



**SIEMAG
TECBERG**

TECHNICAL INFORMATION

TRIGENERATION SYSTEM FOR MINE COOLING WITH P.E.S.*

***PRESSURE EXCHANGE SYSTEM**

(HUAINAN MINING GROUP, DINGJI COAL MINE, P.R. CHINA)

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TRIGENERATION FOR MINE COOLING WITH P.E.S.*

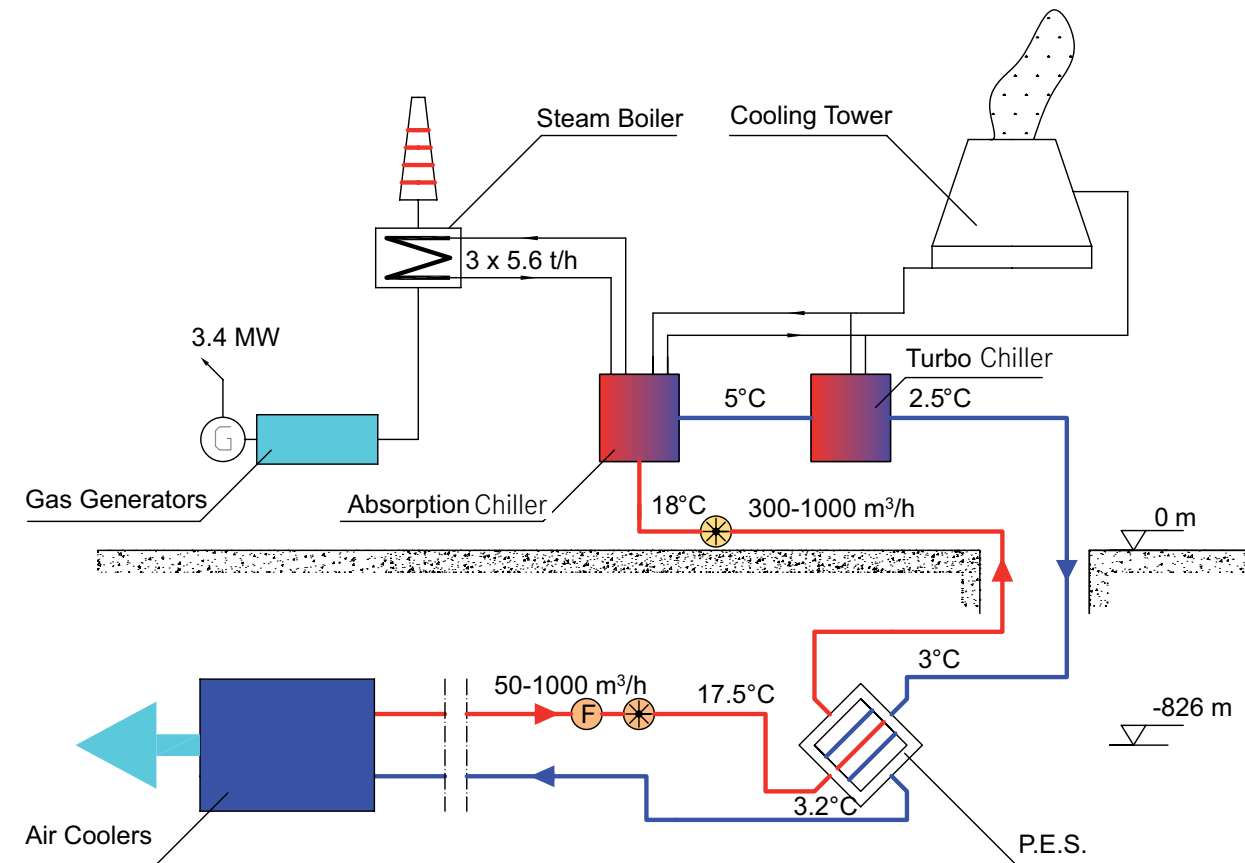
*PRESSURE EXCHANGE SYSTEM

A coal mine does not only produce the “black gold” so much in demand, but also methane on a large scale. The escape of this gas into the atmosphere should be avoided as it may cause explosions and in any case will produce considerable greenhouse gas emission. The advantageous alternative is to collect the gas and feed it into a power generation system to produce electrical energy. In turn, this energy can be used for operating the machines and facilities of a mine. The saved greenhouse gas emission can be sold in the marketplace. In case of

Clean Development Mechanism (CDM) projects also the investment will be done by others.

In addition to electrical energy, the power generation system also produces exhaust with high temperatures. It is recommended to use this exhaust in a trigeneration system for heating the steam boiler which will serve the facilities for heating in wintertime and serve the absorption chiller for cooling the faces in summertime.

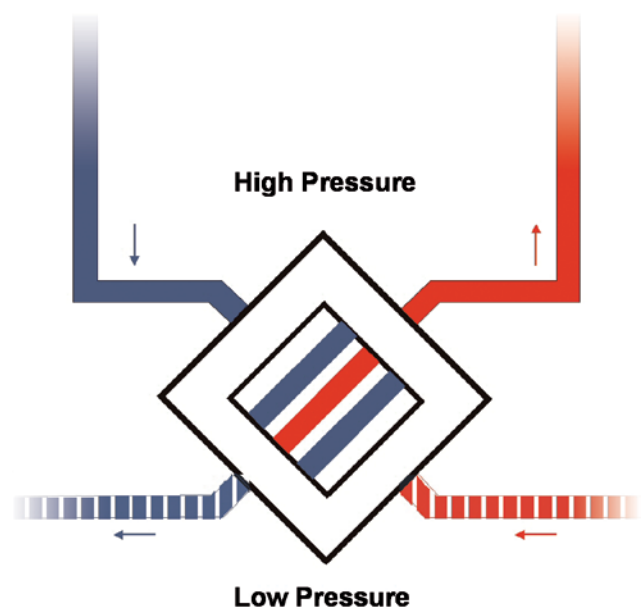




In 2007, the Dingji Coal Mine, which belongs to the Huainan Mining Group Co. Ltd., Anhui Province, P.R. China, with the support by the Hefei Design Institute, accomplished the design of the Combined Cooling, Heating, and Power Generation System. The main components were purchased in late 2007, the installation was erected in mid-2008, and operation started in July 2009.

MAIN TECHNICAL DATA OF THE COMBINED SYSTEM:

Electrical capacity:	3.4 MW
Steam Capacity:	3 x 5.6 t/h
Cooling capacity:	17.5 MW



SIEMAG TECBERG supplied the Underground Cooling Medium Transport System for the central cooling system. In this system, SIEMAG TECBERG's P.E.S. (Pressure Exchange System) assumes the function of a pressure lock between the high pressure circuit from surface (PN 100) and the low pressure circuit to faces (PN 40). The inlet water temperature of the underground circuit is lower than 3.5°C owing to the internal insulation of the P.E.S. pipe chambers which ensure a temperature rise of less than 0.5°C from inlet to outlet. The water flow in the underground water circuit can continuously be regulated from 50 to 1000 m³/h. With this quantity of cooled water, Dingji Mine is able to operate up to 40 x 400 kW coolers in the faces.



LOCATIONS:

GERMANY | HAIGER (HEADQUARTERS)

SIEMAG TECBERG GmbH
 Kalteiche-Ring 28-32
 35708 Haiger, Germany
 Phone +49 2773 91610
 E-Mail info@siemag-tecberg.com

POLAND | KATOWICE

SIEMAG TECBERG POLSKA Sp. z o.o.
 ul. Mickiewicza 29
 40-085 Katowice, Poland
 Phone +48 32 2072086
 E-Mail info@siemag-tecberg.pl

SWITZERLAND | SEDRUN

SIEMAG TECBERG GmbH
 Plant Operation
 7188 Sedrun, Switzerland
 Phone +41 81 9365280
 E-Mail info@siemag-tecberg.ch

CHINA | BEIJING

Beijing SIEMAG TECBERG
 Mining Equipment Co., Ltd.
 Room 21-03, Block A, CITIC Building
 19 Jianguomenwai Dajie,
 Beijing 100004, P.R. China
 Phone + 86 10 8526 1713
 E-Mail info@siemag-tecberg.cn

CHINA | TIANJIN

Tianjin SIEMAG TECBERG Machinery Co., Ltd.,
 Guangyuan Road South,
 Tianjin High-Tech Industrial Park,
 Third Phase Wuqing Development Area,
 Tianjin 301700, P. R. China

AUSTRALIA | SYDNEY

SIEMAG TECBERG Australia Pty Ltd.
 Unit 7, 2 Eden Park Drive (PO Box 1442)
 North Ryde NSW 2113, Australia
 Phone +61 2 9888 3900
 E-Mail info@siemag-tecberg.com.au

SOUTH AFRICA | JET PARK

SIEMAG TECBERG (Pty) Ltd.
 Unit 15, Lakeview Business Park,
 Yaldwin RD, Jet Park, Johannesburg
 P.O. Box 2964, Edenvale 1610,
 South Africa
 Phone +27 11 383 9300
 E-Mail info@siemag-tecberg.co.za

SOUTH AFRICA | GERMISTON

Winder Controls (Pty) Ltd.
 56 Stanley Street, Germiston, Ext. 3, Gauteng,
 P.O. Box 383, Germiston 1400,
 South Africa
 Phone +27 11 873 4650
 E-Mail winder@winder.co.za

USA | MILWAUKEE

SIEMAG TECBERG Inc.
 2969 South Chase Avenue
 Milwaukee, WI 53207, USA
 Phone +1 414 727 5725
 E-Mail info@siemag-tecberg.us