Proecological technology of methane utilization from mines

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Methane utilization is very important because of following reasons:
• economic
• ecological
Big challenge for mining is utilization of Ventilation Air Methane (VAM).
Total methane emission (mln m³CH₄/year)

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

Total methane emission (mln m³CH₄/year)
VAM in Poland (mln m³CH₄/year)
Since many years, are conducted in Poland, analysis and research:

1. in AGH University of Science and Technology in range of methane drainage and utilization of methane from ventilation air,

2. in Wrocław University of Technology and Maria Curie-Skłodowska University in range of methane catalyst oxidation.
Installation for VAM utilization
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Measurable effect of the project should be to build and test following installations:

1. IUMK – 1
2. IUMK – 2
Research of IUMK-1 in laboratory scale
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Pilot plant researches will be conducted in coal mine Jas-Mos in Jastrzębie Zdrój City.
Installation for VAM utilization

- Ventilation shaft
- Fan installation IPG-100
- Mixer MG-100
- Reactor RKUM-100
Pilot plant installation IUMK-100
Conclusions

1. Conducted laboratory tests have confirmed the energy effectiveness of the installation of UMK-1 and the correctness of its design.

2. In Poland, VAM emissions into the atmosphere each year is 579 million m$^3$CH$_4$ and therefore it is advisable to conduct research on the utilization of methane from mine ventilation air.

3. Construction of pilot-scale device IUMK-2, will be the basis for the development of VAM utilization installations in industrial scale.