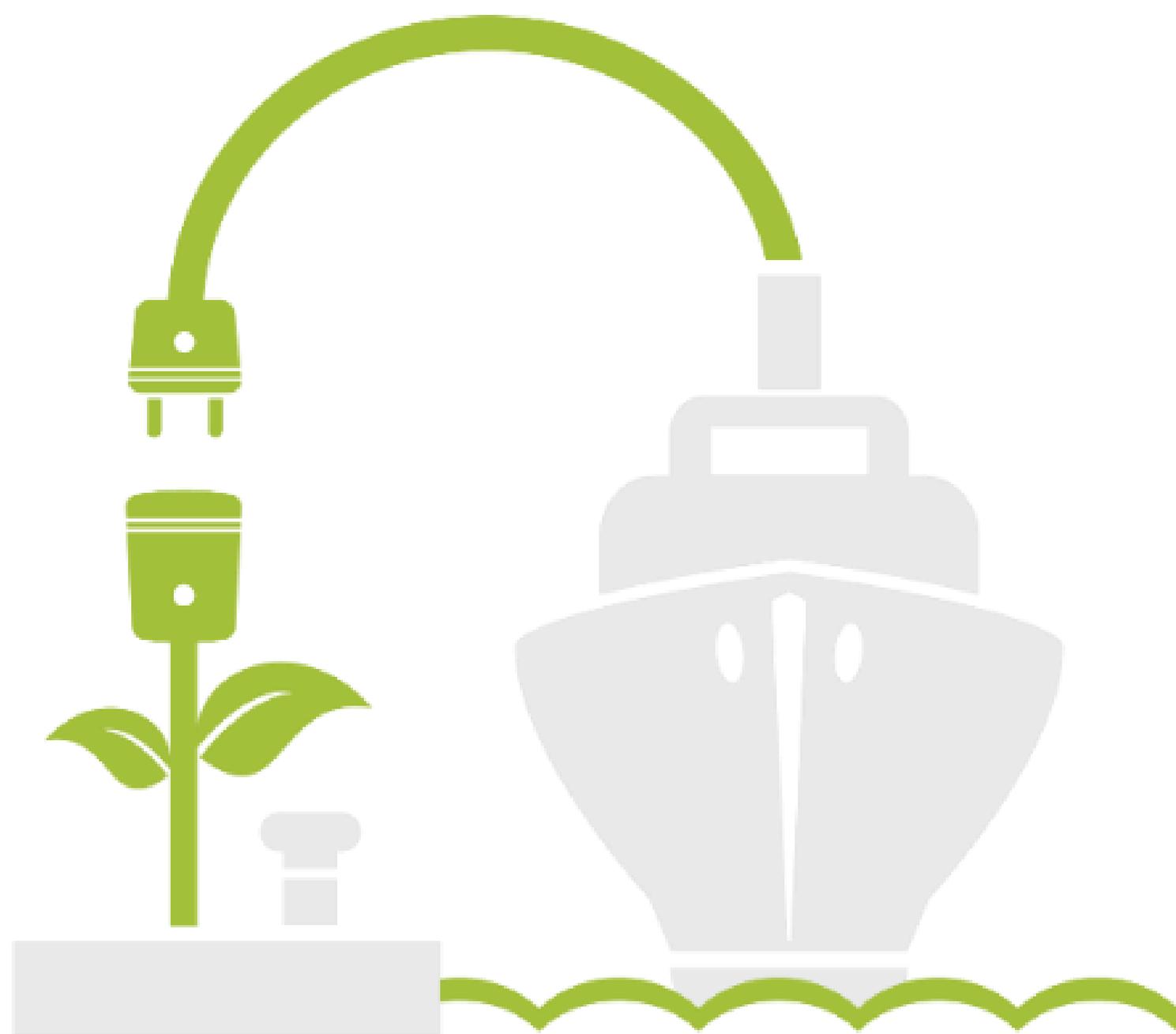


PowerCon Shore Power Solutions



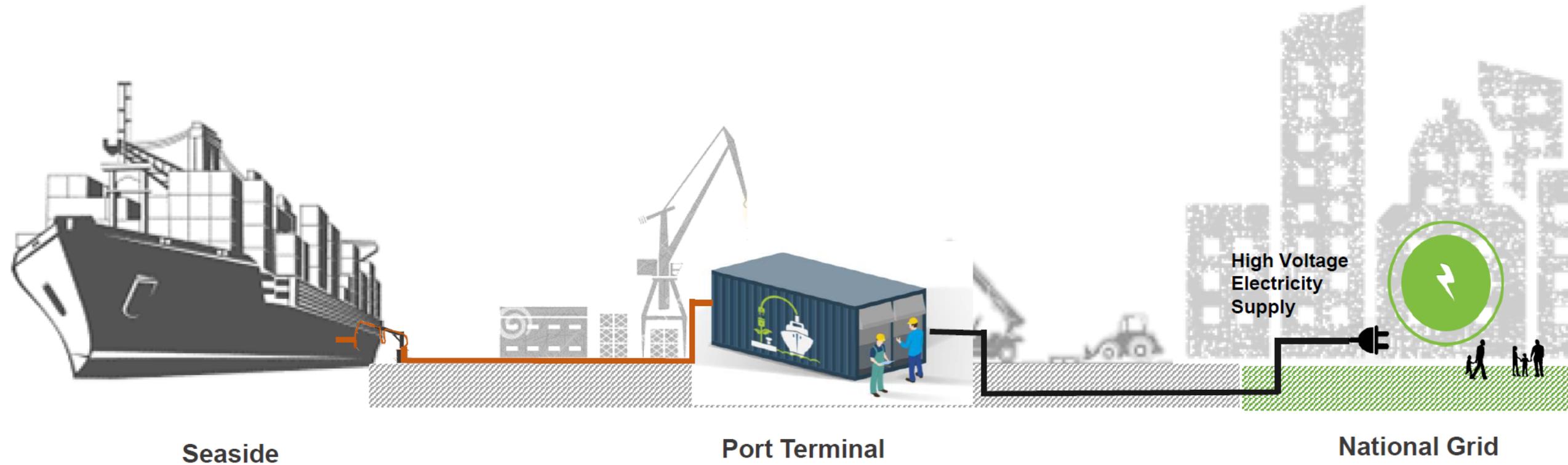
Jacob Bjarkam
+45 20 900 400
jb@powercon.dk
www.powercon.dk



About PowerCon

- PowerCon is a Danish engineering company
- We are highly specialized within electrical power conversion
- We develops and produces full-scale electric power converters for various applications
- We operate within three business segments; Converter Development for Wind Turbines, Converter Drives for Test Equipment & Shore Power Solutions
- We are Europe's leading supplier of Shore Power Solutions for Cruise Vessels

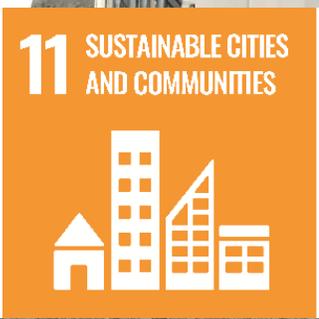




What is Shore Power?

Why Shore Power?

- Elimination of local air pollution
- Elimination of noise
- Improved local health conditions
- Reduced emissions of CO2 and GHG
- Less impact on climate changes





Shore Power Solutions for all Maritime Segments

- Fishing
- Offshore vessels
- Riggs
- E-Ferries
- RoRo
- Cargo vessels
- Cruise





Mobile Shore Power solution

- Plug and play solution
- Grid connection of 400V or 690V
- Output Voltage: 230V-700V+
- Output frequency: 50Hz/60Hz
- Connects to ship with IEC 80005-3 conforming plugs

Fixed Shore Power installation

- Fast installation
- Grid connection HV/LV
- Output Voltage: 230V-700V+
- Output frequency: 50Hz/60Hz
- Junction boxes
- Connects to ship with IEC 80005-3 conforming plugs



PowerCon FORSYNINGSPUNKT +303 System [ikke logget inn]



Strøm uttak					
	V	A	Hz	kW	Piloter
1	394	86	60	58	✓/✓
2	0	0	0	0	✓/✓
3	0	0	0	0	✓/✓
4	0	0	0	0	✓/✓
5	0	0	0	0	✓/✓

Logg inn

Brukernavn

Passord

PowerCon FORSYNINGSPUNKT +303 Nett Last konfigurasjon Alarmer System [pc]

Last 1: På Fullstendig Last 2: Av Fri Last 3: Av Fri Last 4: Av Fri Last 5: Av Fri Last 6: Av Fri

Fartøyet navn IMO nummer

Conmar Fjord 9244192

Start Stopp

Spenning 400 Frekvens 60 Maks. strøm pr. kabel 125

Strøm uttak

1 2 3 4 5 6

Tilbakestill

Strøm uttak					
	V	A	Hz	kW	Piloter
1	395	76			
2	0	0			

Båtsfjord havn Oversikt

Russerbrygge

TOTAL KAPASITET 800 kW BELASTNING 500 kW TILGJENGELIG 300 kW

76%

Uttak A Skandi Vega

SKRU AV Feil

Uttak B Stella Polaris

SKRU AV OK

Servicekaien

TOTAL KAPASITET 800 kW BELASTNING 550 kW TILGJENGELIG 250 kW

51%

Uttak C Havstein

SKRU AV OK

Uttak D MS Ørnen

SKRU AV Alarm

Dampskipskaien

TOTAL KAPASITET 800 kW BELASTNING -- kW TILGJENGELIG 800 kW

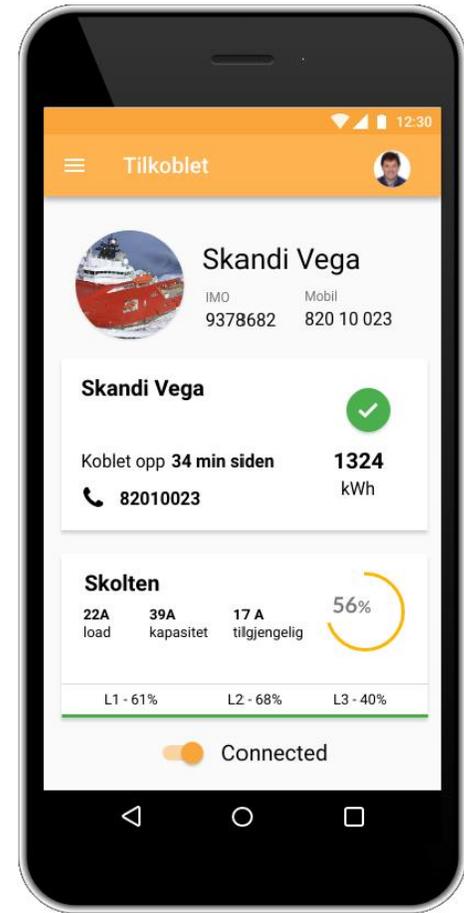
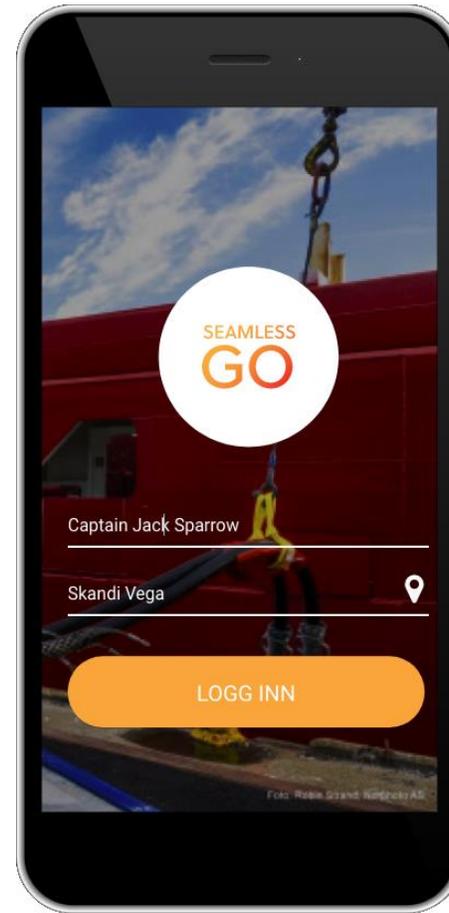
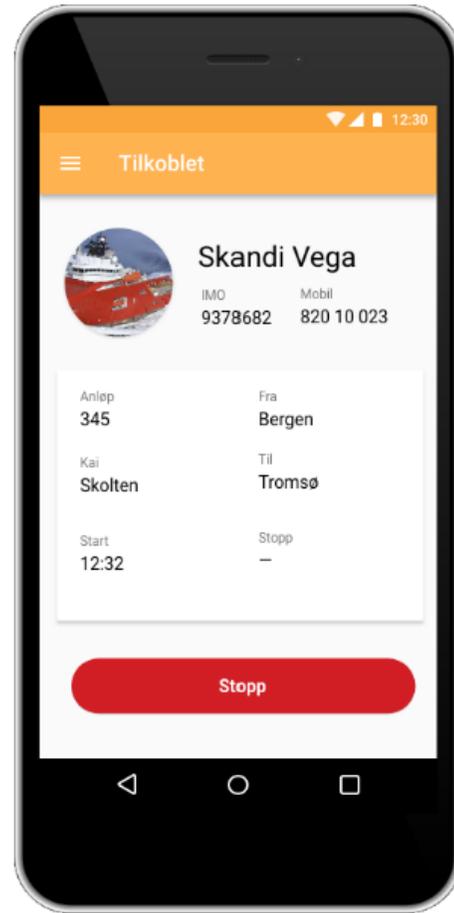
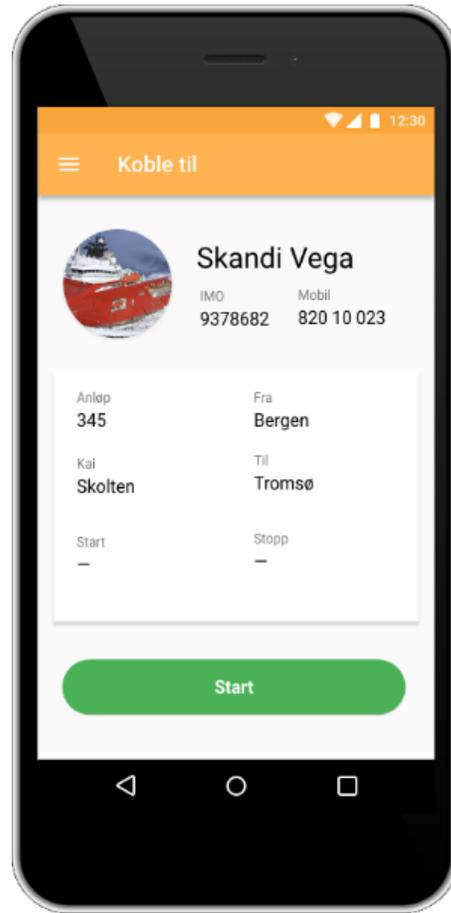
0%

Uttak E

Ledig

- Touch screen
- Safety
- Integretion to CRM
- Automatic billing

Easy to operate



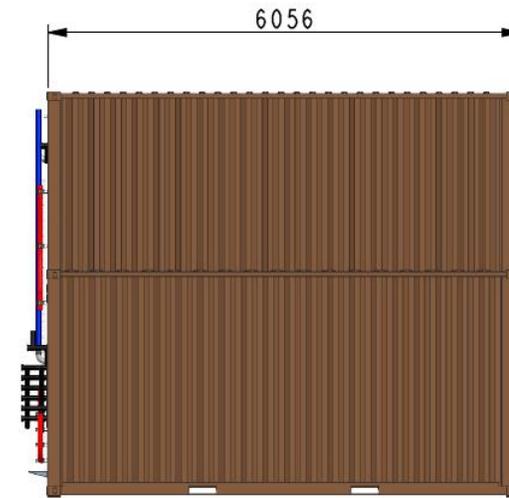
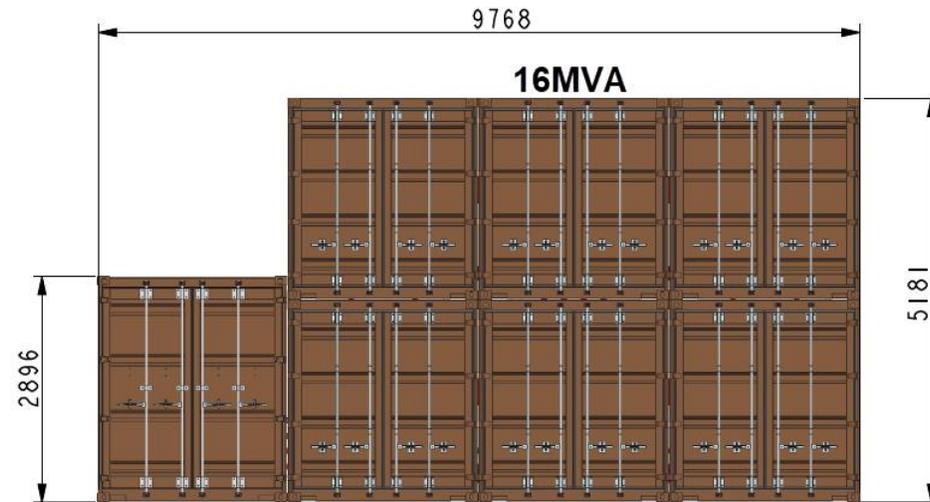
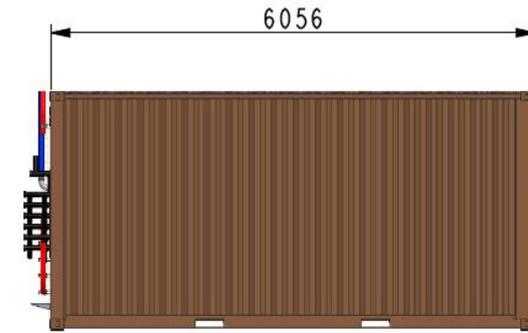
Example of User Application: PortWin-Go

16 MVA System for Cruise vessels



Scalable concept – build in modules

- 4 containers with transformers
- 2 containers with frequency converters
- 1 containers with grid and ship breakers



Benefits of containerized OPS solutions?

- *A factory prefabricated system*
- *A factory pre-tested system*
- *Closed and controlled environment for electrical components*
- *Fast installation on-site*
- *Easy construction to clad in wood, steel or concrete to match surrounding architecture*
- *Built in modules and easily scalable*
- *Easy modification or upgrade of system*

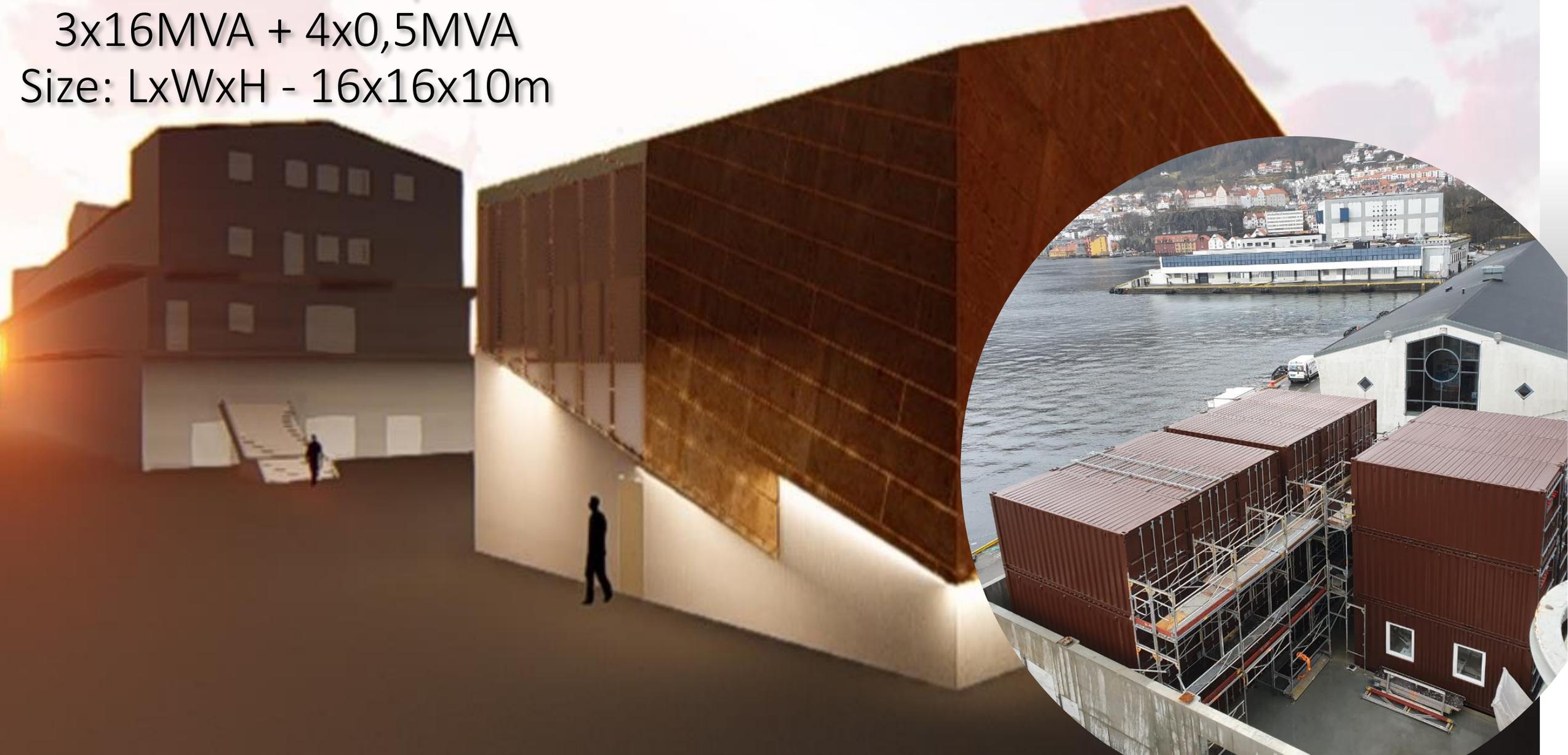


Port of Bergen

50MVA - 7 ships

3x16MVA + 4x0,5MVA

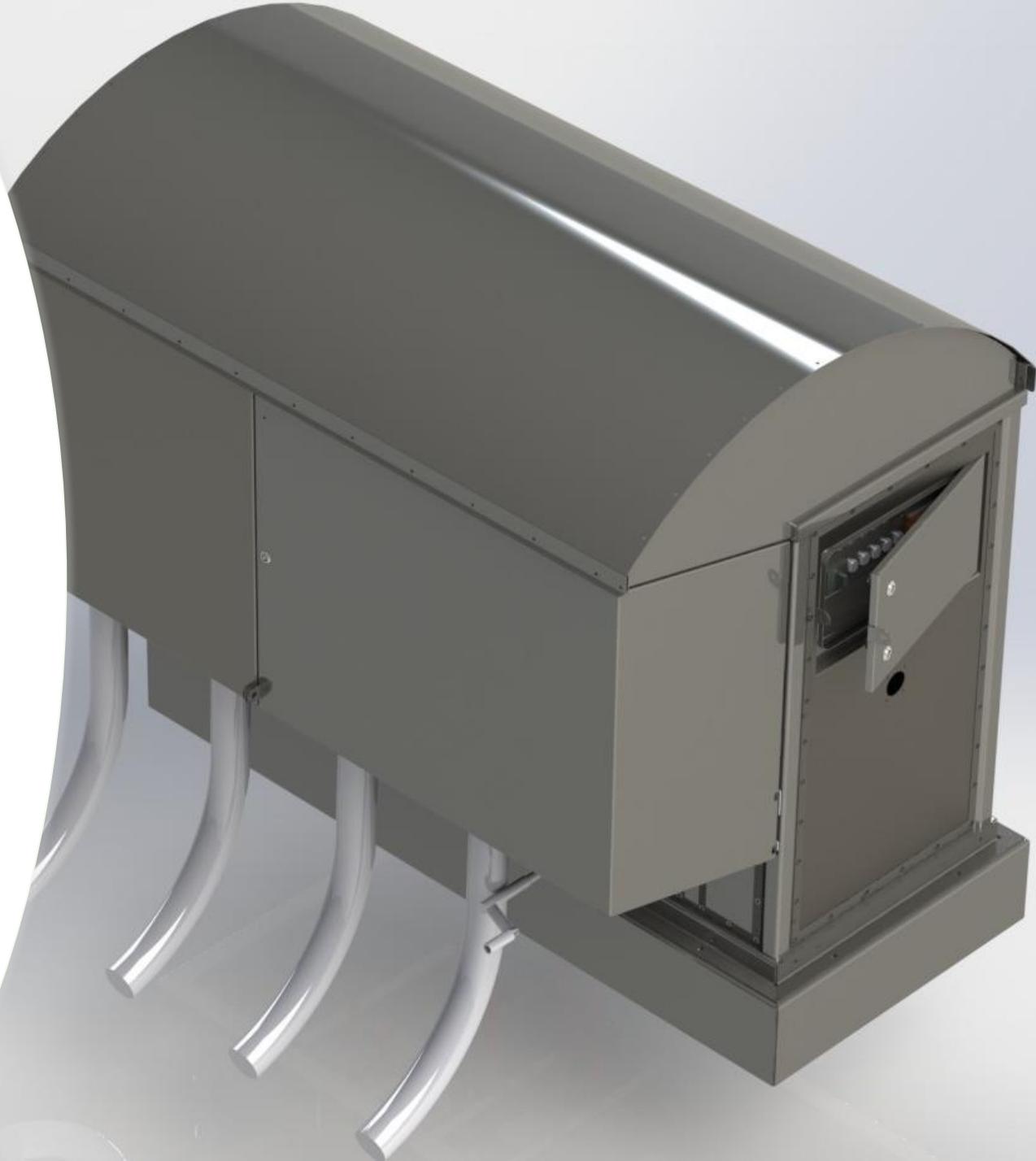
Size: LxWxH - 16x16x10m





Latest innovations

- Junction box with integrated breaker/grounding
-





PowerCon