

IMPLEMENTATION OF A MOBILE UNINTERRUPTIBLE POWER SUPPLY - DEVICE

Introduction

Uninterruptible power supply systems (UPS-Systems) were used especially in the electrical power generation, transmission and distribution to supply primary and / or secondary components. In order to guarantee an uninterrupted power supply in the event of planned and unplanned disconnection of the UPS system, a special UPS-emergency concept was developed. This concept (old concept) provides a complete construction (i.e. transportation, construction and interconnection) of a full UPS-replacement-system on site.

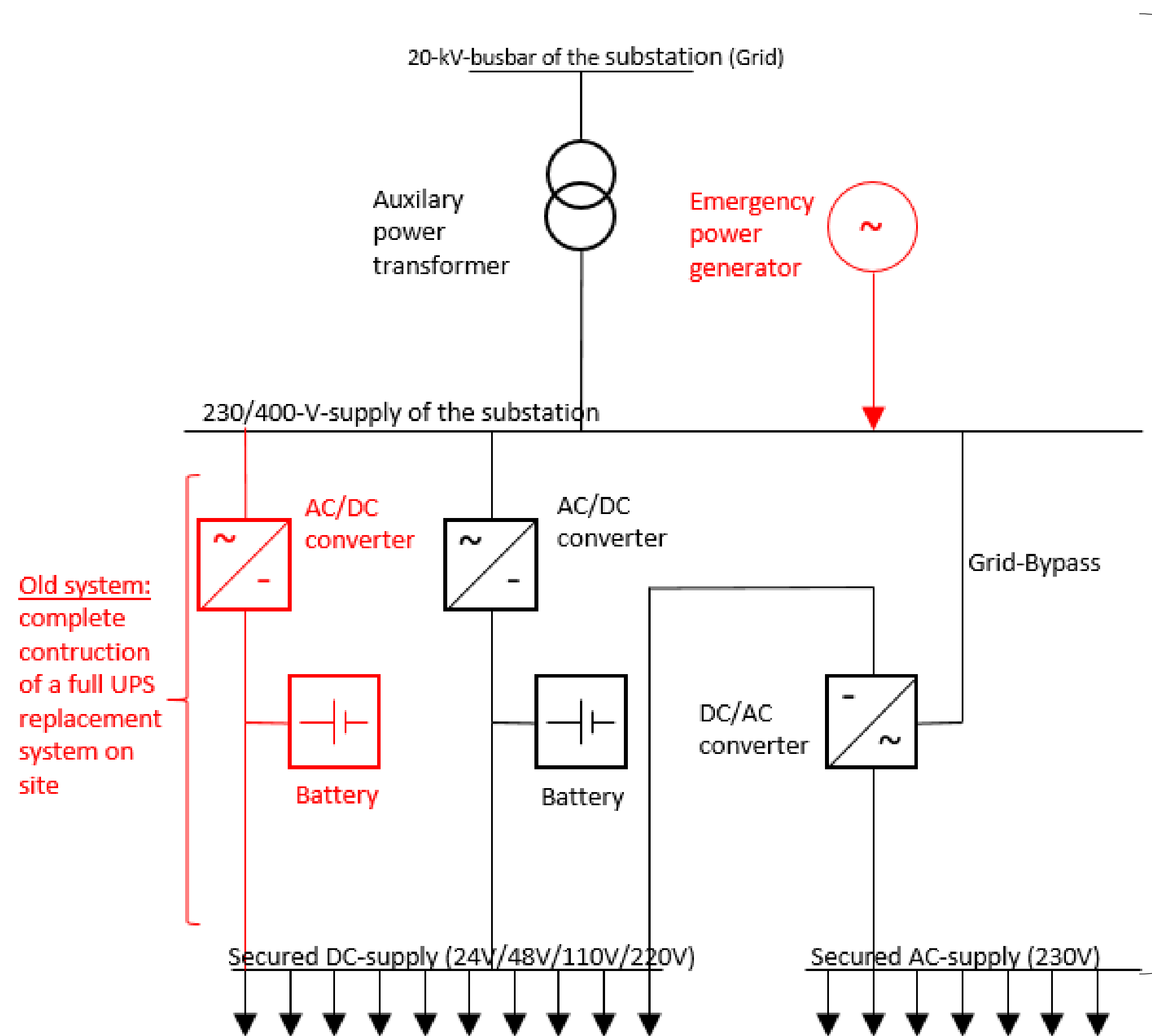


Fig. 1) Diagram of the UPS-System of a substation (red ...emergency systems)

Due to the serious disadvantages of this concept, the KNG realised a new mobile UPS-device in cooperation with the company Sapotec.

Methodology / Construction

Requirements for the mobile UPS-device:

- Usable for all weather conditions
- Required staff for construction and commissioning: one man
- All three voltage levels are available separately at the output with their own battery
- Remote reporting via SMS (short message service) / NLS (network control system)
- High availability and mobility based on a trailer solution

Main components:

- Rectifier Systems, battery systems, aluminium frame for the Trailer, air conditioner, the ventilation system, and the remote reporting system

Advantages of the „old concept“ :

- + Several parallel systems possible at the same time

Disadvantages of the „old concept“ :

- Availability of the system
- Extremely high stress on the musculoskeletal system
- Increased risk potential with interconnection
- Realization time
- Required staff for construction and commissioning: at least 2 men

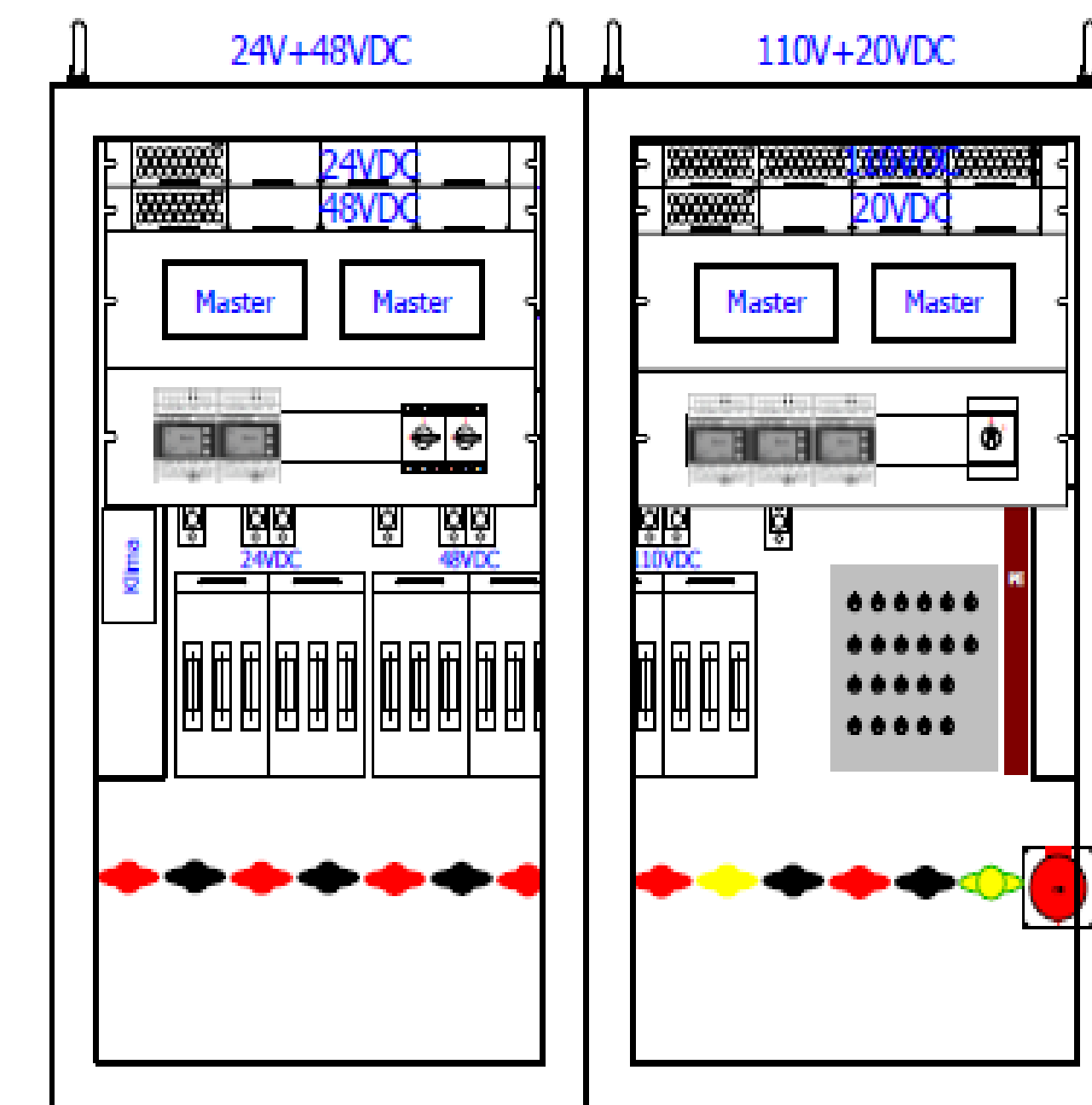


Fig. 2) Planning concepts of the mobile UPS system (left: cabinet front side with 19" installations , right: Aluminium frame to hold the rectifier system and the batteries)



Fig. 3) Technical implementation and practical use of the new UPS- device

Operating experience

- considerable time savings of approx. 4.5 man-hours per one maintenance-replacement-operation
- activated and operated by only one man
- protects the employees' musculoskeletal system

Conclusion

After a total implementation period of 4 years, the cooperation project "Mobile UPS-device" between the companies KNG-Kaernten Netz GmbH and Sapotec was successfully completed in the year 2018. Since then, the KNG has a unique device available for maintenance in the field of UPS-systems, which combines the properties "quickly available", "mobile", "universally applicable", "efficient / effective", "reduced risk potential and ergonomic stress on employees" in one system.