

Power Solutions for the Renewable Energy Market

*From turbine tower...to collector system...
to the utility grid.*



For Wind and Solar applications

- Load and fault interrupting switchgear, sectionalizing cabinets, reclosers and current limiting protectors
- Quality supplier of transmission and distribution products to the electrical industry since 1905
- Tested to applicable IEEE and IEC standards
- Arc resistant certified to IEC 62271-201, annex A
- GL certified designs
- ISO 9001:2008 and ISO 14001:2004 certified

G&W

Engineered to Order
Built to Last

CATALOG GW5-REM10

May, 2010

LOAD AND FAULT INTERRUPTING SWITCHGEAR

FOR UTILITY GRID APPLICATION

G&W SF6 padmount switches are available in a variety of multi-way configurations providing extreme flexibility for single or multiple sources feeding different loads or bus tie application. Specific features include:

- Ratings through 38kV, 900A load break, up to 25kA symmetric interrupting per IEEE C37.60.
- Multiple configurations available.
- Dead-front, compact construction
- Front access or front/back access to cable compartments and operators.
- Resettable, electronically controlled fault interrupters.
- Manual operation, remote operation or total SCADA control.
- Visible break verification of switch contact position.
- Two position (open/close) and three position (close/open/ground) switches available.
- Fully tested to applicable IEEE and IEC standards.
- IEEE 386 standard for 200A and 600A separable connectors.

FOR CONNECTING INDIVIDUAL TURBINE TOWERS

G&W SF6 vault style switches provide a load break and overcurrent protected connection point for individual tower locations. Fault protection for the transformers can be provided using vacuum interrupters. An integral ground position on the switch operator is available which facilitates easy grounding of the system by simply rotating the operating handle. Specific features include:

- Ratings through 38kV, 900A load break, up to 25kA symmetric interrupting per IEEE C37.60.
- Resettable, electronically controlled fault interrupters.



▲ Padmount switch installed outside the tower.



▶ Front access, 4-way switch with integral ground and visible break viewing windows.



▲ Compact vertical design fits through the typical entrance opening for installation after the tower is constructed.

LOAD AND FAULT INTERRUPTING SWITCHGEAR

- Multi-way configurations permit loop through of the turbine towers eliminating the need for separate cable junction points between the tower and the collector system.
- Dead-front, compact construction capable of fitting through a typical entrance opening of the tower.
- Manual operation, remote operation or total SCADA control.
- Visible break verification of switch contact position.
- Two position (open/close) and three position (close/open/ground) switches are available.
- Rear or side bushing location flexibility.
- Fully tested to applicable IEEE and IEC standards.
- IEEE 386 standard for 200A and 600A separable connectors.



▲ Padmount switch in a collector system.

SECTIONALIZING CABINETS

G&W multiple point junctions provide an extremely compact, versatile solution for loop, tap, grounding, testing or sectionalizing applications requiring multiple connection points for 200A or 600A elbows. Ratings are available through 38kV. Padmount and vault designs are available.



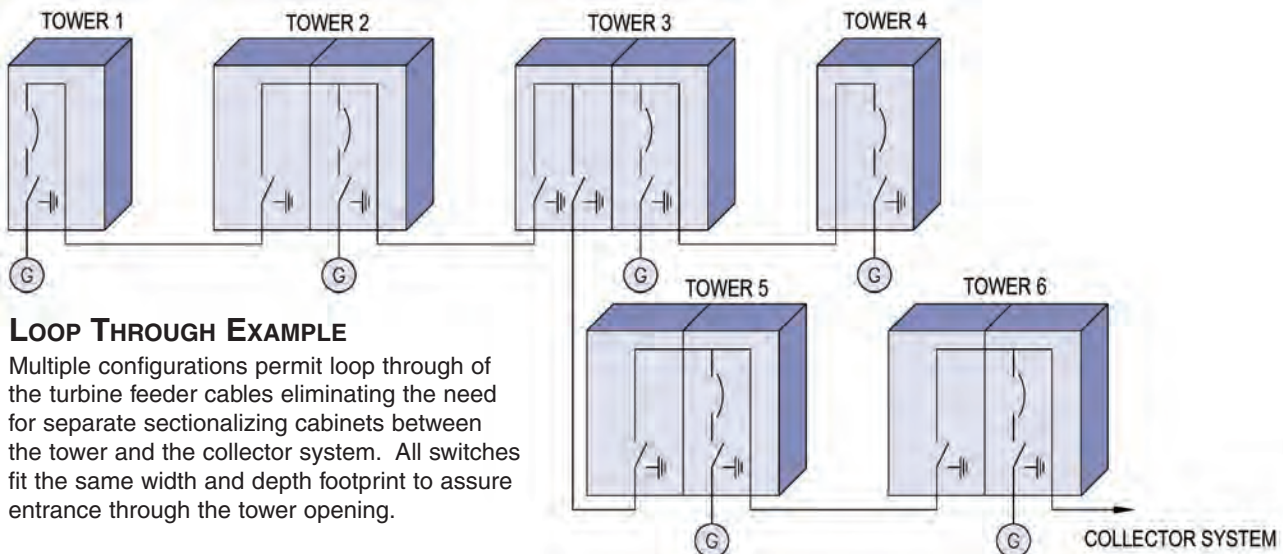
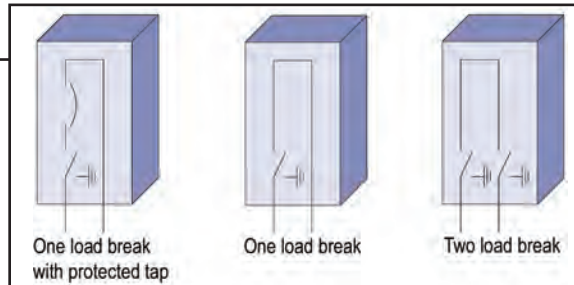
Other configurations are available.

OPTIONS

Options include overpressure relief devices, remote LCD display voltage indicator, remote trip, SEL relays and more. Contact your G&W representative.

SYSTEM DIAGRAMS FOR TOWER MOUNTED UNITS

Integral ground position shown. Configurations without ground position also available.



LOOP THROUGH EXAMPLE

Multiple configurations permit loop through of the turbine feeder cables eliminating the need for separate sectionalizing cabinets between the tower and the collector system. All switches fit the same width and depth footprint to assure entrance through the tower opening.

SOLID DIELECTRIC RECLOSERS

FOR UTILITY GRID APPLICATION

G&W Viper® reclosers offer an economical alternative to circuit breakers at the utility grid. The solid dielectric, three phase vacuum reclosers provide overcurrent protection for systems up to 38kV, 800A continuous and 12.5kA symmetrical interrupting. Reclosers are available with a variety of mounting brackets for overhead and substation applications. Dead-front padmount configurations are also available. Other features include:

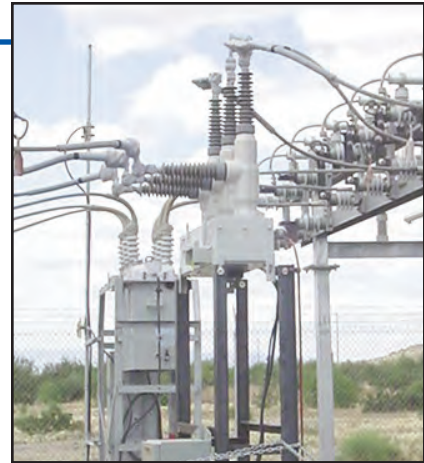
- Dead-tank construction permitting the use of external CTs for SCADA monitoring or metering applications.
- Control and relay flexibility including Schweitzer's SEL-351R, SEL-651R, SEL-351S, GE's URC and others.
- Tested to over 10,000 mechanical

operations. Circuit breakers are typically limited to 2000 operations.

- Extremely fast operation. Typically a 4 shot sequence including a 4.5 cycle interrupting time takes under 5 seconds. Circuit breakers typically take up to one minute for a similar sequence.
- Maintenance-free solid dielectric insulation compared to the routine maintenance required for gas or oil filled breakers.
- Fully tested to applicable IEEE and IEC standards.

Through programmable control logic, Viper reclosers can be configured for Fault Detection, Isolation and Restoration (FDIR), and peer-to-peer communication in one package.

Substation mounted (top) and dead-front padmounted units shown.



CURRENT LIMITING PROTECTORS

FOR UTILITY GRID APPLICATION

G&W's Current Limiting Protector (CLiP®) offers the benefits of current limitation to systems through 38kV, 5000A continuous current and provides fault interruption to 120kA and beyond. This unique device can be used to protect both the utility grid from excessive wind farm fault contributions and the wind farm system from any massive utility grid fault currents. G&W's CLiP limits the current which can protect under-rated circuit breakers or even permit the use of less expensive, lower rated breakers.

The CLiP allows any overloads and lower level faults to be cleared by

downstream devices and acts as catastrophic protection for the system by limiting the peak fault currents as well as minimizing let-through energy.

The CLiP is quite effective as an ArcFlash and ArcBlast mitigation tool. Energy levels are commonly reduced to less than 1% of that from a 5 cycle breaker. Flame suits do not reduce the explosive blast, whereas the CLiP can minimize the concussion as well as lower the required PPE category.

CLiPs can be remotely enabled or disabled. The units provide a remote



▲ Substation mounted 38kV CLiP

indication of operation feature permitting integration into a SCADA or other automation scheme to initiate secondary responses set by the utility after a trip has occurred.

ISO 9001:2008 Certified Company

G&W ELECTRIC CO.

3500 W. 127th Street
Blue Island, IL USA 60406
(708) 388-5010
Fax: (708) 388-0755
www.gwelec.com
ISO 14001:2004 Certified

G&W

Engineered to Order
Built to Last

SHANGHAI G&W ELECTRIC LTD.

No. 8 Lane 1505, Zu Chong Zhi Road,
Zhang Jiang Hi-Tech Park,
Pudong, Shanghai, China 201203
+86-21-5895-8648
Fax: +86-21-5895-6829
www.gwelec.com.cn