EUROPEAN PARLIAMENT

Mezzanine Yehudi Menuhin

Paul-Henri Spaak Building

EXHIBITION

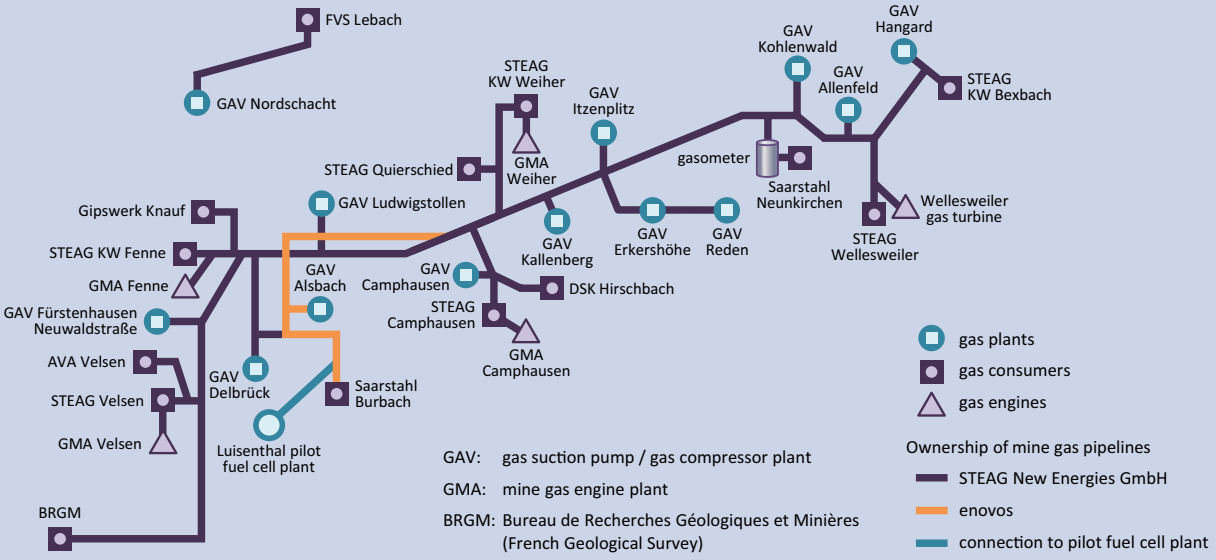
12 – 14 NOVEMBER 2013

COAL IN ACTION

GERMANY

WHERE ELECTRICITY IS GENERATED FROM MINE GAS

The German Saarland region operates the world's largest mine gas combined heat and power plant at Völklingen-Fenne with a capacity of 42 MW. The Saarland has a 110 km mine gas grid connecting local gas extraction stations with mine gas-fired combined heat and power plants. Mine gas from active hard coal mines is extracted during production and pumped to the surface through a series of pipes. It is then compressed before being delivered to combustion plants. Even after a mine closure, mine gas can still be captured and pumped to the surface, avoiding the uncontrolled relase of gas.



EUROPEAN UNION

LIGPOWER – COST-SAVING CLEANING IN POWER PLANTS

Lignite is a competitive energy source in the power generation of many European countries. However, the specific properties of lignite lead to relatively low softening and melting temperatures, resulting in deposits forming in the boiler during combustion. LIGPOWER was a three year Research Fund for Coal and Steel (RFCS) project aimed at improving the cleaning equipment and finding new easier-to-clean heating surfaces with the goal of enhancing the availability and competitiveness of lignite as an energy source.

EUROPEAN UNION

NEMAEQ – A PROJECT THAT MAKES EUROPEAN HARD COAL MORE COMPETITIVE

Coal mining in Europe occurs at depths of up to 1 400 metres where both the rock temperature and pressure are significantly greater than in the shallow deposits in Australia and America. To compete, European coal producers need to be highly productive which is only possible through improved mechanisation of all processes and optimal automation of the mining equipment. NEMAEQ was a project funded by the Research Fund for Coal and Steel (RFCS) aimed at developing a fully automatic shearer loader system which cuts and loads the coal without major manual interaction; including also load dependent regulation, coal/rock distinction, collision avoidance and appropriate control and data processing technologies.

NORWAY

ENABLING SCIENCE IN THE ARCTIC CIRCLE

Store Norske mines coal 1 250 km from the North Pole in some of the most challenging conditions: coal can only be shipped once sea ice melts in late summer. This unique location attracts many scientists and engineers. Only here is there a single ground station that can stay in contact with the polar-orbiting satellites that map the world and measure global temperature changes. The Svalbard Global Seed Vault provides a safety net against losing crop diversity. The NASA rover that is now exploring Mars was tested in the arctic desert of Svalbard. All of this is made possible only because of the mine, its infrastructure and the local community.

POLAND

SKIING ON OVERBURDEN – THE HIGHEST PEAK IN CENTRAL POLAND

Kamieńsk mountain is the highest peak in Central Poland. It is man-made – built of overburden from the lignite mine Bełchatów. Today's forested mountain is the result of a comprehensive rehabilitation plan which transformed this industrial location into an attractive summer and winter tourist resort. The main attraction is a 760-metre long ski slope with one chairlift and two ski lifts, as well as an ultra-modern toboggan run and several bike trails.

SLOVENIA

ŠALEK VALLEY – WHERE COAL MINING STANDS FOR WELFARE AND PROSPERITY

The mining company Premogovnik Velenje in Slovenia provides lignite to the nearby Šoštanj power plant, producing electricity for the entire region and covering 31 % of the country's electricity needs. Thanks to lignite mining, the small town became the fifth largest city in Slovenia in less than fifty years. Premogovnik Velenje takes seriously its commitments in the field of social responsibility and the rehabilitation of mining sites in order to marry industrial activity and high living standards.

POLAND

INTERACTIVE TRAINING WITH VIRTUAL SIMULATION AND ON-LINE DOCUMENTS

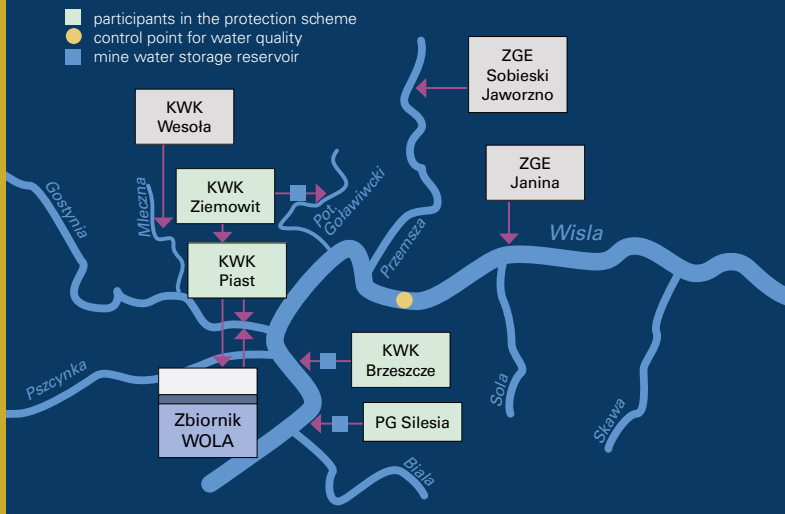
Mining is not only about hard and hazardous work. Nowadays, advanced ICTs are vital to underground operations and also in the field of training. Interactive training material, including accident scenarios as well as advanced applications that aid with manual activities, are successfully used at underground mines in Poland.

POLAND

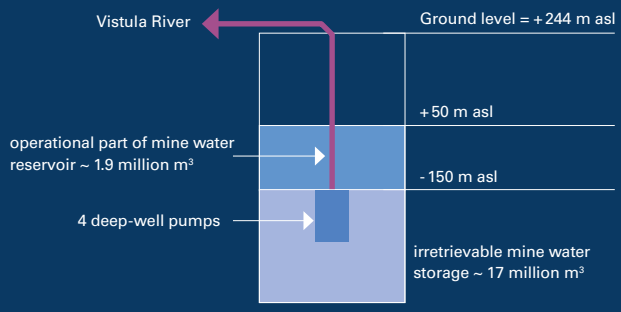
PROTECTING THE UPPER REACHES OF VISTULA RIVER

Since 2002, Kompania Węglowa has worked on the protection of the Vistula river in Poland against salt water from coal mines. The protection scheme is based on a temporary reservoir of salty mining water followed by regulated inflow of this water to the river in order not to exceed the acceptable limits for chloride and sulphide concentrations. During periods of low water levels, the most salty mine water is stored in the Wola reservoir until periods of high level water, when it can be safely released.

The "Mała Wisła" scheme



Commissioned: 2008
Total investment: c. € 10 million
Ecological benefits: balancing salt concentration in the Vistula River and avoiding the discharge of 998 000 tonnes of salt stored in former mining excavation



SLOVENIA

THE WORLD'S BEST MINING OF THICK COAL SEAMS

Velenje coal mine in Slovenia – with more than 135 years of mining tradition – uses highly developed technologies. Exploiting one of the thickest lignite seams in the world, the company has developed a unique and patent-protected method for extracting thick coal seams. The basic approach at Velenje coal mine is to extend coal extraction above the protected area at the face. Natural forces break and crush the seam. Thanks to modern mining equipment, especially hydraulic supports and advanced chain conveyors, the company uses a lower number of wider longwall faces. The method is producing enviable results, placing the coal mine at the global forefront of underground coal mining.

GERMANY

RECULTIVATION OF COLLIERY SPOIL TIPS

Over the long history of coal mining in the Ruhr basin, hard coal extraction from underground mines inevitably produced unwanted waste material – now a feature of the surface landscape in coalfield areas. Some of these spoil heaps have undergone changes on their own, others have provided a site for artistic works. "Totem" is a piece of contemporary art by the Basque painter and sculptor Agustín Ibarrola. Created from more than one hundred railway sleepers, it is intended to portray the apparent contradictions between industrial landscapes and nature.

UNITED KINGDOM

NORTHUMBERLANDIA – THE LADY OF COAL

At Shotton in Northumberland, the Banks Group decided to create the world's largest human landform "Northumberlandia", using 1.5 million tonnes of carefully selected stone, clay and soil extracted from the adjacent Shotton surface mine. The Lady was designed in line with a "restoration first" approach, where extra land not needed for coal mining was provided by the landowner Blagdon Estate to deliver a lasting and positive legacy for both the local community and the wider region.

Since being officially opened by Her Royal Highness The Princess Royal in September 2012, "Northumberlandia" has proved extremely popular with local residents and tourists alike. Many thousands of people visit the 47-acre public park in which she resides every week.

GERMANY

WATER BUFFALOES AT LAKOMA

Since the natural paradise of "Spreeaue" was opened to visitors in 2007, thousands of tourists, cyclists, hikers, kids and teenagers have come to visit this fascinating area of 530 hectares between Cottbus and Spreewald in Germany. The area became the new home to more than 146 000 amphibians, while oxen, wild horses and water buffaloes graze on the meadows. Many fish are bred in the ponds. Fire-bellied toads and tree frogs have found a new habitat in the biotopes which draw locals and tourists from all across Germany. The new landscape offers new perspectives and new views on local sustainable development.

HUNGARY

A BUCKET-WHEEL EXCAVATOR STANDING TALL AT 24 m

In order to further improve productivity at the Bükkábrány opencast mine of Mátrai Erömü in Hungary, a new compact excavator was designed and built.Taking three years to build, the excavator's capacity of 6 700 m^3/h is 20% higher than the known capacity of any other excavator in the world. In terms of weight and power, the excavator also sets new standards and since it has been in operation it has significantly contributed to the mine's productivity. The compact design, the two-crawlers and the large belt wagon allow flexible operations, while the integrated control and monitoring system guarantees easy handling. In 2012, the excavator moved some 13.2 million cubic metres, accounting for some 50% of the total overburden removed at the Bükkábrány mine.

CZECH REPUBLIC

MOST HIPPODROME – A FAVOURITE RECLAMATION PROJECT

The Hippodrome racecourse, located in the 790-hectare Velebudice reclamation park in Most is a unique and highly acclaimed project of the "Czech reclamation school".The idea was to give new breath and social importance to this former surface mine. The result is a unique racecourse, skirted by a 3 370 m in-line skating track, a show jumping field, training fields, a golf course and a picnic park for the public. The brown coal companies Vršanská uhelná and Severní energetická are proud of the outcome: 100 000 visit the Hippodrome every year, proving the success and originality of the project.

CZECH REPUBLIC

THE DRAGON OF BŘEZNO

At Březno village, the retired bucket-wheel excavator KU 800 has become an industrial monument, standing for the glorious history of modern surface mining in the North Bohemian brown coal basin. The veteran KU 800, with a respectable 32 years of service and winner of eleven overburden extraction records, attracts tens of thousands of visitors every year to witness the technical and design skills of Czech brains and hands. This "dragon" symbolises the technological success of modern and efficient surface mining. Children from Březno village might also relate the fantastic fairy tale of the Good Dragon and the Brave Knight, who saved the village many centuries ago.

BULGARIA

FROM COAL TO GYPSUM

Over one half of Bulgaria's electricity is generated from coal, mainly mined by Mini Maritsa Iztok. At the Maritsa Iztok complex, gypsum is collected as a by-product of the flue-gas desulphurisation process at two power plants. Gypsum is found in nature, but Knauf Bulgaria and Technogips can now produce gypsum plasterboard sheets and gypsum products out of a raw material which is in fact a waste product from power plant operation rather than from gypsum mines. This successful symbiosis between lignite mining, power generation and product manufacturing is a unique solution that ensures the efficient utilisation of indigenous resources, protects ambient air and respects the requirements of EU environmental regulations.

FRANCE

ADVANCED AMINE POST-COMBUSTION CO_2 CAPTURE AT LE HAVRE

The reduction of CO_2 emissions from fossil fuels is one of the challenges that EDF intends to meet over the coming years. The carbon capture demonstration plant located at the coal-fired power plant of EDF in Le Havre aims to demonstrate Alstom's proprietary Advanced Amine Process (AAP) Technology.

The first tonne of CO_2 was captured on 11th July 2013 and approximately 25 tonnes of CO_2 will be captured every day. The primary test objectives are the validation of key process performance parameters such as CO_2 capture efficiency, thermal degradation and related environmental emissions as well as material selection for key components. Additionally, the robustness and behavior of the AAP technology under transient operating modes such as load variations and "cold" and "hot" start-ups and shut-downs will be examined as well as of course the economic viability of the process.

CZECH REPUBLIC

LESS EMISSIONS AND MORE ELECTRICITY

Czech domestic coal reserves will continue to play a key role in the national energy mix to make the country less dependent on fossil fuel imports. ČEZ committed to refurbish coal-fired power plants and construct new high-efficiency ones to provide economically attractive and lower-carbon solutions to meet the country's power demand. Prunéřov power plant (3x250 MW) will increase its efficiency from 32.8% to 40%, Tušimice power plant (4x200 MW) from 33% to 39% and the first supercritical brown coal-fired unit in the country (660 MW) with a net efficiency of 42.5% is under construction at Ledvice. All three power plants have a long future ahead – providing affordable, reliable and lower-carbon electricity.

This exhibition – part of the 4th EUROPEAN COAL DAYS – shows many good examples of where the European coal and lignite industry has successfully protected and restored natural habitats, of where new technologies are contributing to climate protection and of where coal and lignite stimulate the economic development of many European Union regions.

For more information:
www.europeancoaldays.eu