

INTELEC 2013, Hamburg

WORKSHOP HVDC

Future trends in the power supply for Telco and Data Centres: AC to DC?

Panel Discussion

Tuesday, October 15, 2013, 13:30 – 14:30, Saal 7

Chairman: Mr. Wilfried Schulz (Deutsche Telekom)

Introduction

Historically the AC power supply has been independent dominant in the IT environment, while the DC power supply has been the usual choice for Telcos. According the introduction of the INTERNET and Broadband Services in the Central Offices the two applications are increasingly mixed, and in the near future they may possibly share the same homogenous power supply scheme.

The transition to a fully DC powered ICT applications has many sponsors worldwide. Is this a revolution ? Or will it be, if ever, a long-term and smooth evolution? Whatever the future of the DC power supply, the following key topics must be considered:

safety of personnel, availability and reliability of the power supply, conversion efficiency for energy savings, environmental impacts of the various solutions, life cycle management and standardization of the components in the electrical distribution. Last but not the least: if the change is desirable, who will lead it?

The End Users, the Power Converter providers or the IT systems manufacturers? Furthermore, will it be possible to win the traditional inertia in the customers' specifications?

Below is a brief description of the key items that will be addressed during this discussion:

Safety

Is the safety level of a high-voltage DC distribution the same as that of an AC one?

Is it easier or more difficult to make high-voltage DC distribution safe for maintenance personnel and for end users?

Availability and reliability

Is a high-voltage DC distribution as reliable as an AC one? Can a DC distribution achieve and exceed the AC distribution availability?

Efficiency for energy savings

The Kyoto protocol, the EUP Directive in Europe, the JRC-EU Codes of Conduct for Broadband Services and Data center: the best practices and normative for energy savings are pervading the various industries, thanks also to global and local regulatory layers. From this standpoint, can the high-voltage DC distribution be more advantageous than the AC one? The modularity and scalability of power supply systems may allow an optimal usage of the power conversion systems. However,



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the state-of-the-art dual-bus redundant systems for high availability does not allow for an optimal power usage, mainly due to the power sharing among converters. Can the high-voltage DC establish a new and better trade off?

Environmental impact and life cycle management:

Are there any differences between the AC and DC systems as far as the environmental impact (except efficiency) is concerned?

One important point, could be more efficient and more flexible use of DC source energy on a HVDC bus such as Photovoltaic and fuel cells generators.

Standardization for usability:

In order to have a true transition from the current mixed AC/DC to a full DC distribution a new definition and standardization of the distribution elements must be also established. Are the manufacturers ready to provide components that are suitable for the high-voltage distribution, or will they do this only in the future?

Green grid standardization activities are already placed in ETSI TC EEPs and ITU-T.