System design for optimal techno-economic distribution network based on current and future load forecast

ABB Solution

- Analysis of existing sub-transmission and distribution network with contingency analysis and reliability planning
- Greenfield analysis based on current and future load forecast
- Superimposition of greenfield solution on current network
- Future investment plan to optimise existing network
- Implementation plan of HVDS (High Voltage Distribution System) concept for achieving minimum T&D losses and improved system reliability

Benefits

- A world class sub-transmission and distribution system design with a road-map to superimpose on the current system
- Network accuracy check for next 10 years
- Augmentation plan for the next 10 years to cater to future growth
- Short term and long term network planning for reducing losses within standard limits and improvement of network reliability to global standards
Power Systems Consultancy from ABB

ABB partners with power utilities and industries to maximize power availability and improve power quality while optimizing resources by:

- Power system studies for transmission, distribution and industrial systems
- System Diagnostics for condition assessment and due diligence
- Asset management for improved operating costs and planned capital expenditure

Gujarat Electricity Board (GEB) - Transmission Network

Complete system study of existing GEB transmission network and power evacuation study for 10th Five Year Plan (2002-07), Government of India

ABB Solution

- Optimum operational plan for reducing line loading and transmission losses
- System analysis for improved reactive power management
- Load flow studies for evacuation of power based on proposed addition of generation capacity

Benefits

- Recommendations for strengthening existing network for improved power availability
- Plan for transmission network expansion in line with Govt of India’s 10th five year plan for improved grid stability and power quality
- Additional plans to manage power flow to Saurashtra region

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FACT SHEET

Bhushan Limited, Orissa - Greenfield Planning

220kV switchyard system design for a greenfield steel project with 3 nos. 120 MT arc furnaces planned with captive power generation

ABB Solution

- System transient stability study
- Electrical specifications of transformers, cables, Overhead lines, Generators, Static Var Compensators (SVCs), Filters and Series Reactors
- Design of reactive power compensation equipment

Benefits

- 220kV switchyard plan with detailed specifications - optimized solution for superior power quality and maximum system availability
- Defined operational limits for running the plant
- Sizing of SVC for large Electric Arc Furnace (EAF) to reduce voltage flicker levels
- Sizing of harmonic filters for EAF load cycles
- Demand estimation and equipment sizing with phase-wise plant planning

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Reliance Industries Ltd., Hazira - Electrical System Study

Power system studies for existing network and system expansion including system adequacy checks, protection coordination and Direct On Line (DOC) start of large motor.

- System load flow and short circuit study
- Transient and motor starting analysis for motors up to 20MW
- Relay co-ordination scheme for automation and control solutions
- System islanding & load shedding and logic design

Benefits

- Economical solution to reduce Bus fault levels for future expansion plans
- Emergency safe start of 20 MW motors with pre-defined operational procedures and network constraints
- Protection grading and scheme to avoid operation error of HT protection for LT faults
- Advanced load shedding scheme preparation for network expansion with conventional schemes as back up
ABB partners with power utilities and industries to maximize power availability and improve power quality while optimizing resources by:

- Power system studies for transmission, distribution and industrial systems
- System Diagnostics for condition assessment and due diligence
- Asset management for improved operating costs and planned capital expenditure

Feasibility study of 93MW wind farm at Babu Budangiri Hills, Karnataka

ABB Solution

- Transient stability study
- Reactive power compensation
- Connectivity to Karnataka Grid and reliability analysis

Benefits

- Reliable and economical interconnection of wind farm to grid substation
- Improved voltage profile in the network with VAR compensation
- Maximization of grid availability for power evacuation - improved project feasibility

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Load flow and short circuit study, protection coordination, and start up of large motor

**ABB Solution**
- Load flow, short circuit study
- Transient and harmonic analysis
- Relay co-ordination
- Islanding & load shedding and logic design
- Start of large motor by altering operation sequence without additional investments

**Benefits**
- Emergency starting of large motors (10MW) without grid support
- Improved protection system
- Preparation of islanding scheme
- Sizing of Harmonic Filters