

In short:

The project is implemented by six partners from three countries: the UK, Spain and Poland. With each region comes two partners - scientific unit and the company:

from UK :

- University of Glasgow (UoG)
- Alkane Energy

from Spain:

- University of Oviedo (UoO)
- Hulleras del Norte S. A. (Hunosa)

from Poland:

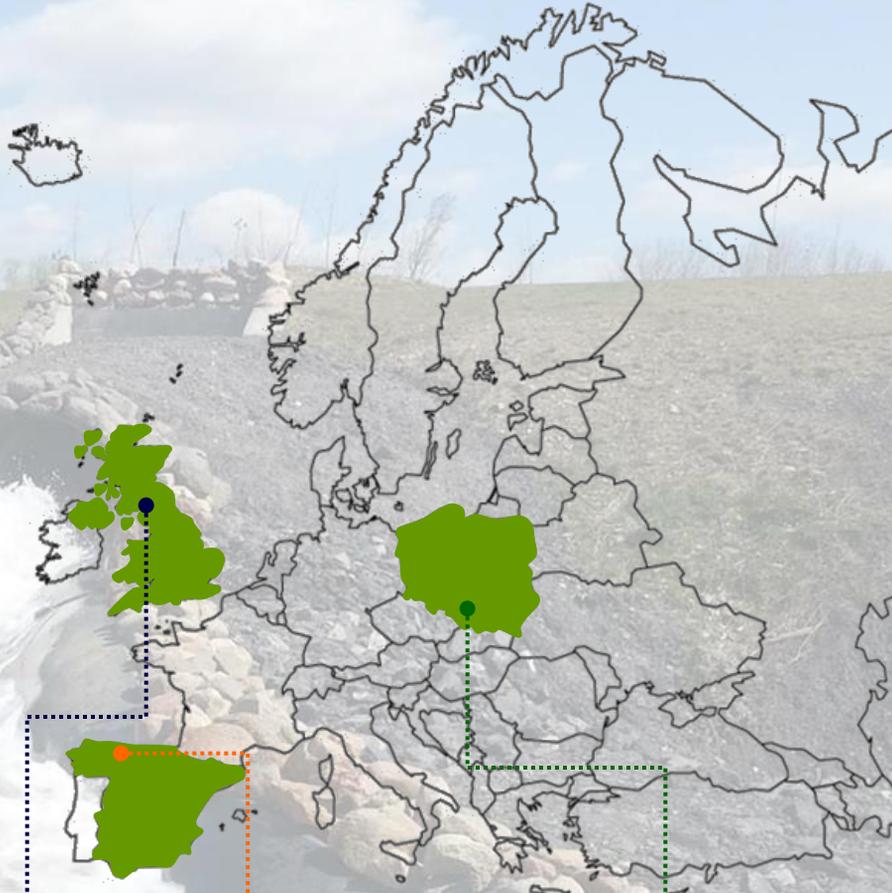
- Główny Instytut Górnictwa (GIG)
- Armada Development S.A.

The project leader is Główny Instytut Górnictwa (the Central Mining Institute) in Katowice.

Partners are responsible for coordinating the following project's work-packages:

- **University of Glasgow (UOG) -WP1.** *Bespoke tools for investigating flow and heat transfer in flooded mineworkings.*
- **University of Oviedo (UoO) – WP2.** *Overcoming the hydrochemical barriers to effective heat transfer from raw and treated mine waters.*
- **Główny Instytut Górnictwa (GIG) – WP3.** *Models for efficiency of energy extraction and distribution.*
- **Alkane Energy – WP4.** *Pilot Implementations.*

Where we are?



- **University of Glasgow (UOG)**
- **ALKANE Energy**
- **University of Oviedo (UoO)**
- **Hulleras del Norte S. A. (HUNOSA)**
- **Główny Instytut Górnictwa (GIG)**
- **ARMADA DEVELOPMENT S.A.**

PARTNERS DESCRIPTION

About us:

Główny Instytut Górnictwa (GIG) is a Polish scientific and development organization, subordinated to the Minister of Economy working not only for the benefit of the mining industry, but also for enterprises representing different branches. Currently the four basic areas of activities constitute: mining engineering, environmental engineering, problems relating to quality, education and training. GIG has extensive experience of participating as partners and co-ordinators of ECSC and RFCS (RFCS projects e.g.: FLOMINET, GEOSOFT, COGASOUT, MISSTER, HUGE, HUGE2) and Framework projects.



ARMADA DEVELOPMENT S.A. is a company sectioned off from GC Investment to implement the biggest investment project in Bytom. For the past few years we've been transforming area of the former coal mine Szombierki into the oasis of greenery and creating a new leisure and residential area for the inhabitants of the city and the region. GC Investment has been operating in commercial real estate market in Upper Silesia since 1993. We've completed dozens of investment projects among which were the supermarkets, DIY retail centers, gas stations, car showrooms, warehouses. We have been awarded with many titles and distinctions: European Medal for Services, Business Gazelle, Silesian Business Cesar, QI. We are member of business organizations such as Business Center Club, Silesian Chamber of Construction, Polish-German Industry and Commerce Chamber (AHK).



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University of Glasgow (UoG), School of Engineering, is the UK's leading centre of expertise in geothermal energy in all its manifestations, with a rapidly-growing geothermal research team, already with more than a dozen members. The UoG team is led by Professor Paul Younger FREng, who holds the Rankine Chair of Energy Engineering. UoG is located in the first place in Europe to successfully develop ground-source heat from mine waters (Shettleston, Glasgow), and is supporting local initiatives to further this technology by local government and a sister university. Younger previously established and led the HERO group at Newcastle University, which is still considered one of the world's leading mine water research groups (see, e.g. Younger et al. 2002). Prof Younger was Coordinator of major FP mine water research projects, including PIRAMID (EVK1-CT-1999-000021), ERMITE (EVK1-CT-2000-00078) and CAMINAR (INCO-CT2006-032539). The UoG team also includes David Banks - the originator of the discipline of Thermogeology - and author of the highly successful textbook of the same name (Banks 2012). Banks and Younger have collaborated on numerous ground-source heat pump research projects in the past, and also on innumerable projects on mine water hydrogeology and geochemistry. The UoG team also counts on the as well as on the mechanical engineering expertise of Dr Zhibin Yu, who is, inter alia, an expert on the thermodynamics and practical engineering of low-carbon cooling systems. UoG also hosts Professor Adrian Boyce is an internationally-renowned stable isotope geochemist with over 200 peer-reviewed publications, largely in Applied Geology, and a vast experience in the application of natural isotope tracer studies to mid- and high-enthalpy geothermal systems worldwide.



ALKANE Energy is the UK's leading producer of green energy using methane from abandoned coal mines. The Alkane team is led by Keith Parker MBE, Renewables Director. Keith formerly set up and led the UK's world leading minewater treatment programme for the Coal Authority, constructing over 60 treatment systems and managing pumping operations at numerous sites across the coalfield areas of the UK. Keith was awarded an MBE for services to the coal industry and environmental protection in 2002. Alkane has a number of sites in its portfolio which can be used to gather scientific data and carry out tests to further the knowledge base for this proposal. The team also includes Anup Athresh who has previously undertaken R&D work in his native India and joined Alkane to develop renewable heat technology. Alkane operates over 25 electricity generation plants where coal mine methane (CMM) is abstracted from abandoned coal mines.

PARTNERS DESCRIPTION

University of Oviedo (UoO), School of Engineering, is one of the leading centres for research and teaching in Mining Exploration and Environment in Spain. The University is placed in a historical mining region where coal, metals and industrial minerals have been very important extractive industries, although most of them are currently abandoned and piles of mining wastes are distributed profusely in the region. The UoO team is led by Professor Jorge Loredo and the research group has close links with mining industries in Spain and it is a centre of scientific excellence for solving environmental problems related to mining, including the use of mine water for geothermal projects. Results of this activity have been several doctoral theses in the Asturian Central Coal Basin as well as the publication of papers in international journals. UoO has relevant experience and expertise in prevention and control of heavy metal pollution throughout the different stages of the life cycle of a mining project as well as the closure or abandonment of the mine. As part of these experiences, UoO has participated in different EU projects related to mine water research, such as PIRAMID (EVK1-CT-1999-000021), ERMITE (EVK1-CT-2000-00078) and CAMINAR (INCO-CT2006-032539).

Hulleras del Norte S. A. (HUNOSA) is a mining company operating underground coal mines in the Nalón and Caudal basins in Asturias, northern Spain, and also owns a circulating fluidized bed power station in the area. The skills deployed by HUNOSA concern mining engineering, drilling engineering, geology, safety engineering, gas monitoring, and mine closure related issues. In addition several research and development projects related to underground coal production have been undertaken by the company. HUNOSA has participated in many projects under the RFCS/ECSC program including FLOMINET and WATERCHEM.



<http://www.hunosa.es>



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