Overview

Very large capacity, portable Load Bank System consisting of multiple units, each rated 5.0MW, capable of parallel operation to form very large systems of up to virtually unlimited capacity.

Medium voltage to 34.5kV.

Includes:

- Trailer portable load modules
- Portable or fixed mounted distribution switchgear
- Integrated digital control and data acquisition system
- Connection accessories

Description and Specification

Each 5.0MW Portable Trailer Load Bank consists of four (4) principle elements, factory packaged as a system:

1. Low voltage resistive load bank module, 5.0MW, 480vAC
2. Transformer package for medium-voltage operation, 5.0MVA, MV:480vAC, including 15kV disconnect
3. Highway semi- trailer integration of above for portable, highway transportation and outdoor weatherproof use
4. Digital controller for standalone or multi-unit paralleled operation from a single control station

Low Voltage Load Bank Module

- Total Capacity: 5.0MW, 1.0 power factor
- Voltage: 480vAC, 3-phase, 3-wire (from transformer)
- Frequency: 60 Hertz
- Load steps: 50KW step resolution

Transformer Module

- 5.0 MVA, dry type
- Medium voltage delta: 480Y/277vAC, 60 hertz
- Medium voltage, 1200A, 3-pole, manually operable, fixed mounted, fusible disconnect
- Fused low voltage outputs

Trailer

- Highway semi-trailer, "low-boy", tri-axle, 48-foot.

Digital Controller

PLC-based digital control. Each load bank trailer equipped with digital control system and local operator interface. Each trailer networked such that entire trailer can be controlled from a single station. Any system of paralleled trailers can be controlled from a single station, either at one trailer or at a remote station.

Digital power transducer to monitor volts-amps-hertz-KW. Network communication is via Modbus-TCP over Ethernet.

Power Distribution Switchgear

For connection of system of multiple load banks to generator switchgear:

1. Outdoor, freestanding metal-enclosed power distribution switchgear consisting of multiple cubicles
2. 15kV vacuum circuit breaker for each load bank trailer
3. Transformer Protection Relay for each breaker.
4. Instrumentation potential and current transformers
5. Low voltage motor starter and control power cubicle
6. Network PLC control
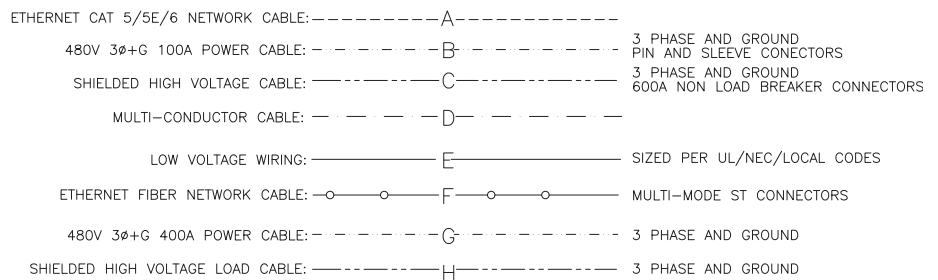7. Touchscreen operator interface

Optional Capability

- 480v direct load power input
- Second medium voltage input
- Medium voltage connection cables
- Low voltage connection cables
- Automation software
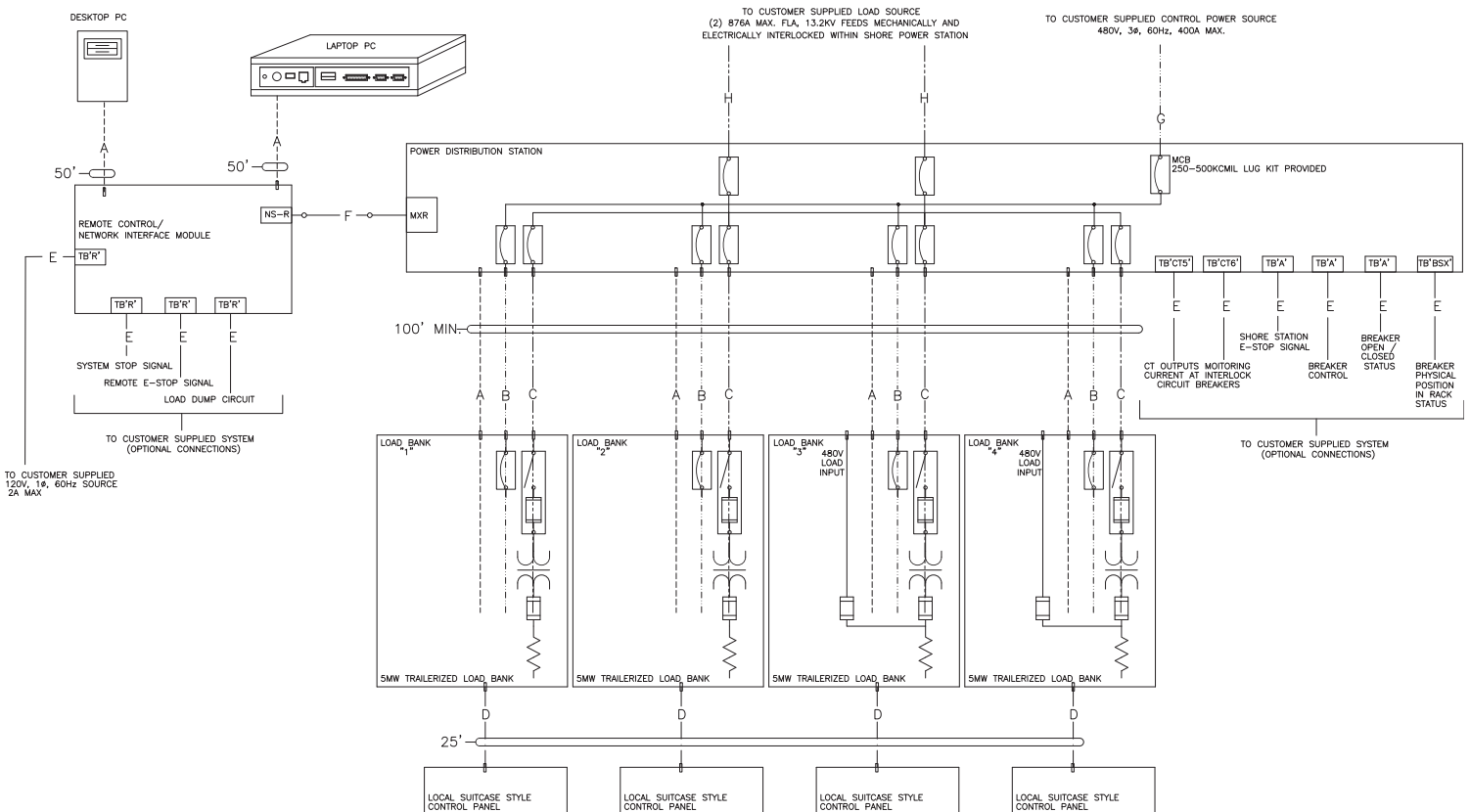- Windows PC for single point control and automation

Simplified System Overview for 20MW, 13.8kV System

ETHERNET CAT 5/5E/6 NETWORK CABLE:	————————A————————	
480V 3ø+G 100A POWER CABLE:	— — — — — —B — — — — — —	3 PHASE AND GROUND PIN AND SLEEVE CONECTORS
SHIELDED HIGH VOLTAGE CABLE:	————·—·——C—·—·——·——	3 PHASE AND GROUND 600A NON LOAD BREAKER CONNECTORS
MULTI—CONDUCTOR CABLE:	— ·— — — —D— — — · — —	
LOW VOLTAGE WIRING:	—————E—————	SIZED PER UL/NEC/LOCAL CODES
ETHERNET FIBER NETWORK CABLE:	—o———o———F——o———o———	MULTI—MODE ST CONNECTORS
480V 3ø+G 400A POWER CABLE:	— — — — — —G- — — — — — —	3 PHASE AND GROUND
SHIELDED HIGH VOLTAGE LOAD CABLE:	———·—·——H——·—·——·——	3 PHASE AND GROUND

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15kV outdoor power distribution switchgear for 20MW system consisting of four Vulcan-5 Load Banks.

Drawout vacuum circuit breakers with protective relays, plug-in connectors for 15kV cable, low voltage cubicle for load bank control, 400A shore power panelboard, 4 x 100A "pin-and-sleeve" connectors for load bank fan/control power, network interfaces, local touchscreen.