



MRC moved to new location



On 21 November 2005, Guangdong MR OLTC Ltd. (MRC) completed the move to their new home, which is much bigger and more comfortable than the old one. Of course, there is also a nice place available for the training centre. The new building locates also in Panyu and is very close to the previous one. Around 60 employees are working here. ●

The Address of the new location is as follows:

761 Qiao Xing Da Dao
Shatou Jie, Panyu District,
Guangzhou, Guangdong
P.R.C., China
Postcode: 511400

Contact information of our Competence Center in China:

We have moved but our service hasn't. We are always available for you and looking forward to serving you!

Guangdong MR OLTC Ltd.
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Postal Code 511400
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Please call

Mr. Robert Schwertner, Sales Manager 0086 135 7070 7149
Mr. Jianhua Zhong, Head of Service 0086 136 0901 4763

MR on all continents

Our new subsidiary SBR Engineering made its start in South Africa

SBR Engineering changed hands in Johannesburg, South Africa on September 1 2005 and is now owned 100 % by MR bearing the name SBR Engineering. The new managing director is Jürgen Schwarz. The subsidiary, with currently a total of 18 employees, was founded by Siegfried Bruno Raab and Erika Raab in 1986 offering technical service for MR, Trafo Union, Siemens and AEG on-load tap-changers since. In addition, maintenance and repair were also carried out on Ferranti, ATL and ABB on-load tap-changers. By taking over SBR Engineering, MR now offers its complete product range and technical service throughout South Africa and the Sub-Sahara region. ●

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Information worth knowing:

- Technical service on non-MR OLTCs is also carried out by SBR Engineering
- 24/7 hotline
- On the basis of the established trademark SBR Engineering, SBR will continue to stand for reliability and high quality
- Sale of new products to OEMs and utilities as well as After Sales Service

Voltage regulators in phase shifter projects

Tailor made solutions made by MR



Europe's high-voltage grids continue to be linked more and more closely. According to UCTE forecasts, central Europe will become a net electricity importer by 2010 ("UCTE System Adequacy Forecast 2004-2010", report dated 19 January 2004). Contributing factors are liberalisation of the electricity market, decommissioning of power plants, and increased generation from wind energy. Electricity transmissions will increase, and so will the need for regulation.

Through a special coil arrangement, phase shifter transformers enable active energy flows to be controlled with constant voltage. Underload and overload can thus be compensated step by step, resulting in higher transmission efficiency. The voltage of regulating transformers under load is adjusted via an on-load tap-changer. The system is controlled by adding or subtracting an auxiliary voltage at the main winding. If a phase shifting transformer is selected, for example, its auxiliary voltage will have a phase angle " α ". However, this angle only applies to idle mode, i.e. zero position of the on-load tap-changers. Under load, angle " β " of the phase shifter also has to be considered. The phase angle under load therefore is " $\alpha - \beta$ ". The angle will change, depending on in-phase regulation in the positive or negative range.

The solution options available for phase shifter projects will depend on the philosophies adopted by the utility companies and transformer manufacturers. In many cases, five MR on-load tap-changers are required, i.e. three for in-phase regulation on the high-voltage side, one for quadrature regulation on the low-voltage side, and one for quadrature regulation on the high-voltage side.

A TAPCON® 260 voltage regulator is used for in-phase regulation. A further TAPCON® 260 acts as active power regulator for quadrature regulation. It features a display showing the actual active power, the voltage level, the control deviation and the tap positions.

The voltage regulators can be operated in automatic or manual mode. The current setting is indicated via an LED at the front panel. In manual mode the voltage regulator only responds

to external commands, which can be entered via the keyboard at the front panel of the voltage regulator or via the remote control inputs. TAPCON® 260 also features a serial interface for receiving commands from the control system, e.g. switching between manual and automatic mode. From the control room the operator can also change parameters such as the voltage level. In contrast to the voltage regulator, for the active power regulator this is the rated active power value. With manual remote control via the control system (in addition to the new IEC61850 protocol, more than 10 different control system types are available), switching signals can also be triggered. In automatic mode regulation is based on the previously selected or defined bandwidths. An individual delay time can be set. The positions of the on-load tap-changers and the motor protective switches determine which on-load tap-changers are used. In the event of a motor protective switch tripping, the voltage regulator switches to manual mode, i.e. automatic control is switched off.

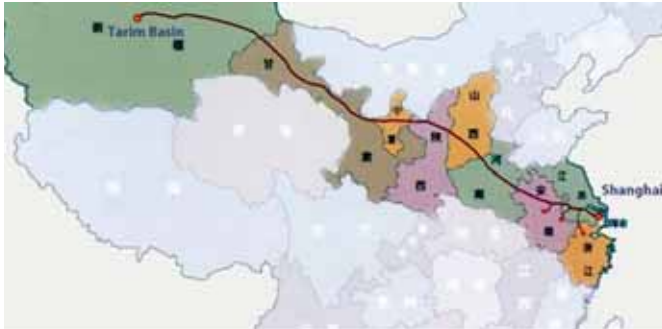
Since mains conditions may vary significantly, different changes in power level can be specified for each step. The voltage regulators therefore measure the conditions after each switch operation and use the result to determine the regulation threshold. The regulators can be switched on or off flexibly via different adjustment values. All settings can be made directly at the voltage regulator or from a laptop via the "TAPCON-trol SYSTEM" visualisation software provided.

In the event of a critical grid condition the TAPCON® 260 receives a signal and starts switching both quadrature regulator on-load tap-changers simultaneously, in order to reach the set voltage level as soon as possible. If a specified overcurrent limit is exceeded, any delay time that may have been set is disabled. As long as the phase shifter transformer load is within the normal range, this rapid regulation ensures that the current remains below the specified critical limit. ●

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Controlled Voltage for China's Longest Natural Gas Pipeline

Major Contract Awarded to MR's Power Quality Management Unit



MR's Power Quality Management Division proudly announces the award of a major contract for the delivery of compensation systems for China's longest natural gas pipeline. This pipeline has been designed to transport natural gas over a stretch of more than 4000 kilometers, to deliver this important fuel from the Xianjiang desert region to the Yangtze River Delta, and, via branch pipe, to Beijing.

To keep the natural gas moving at the desired rate, the pressure must be increased. This task is accomplished by compressor stations located at approx. 300-kilometer intervals along the pipeline. These compressor stations are powered by natural-gas turbines or electric drives. The electric drives used in the compressor stations are speed-variable and powered by high-performance transformers and power converters with capacities of up to 22 MW. To prevent inadmissible harmonics and regulate the reactive power balance, the 10-kV voltage level will be equipped with multi-level filter circuit systems as demanded by the Chinese power authorities. Altogether, a total of eight variable-speed drives plus the associated filter circuits will be required for the

WEPP and SHANJING projects. MR will design, deliver and commission these filter circuits together with the drives supplied by the power converter manufacturer. For that purpose MR will be required to provide extensive customer consulting and prepare network analyses – underlining once more MR's core competence in the field of Power Quality. Delivery of the systems will be after a very short project term of only five months. To meet this task and time challenge, MR will employ the POCOS® compensation system, which, thanks to its modular design and superb adaptability, has been designed to support a wide spectrum of customer requirements. The design and delivery of 40 filter circuits total with a combined output of 75 Mvar – yet another milestone project for PQM ! ●

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PetroChina has designed the pipeline route to go from the Lunnan compression station in the Tarim Basin in the West Gobi desert, along the southern edge of the Tengeli and Maowusu deserts, over the Luliang, Taiyue and Taihang mountains, then across the Yellow River, the Yangtze River and the Huaihe River, then finally down to Shanghai in the East Coast. Construction of the pipeline began two years ago and is scheduled for completion later this year.

MTraB® on heat test in Mexico



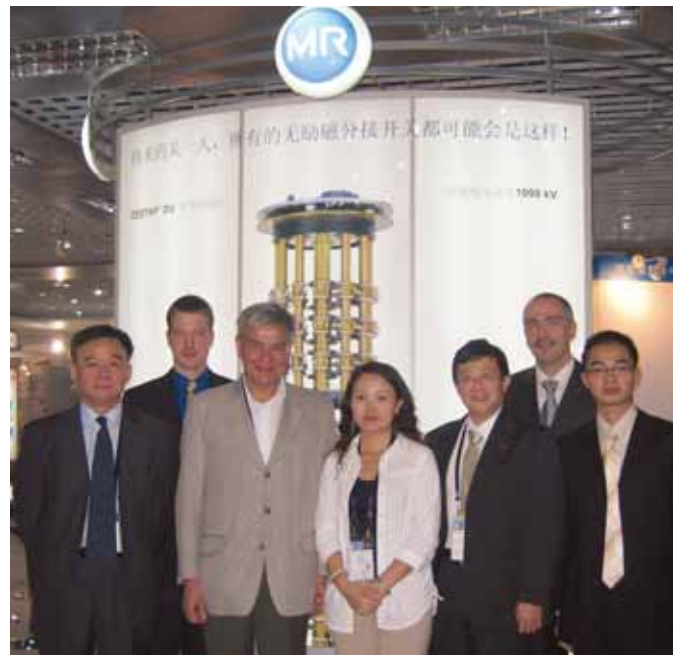
Messko's MTraB® (Maintenance-free Dehydrating Breather) with a 18,700 litres capacity was retrofitted on a 1990 18/24/30 MVA, 110KVD/13.8KVY power transformer at mexican Compañía Federal de Electricidad (C.F.E). The transformer is in service at a substation in Puerto Vallarta. C.F.E. selected the site to expose the MTraB® to ambient conditions with extreme humidity. ●

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Successful MR Presence in Beijing

OLTC models VACUTAP® VR and VACUTAP® VT as well as the newly developed DEETAP® DU were presented at our booth on "The Fifth International Conference on Power Transmission & Distribution Technology 2005" in Beijing, city of the Great Wall and the Olympic Games 2008. Dr. Dazhong Shen gave a lecture on On-Load Tap-Changers with Vacuum Interrupters and Overvoltages in Circuit Breakers. This exhibition was the ideal platform to communicate directly with our customers and to raise our MR beer mugs in a toast to a successful business relationship. ●

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Product Promotion in Kunming

MRC held a product seminar with emphasis on VACUTAP®AVT and VACUTAP®VT OLTCs in Kunming Hotel on September 26. Both types are especially designed for dry-type transformers. About 70 technological specialists from big Chinese enterprises such as cigarette factories, iron works, chemical plants as well as design institutes for power supply attended the seminar. ●

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First ex-protected OLTC delivered to France Transfo

At France Transfo the first explosion-protected VACUTAP® VV-Ex was built in a 20-MVA-transformer destined for an oil platform in Congo. Our photo shows the also delivered ex-protected motordrive ED. MR is the first OLTC manufacturer worldwide to certify his products in accordance with Directive 94/9/EC (ATEX) (compliant with IEC and NEC 505 in North America). Incidentally, this also applies to MR's internal quality assurance system. ●



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OLTC for Zagreb delivered in record time

If it hadn't been for MR's quick reaction, half of Zagreb's population would soon have been without heat. Because an on-load tap-changer made in Bulgaria 1977 was causing big problems at a heating plant near the Croatian capital, the local utility felt forced to procure a replacement on-load tap-changer with motor drive unit within a very short time. For MR this meant manufacturing an OILTAP® V III 200Y plus motor drive ED in the record time of just six working days and delivering it for installation to

the Croatian transformer manufacturer Konçar Distribution and Special Transformers. The MR manufacturing plant in Regensburg met the deadline and at Konçar installation was also completed without problems. MR's local agent M-T Servis assisted at Konçar (Photo). Proof that MR customers can always count on reliable support – especially in emergencies. ●

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Type plate of the transformer

32-MVA-transformer and OILTAP® V-OLTC at Konçar Distribution



28 years old transformer

Installation of new OILTAP® V-OLTC



In production now:

New DEETAP® DU off-circuit tap-changer



MR's new DEETAP® DU off-circuit tap-changer already caused a stir in expert circles and at trade fairs. Now production of this product with the totally new design has begun in Regensburg.

A carefully conceived modular system offers a great number of standard versions (four times as many as before!). The tripping/interlocking contact integrated in the off-circuit tap-changer head provides even more safety and new materials ensure innovation and an even higher level of quality. The standard DEETAP® DU is available as single and three-phase model for up to a max. of

2000 A rated through-current. Naturally, the new off-circuit tap-changer is in absolute conformance with IEC regulations. Even installation of the bell-type tank is easy. Starting on 10.31.2005, the DEETAP® DU replaced its U model series predecessor.

Our photo shows all the specialists who worked on this project - from design engineering to manufacturing. ●

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