



Factsheet providing a brief summary on one of the model sites in ProMine

Glogow-Legnica Installation (Poland)

October 2010

The Glogow-Legnica installations are the ProMine model site for the production of high value rhenium powder and rhenium alloy products from copper smelter waste streams for use in jet engine turbines.



Glogow-Legnica Installation, KGHM Ecoren S.A.

KGHM Ecoren S.A. has been operating since December 2006 and is the sole rhenium producer in Poland. Ecoren's facilities are divided between Glogow, where it produces ammonium perrhenate (APR), and Legnica, where the subsequent production is planned of spherical powders of rhenium and its alloys. Ecoren's products are obtained as by-products of copper smelting carried out by KGHM Polska Miedz S.A., who own and run the copper production in the area. Ecoren's APR production facilities are within the site of two copper smelters, located 7-11 km north-west of the densely built-up city of Glogow. The Technology Park KGHM Letia in Legnica is located 55 km to the south of Glogow. Glogow and Legnica are both located in the Odra river basin.

Current Situation

The currently operating technology recovers rhenium from the washing of acid generated by the sulphuric acid plant at the Glogow copper smelters. The technology involves two fundamental steps. In the first, rhenium eluates are produced. These are then processed and high purity crystalline ammonium perrhenate, containing a minimum of 69.4% rhenium, is separated. The envisaged production of metallic powders of rhenium at Legnica is based on a combined hydrometallurgical and powder metallurgy method.



There is constant technical supervision of the condition of devices, tanks, pipelines etc. Acidic gases contained in tanks are neutralized in a gas treatment plant to which they are connected via a network of pipes. Liquid substances are stored in the appropriate containers and tanks and in suitable places to prevent any harmful repercussions in the event of leakages. Machines and technological devices are stored on a paved area in a covered protection hall so as to minimize the potentially harmful impacts on the soil-water.

The production of rhenium products has increased from 1.5 tons in 2006, when production began, to nearly 8 tons in 2010 (including almost 1 ton of pure metallic rhenium), which is around 15% of world production. KGHM Ecoren S.A. is the largest producer of rhenium products in Europe.

ProMine Model Site - Poland

More information can be found on promine.gtk.fi

Expected Outcome from ProMine Research

The spherical rhenium powders and its alloys are expected to be used in the aviation and aerospace industry. Utilisation of waste material for production of high-value products directly addresses the growing need for environmental footprint reduction.



Some facts

APR Production Facility at Glogow run by KGHM Ecoren S.A.

Start of operation 2006	Employees 248
Type of Process Technological process that involves the production of first rhenium eluates and finally ammonium perrhenates (APR)	Land owned/land disturbed Ecoren's APR production facilities are on the grounds belonging to KGHM Polska Miedz, where the copper smelters Glogow I and II are located
Production (end 2008) ~5t	Product applications Blades of jet engines and turbines
Hazardous waste generated (t/year) Filtration cake consisting of lead sulphate (420) Spent ion exchange resin (40) Packaging containing residues of or contaminated by dangerous substances (10)	Waste water generated and treatment In 2009, 76,000 m3 of industrial (acid) waste water was generated. Waste waters are disposed by sewage system to a treatment plant operated by Energetyka company, and after treatment, discharged in the Odra river.
Recycled waste The waste from filtration in the technological process, so called filtration cake, contains lead-sulphate which is fully utilized in lead production (35t/month on average)	Distance from nearest town(s) 7-11km from Glogow
Philanthropic contributions to the community 200kPLN (~50k€)	Main activities in region Both Glogow and Legnica are heavily industrialised areas

Core Team at Glogow-Legnica Model Site

KGHM Ecoren S.A. (Ecoren), Poland

Owner of installation/R&D provider

Instytut Metali Niezależnych (IMN), Poland

R&D provider

ProMine Partners



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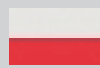
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INPL, INSTITUT NATIONAL POLYTECHNIQUE DE LORRAINE



BOLIDEN, BOLIDEN MINERAL AB
KEMAKTA, KEMAKTA KONSULT AB
LTU, LULEÅ TEKNISKA UNIVERSITET



IGME ES, INSTITUTO GEOLÓGICO Y MINERO DE ESPAÑA



CUPRUM, KGHM CUPRUM SP ZOO
CENTRUM BADAWCZO-ROZWOJOWE
ECOREN, KGHM ECOREN S.A.
IMN, INSTYTUT METALI NIEZELAZNYCH



AGCMP, AGC MINAS DE PORTUGAL UNIPESOAAL LIMITADA
LNEG, LABORATORIO NACIONAL DE ENERGIA E GEOLOGIA, I.P.



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