

## **MEIDENSHA Delivered a World-first High Voltage 204kV VCB for Hokkaido Shinkansen Bullet Train Project**

Tokyo.– November 26<sup>th</sup>, 2012– Meidensha Corporation “MEIDEN” (Tokyo Stock Exchange Sticker: 6508, President & C.E.O. Junzo Inamura) today announced it has installed a World-first highest voltage 204kV Dead Tank Vacuum Circuit Breaker “VCB” to a traction substation for Hokkaido Shinkansen Bullet Train Project which will be in service between Shin-Aomori Station and Shin-Hakodate Station. MEIDEN received the order in 2010 from The Japan Railway Construction, Transport and Technology Agency “JRTT”.

MEIDEN supplied a Japan-first Medium Voltage 7.2kV VCB in 1971.

Ever since then, we have been working on to increase its line-ups including the higher voltage and the wider model offerings.

Regarding the Dead-Tank VCB\*, we have been supplying 72kV model since 1979, 120kV model since 2006 and 168kV model since 2007. The installed units have been operating well. By the release of this 204kV Class VCB models, we could cover up to the system voltage 187kV by VCB.

Some of the excellent features of VCB are: 10,000 times of mechanical switching operation for load current switching and reduced maintenance work compared to breakers employing other arc-extinguishing mediums as SF6 gas.

Our many VCBs are used not only in the traction power field but also in the electric power systems and industry sector.

Further, recently, the customers require the power products for power transmission and distribution “T&D” with less carbon footprint as less environmental impact. For 72/84kV range line, we have been supplying SF6 Gas-free VCB since 2004. Unlike Gas Circuit Breaker “GCB” which used SF6 gas as one kind of greenhouse gases, our VCB employs vacuum interrupter and less SF6 gas for insulation only. And it is considered as an eco-friendly product.

From now on, we will develop the higher voltage switchgear, i.e. Gas Insulated Switchgear “GIS” and /or Cubicle type GIS “C-GIS” and will focus on Over 145kV rating product which employs key component i.e. VCB.

### **\*Note: Dead Tank VCB**

Except the power-line connecting part (terminal and bushing), the electrically charged parts including the vacuum interrupting part are housed inside the metallic tank which is earthed. Dead tank VCB has the excellent features in the electric safety level and the anti-seismic level.

### **■ Features of VCB:**

- (1) Longer life of interrupter: The arcing contact part erosion after interrupting current is less and has about 5 times longer life than GCB.  
(No Load and Load Current Breaking Time – GCB (2000 times) and VCB (10,000 times))
- (2) Employment of less SF6 gas which is specified as acts as a greenhouse gas, it has better environmental performance (eco-friendly): It realized about 2 times more CO2 emission reduction level.  
《SF6 Gas volume – GCB (160kg) and VCB (70kg). This is the CO2 reduction equivalent volume of 2,150 Ton.

(3) Reduction of Life-Cycle Cost (“LCC”):

: No internal area inspection (requiring the tank opening work) is required until 10,000 times breaking performance (This means NO SF6 gas collection work, NO disposal work and NO part replacement work is required until then).

: SF6 collection and reuse is easy (because the arc distinguishing occurs inside the vacuum valve (container), no cracked gas will be produced.)

《Replacement of circuit breaking part consumable item – In case of GCB, it requires to replace consumable parts after 2000 times of breaking performance or expiry of 18 years whichever is earlier. It has to perform the inspection by opening the breaker’s tank. 》

■ Basic Specification

Type	VB0-170532B	VB0-170740B
Rated Voltage (kV)	204	
Rated Current (A)	1200	2000
Rated Breaking Current (kA)	31.5	40
Rated Opening Time (s)	0.037	
Rated Breaking Time (Cycle)	3	
Operating Duty	A(0-1Min.-CO-3Min.), B(CO-15Sec.-CO), R(O-0.35Sec.-CO-1 Min.-CO)	
Rated Closing Time (s)	0.13	
Rated Circuit Operating Voltage (V)	DC100	
Rated Control Voltage (V)	DC100	
Insulation Medium	SF6 Gas	
Rated Gas Pressure (MPa·G)	0.15(20°C)	
Type of Operating Mechanism	Motor charged spring	
Applicable Standard	JEC-2300(1998)	

