



**bel** POWER  
SOLUTIONS &  
PROTECTION

---

a bel group

## Power Shelf Products for OCP

**Feb 2017**

Nicola Cinagrossi

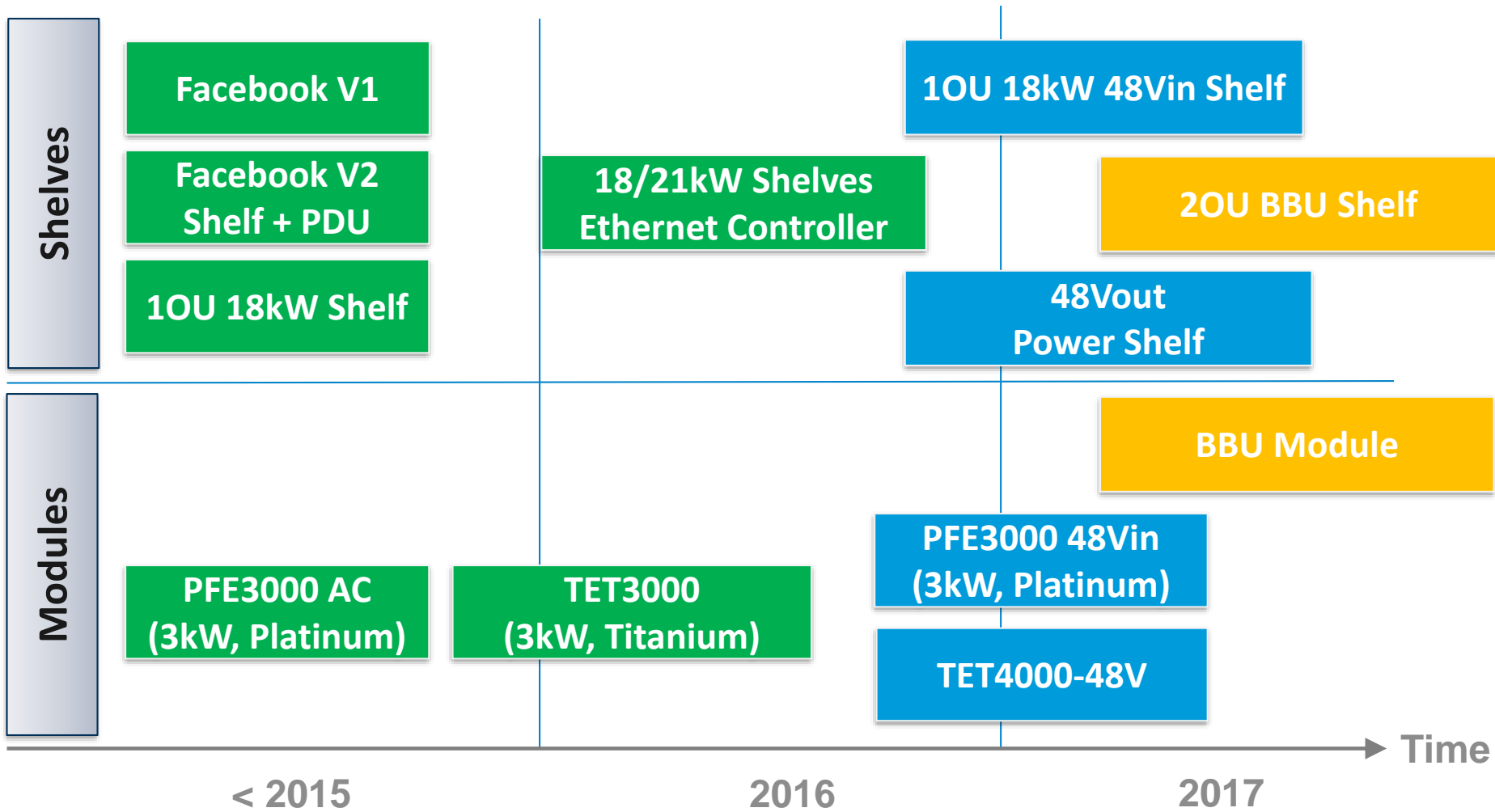
# 19" / OCP Rack Power Roadmap

Color Legend

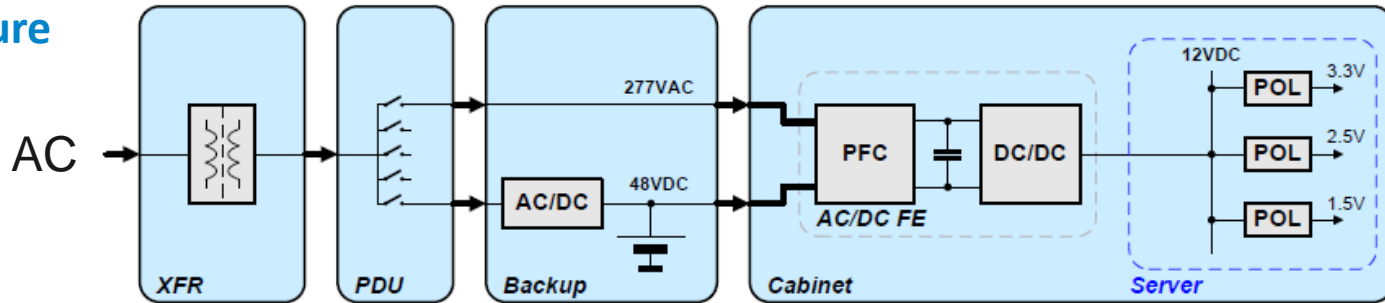
Available

In Work

Planned

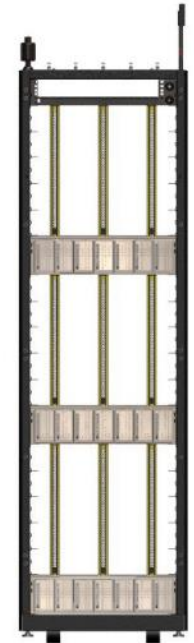


## Architecture



- The Power System is separated from server & storage shelves
- No need of in-line UPS
- Back-up implemented with distributed lead-acid battery system
- Increased AC Voltage input up 480/277 Vac to improve distribution efficiency
- 6+1 redundant Power Modules
- Total 4200 W (+700 W) per shelf ( $\eta > 95.2\%$ )
- 3 shelves for each Rack are used.

277Vac 48Vdc

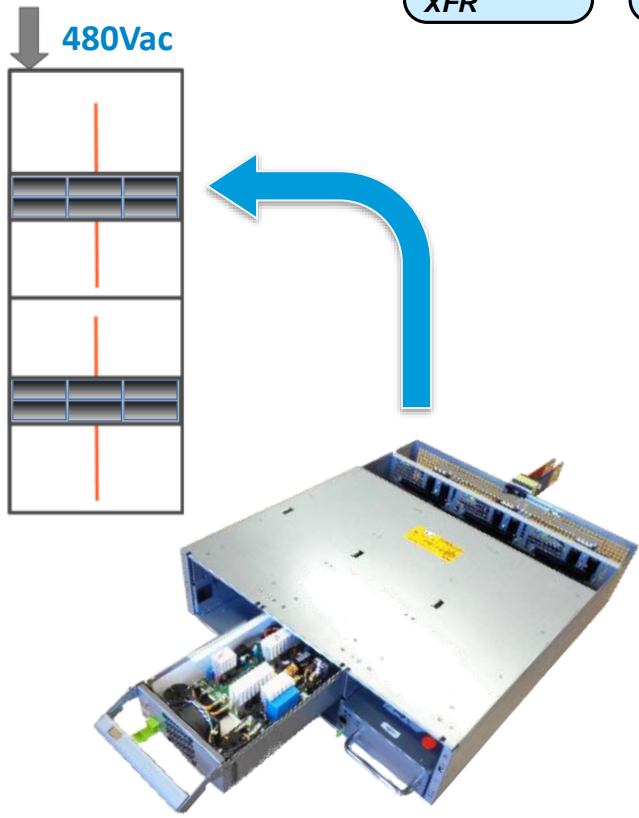
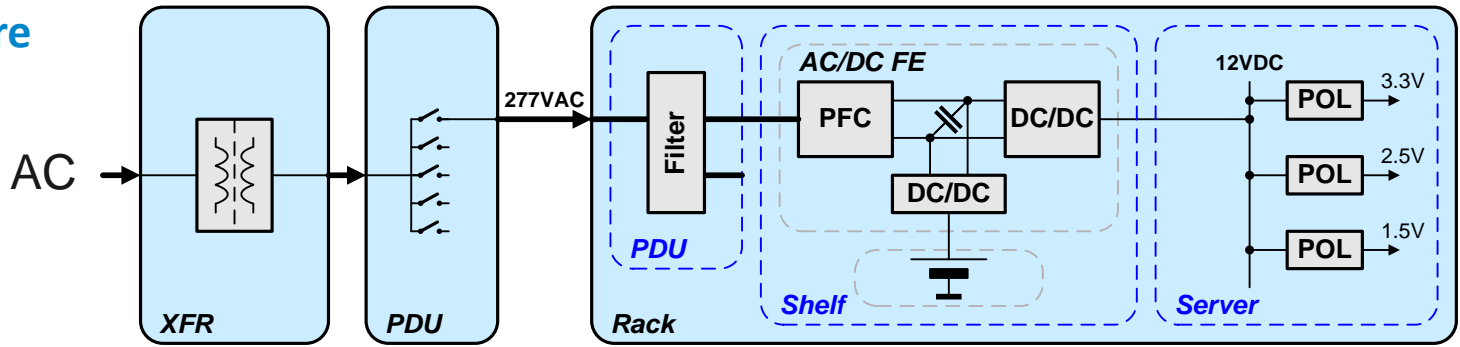


V1 Open Rack



# OCP V2 Power Shelf

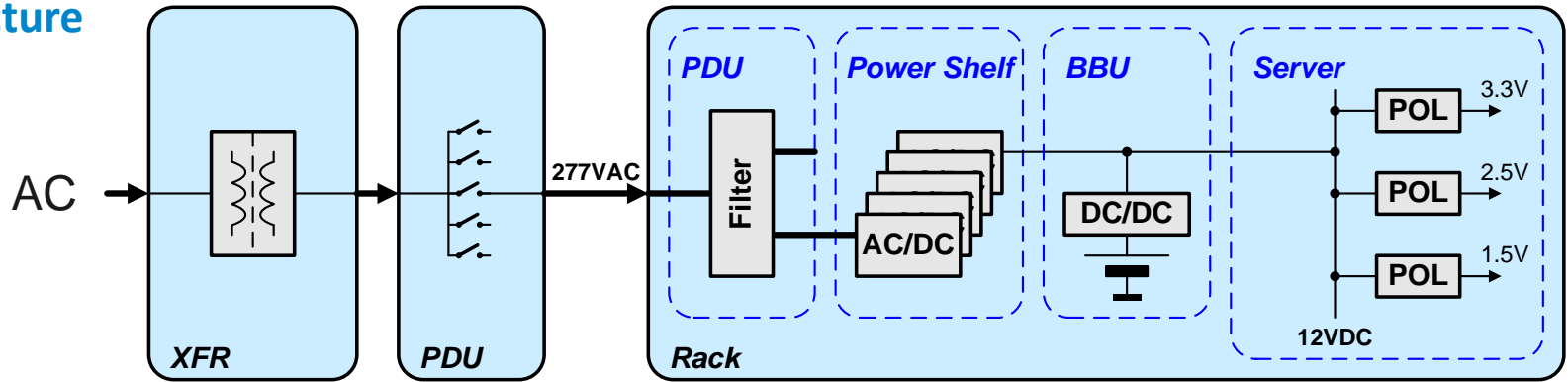
## Architecture



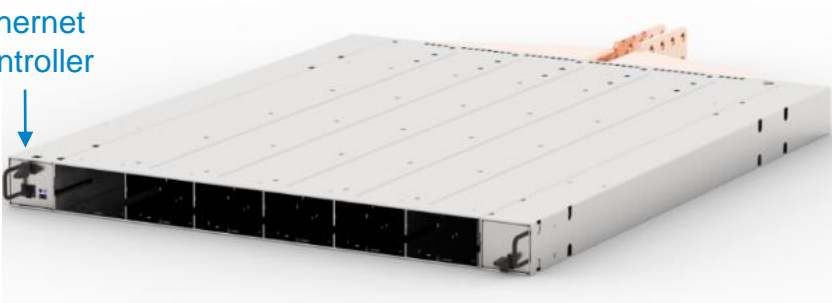
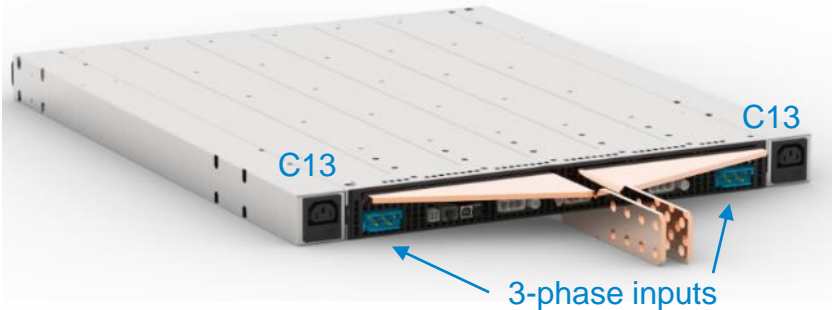
- The Power System is separated from server & storage shelves
- No need of in-line UPS
- Increased AC Voltage input up 480/277 VAC to improve distribution efficiency
- 2 shelves for each rack are used
- Single 12 V busbar system distribution in the rack
- 2+1 Redundant Power Modules
- Total 6600 W (+3300 W) per shelf ( $\eta > 96\%$ )
- Backup battery system included in shelf: 90 sec, 3x Li-Ion Panasonic battery modules
- Power supply also includes the battery charger and discharger converters

# OCP 10U / 15 kW N+1 / 12 VDC / V1 or V2

## Architecture



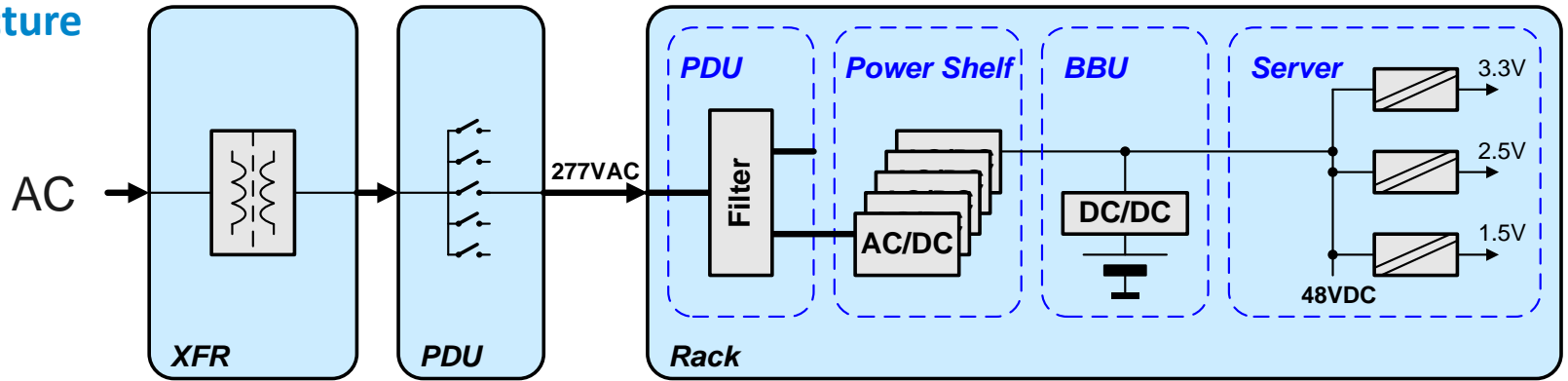
## SPSPFE3-06G



- 6 x 3000 W power modules
- Shelf compatible to OCP standard (534 mm wide)
- Height= 46 mm < 1 OpenU
- Single and 3-Busbar System compatible to OCP
- 2x C13 AC outputs protected with fuses
- 3x single-phase AC outputs (Molex Sabre)
- 2x 3-phase AC inputs with Positronic connectors (PN SP5YYE1F0091/AA)
- Hot-swap controller with Ethernet communication (RJ45)
- CAN bus on the back of the shelf to communicate with BBU or ATS (2x RJ45)

# OCP 10U / 20 kW N+1 / 48 VDC

## Architecture



## SPSTET4-01G

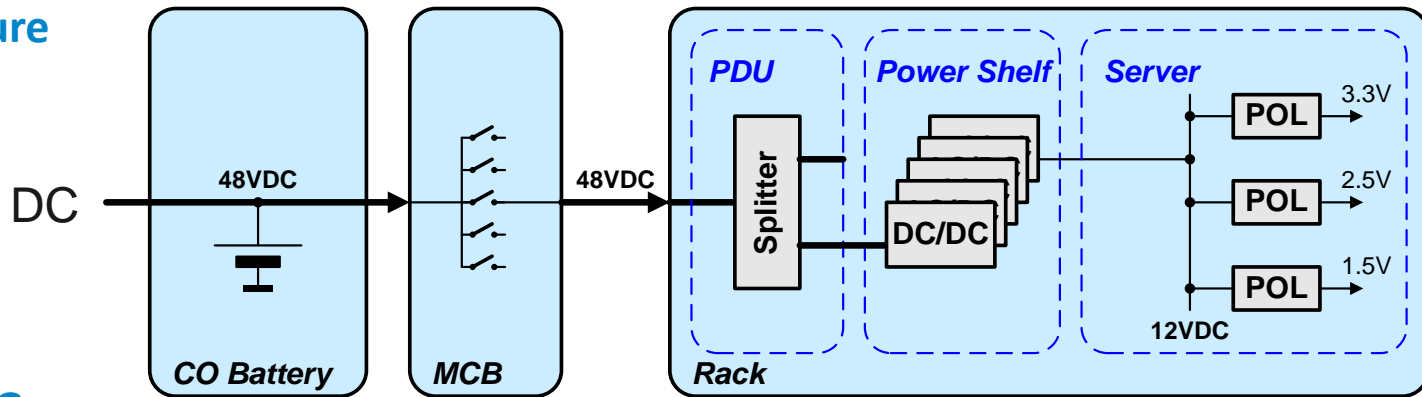


- 6 x 4 kW TET4000-12-069RA power modules
- Shelf compatible to 19" and OCP standard (534 mm wide) with side extensions
- Height= 46 mm < 1 OpenU
- Single Busbar System compatible to new OCP spec from Jan 2017 (different from 12VDC V1 / V2)
- 2x 3-phase AC inputs with Positronic connectors (PN SP5YYE1F0091/AA)
- CAN bus on the back of the shelf to communicate with BBU or ATS (2x RJ45)

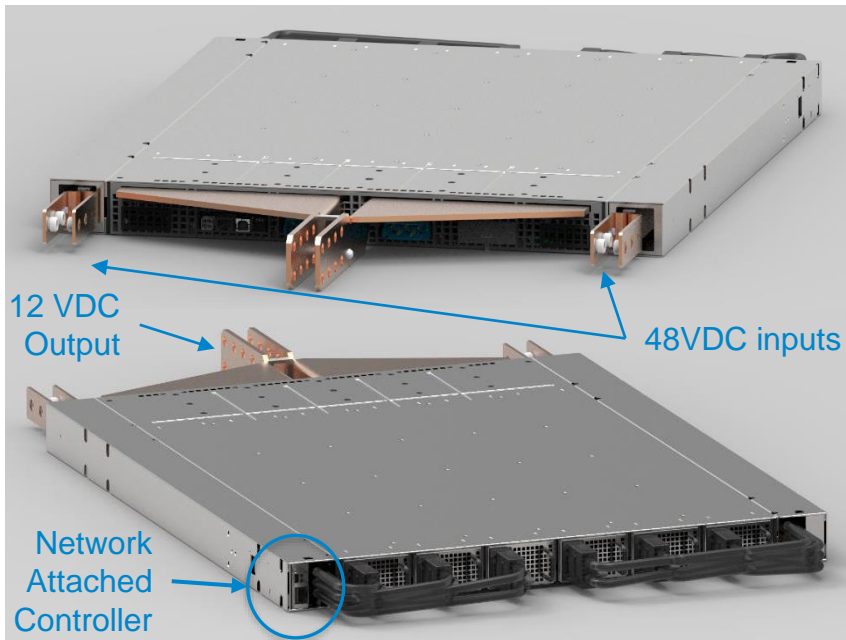
First engineering sample to be revealed at OCP Summit (March-8 2017)

# 10U / DC-DC Shelf + Controller / V2

## Architecture



## SPSPFF3-01G



First engineering sample to be revealed at OCP Summit (March-8 2017)

- 6x 3 kW AC/DC power-modules
- Central Office 48 Vdc: 39...72 Vdc
- Shelf compatible to OCP standard (534 mm wide)
- Height = 46 mm < 10OpenU
- Single-Busbar as in OCP V2
- 2x250 A input bus bars
- Hot Swap controller with Ethernet communication (RJ45)
- CAN bus on the back of the shelf to communicate with BBU (2x RJ45)

# Thank You

---



- ✓ Industry leading efficiency and power density
- ✓ Proven, scalable, power conversion technology
- ✓ Superior digital power controls, power management and monitoring
- ✓ Packaging technology from benign to heavy duty; convection cooled to forced air cooled to liquid cooled
- ✓ World class manufacturing sites

Be a long term and fully dependable PSU supplier using its advanced power conversion knowledge & technology to the advantage of its customers

POWER | PROTECT | CONNECT