

Benefits of digital substations

B5 PS2

Question 2.02 What are the expected benefits of using digital substation concepts and how to meet these benefits during industrial application?

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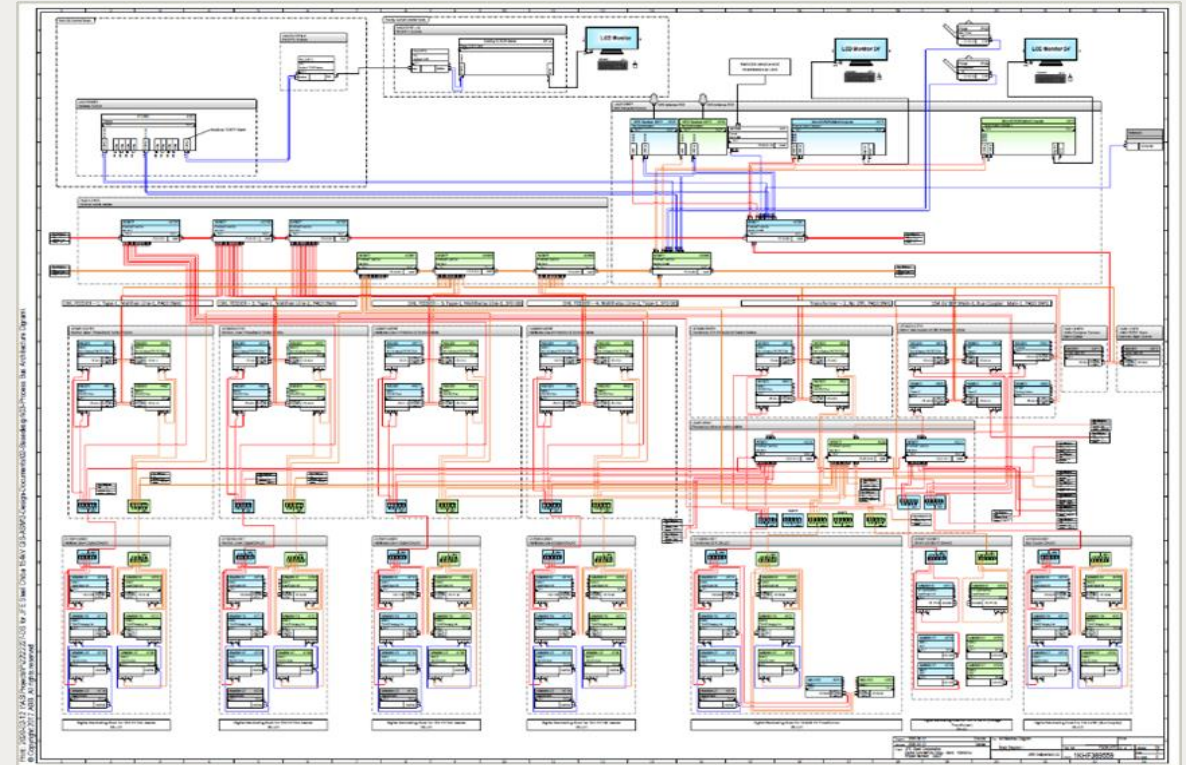
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Benefits of digital substations?

- Data instead of wires
 - ✓ Reduced copper cabling
 - ✓ Smaller protection and control panels due to less conventional equipment
 - ✓ Shorter installation time thanks to verification of complete data exchange in factory
 - ✓ Software-based testing using IEC 61850-defined test and simulation modes
 - ✓ Sharing of real-time data within and across substations with interoperable IEC 61850 GOOSE and Sampled Values, enabling new functionalities
 - ✓ Permanent supervision of all exchanged data
 - ✓ Integration of monitoring equipment, enabling condition- and risk-based maintenance
 - ✓ ...

How to meet the benefits during industrial application?

- Specification
 - Apply digitalization concepts consequently and avoid sticking to conventional components
- Design
 - Re-think established function allocations and panel designs, to benefit from fewer terminal blocks and wiring
 - Take advantage of complete supervision of the entire GOOSE and SV data exchange
 - Design products that automatically react on bad quality or missing data or synchronization
 - Design products that gracefully only block those functions that are affected by bad quality or missing data or time synchronization



Group Discussion Meeting

How to meet the benefits during industrial application?

- Factory testing
 - Verification of entire dataflow, with real or simulated equipment
 - Familiarize with new technologies hands-on in safe environment
- Installation and commissioning
 - Save time during site installation due to reduced installation and cabling works.
 - Focus site testing on interaction with primary equipment. Data exchange between IEDs is verified in factory testing

