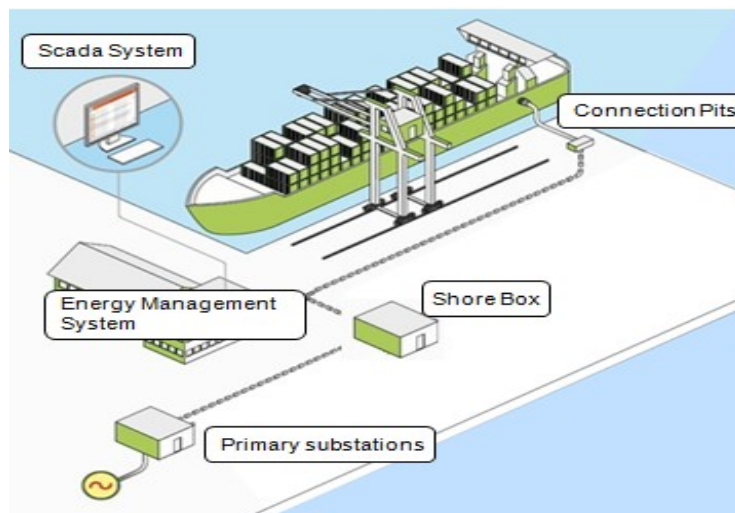
**Completion:**

- 2015 - phase 1
- 2023 - complete project

**Estimated Costs:**

- US \$2.47 bil. - phase 1
- US \$1.50 bil. - phase 2

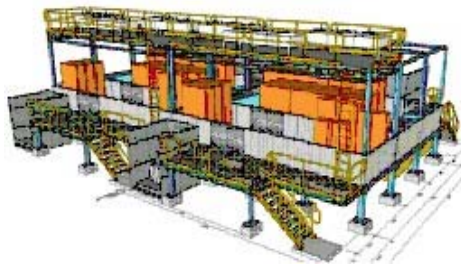
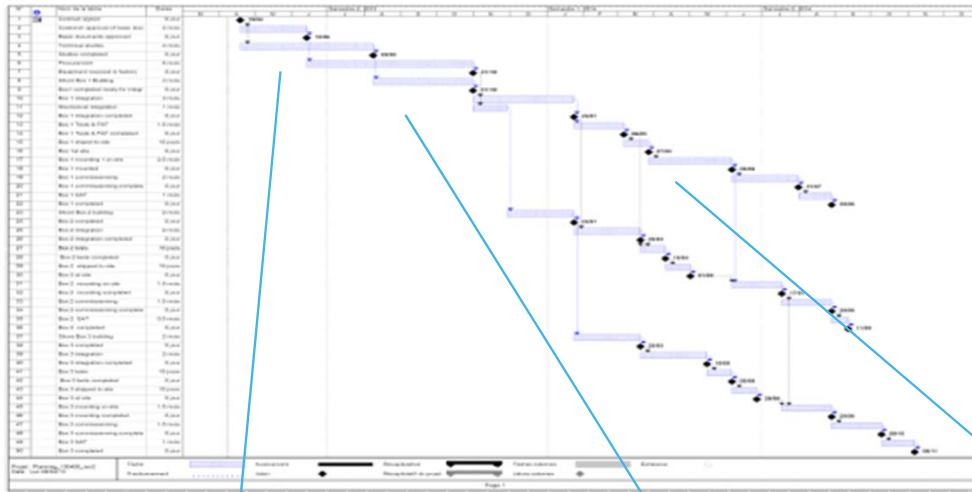
**Operators:** Mitsui & Co ; PSA



**Design and build project for the all electrical part :**

- Primary Substations,
- Shore connection systems,
- Cable management system (Cavotec Partner),
- Scada System,
- Installation, Commissioning,
- Maintenance contract.

# We are in the execution phase



Studies



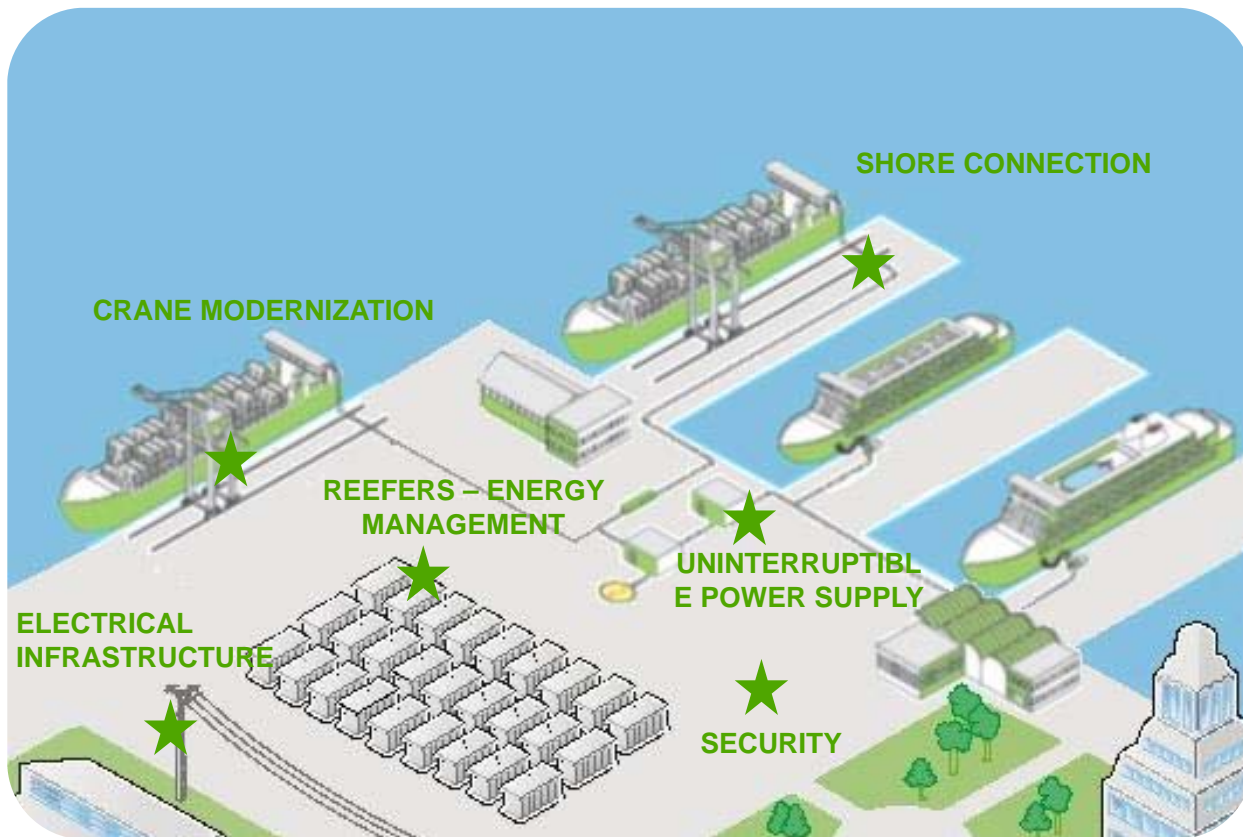
Cable System installation



ShoreBoX™ production



# Schneider electric: your partner to electrify & manage energy in ports



- 1 provider with full scope offer
- Support for electrical design studies
- Dedicated Competency Center gathering our port experts
- Local service support
- Dedicated labs and prototype opened to customer



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