**ADAPTIVE AUTOMATED SYSTEM FOR GAS FLOW MONITORING AND PREDICTION IN COAL MINES**

**Description**
The equipment is designed for:
- on-line control of:
  - methane content;
  - blower and explosion risk in mines and faces;
  - operability of methane content detectors;
- complex prediction of regional, local, and current gas flows;
- adaptation of degasification system parameters to local rock conditions;
- estimation of amount and efficiency of methane recovery.

The main (underground) unit of the system consists of standard equipment for mine air control produced for coal mines in Russia and abroad.

**Technical appraisal and economic benefits**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Analogs</th>
<th>Developed automated system</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>Information, control</td>
<td>Information, control, adaptive prediction</td>
</tr>
<tr>
<td>Gas</td>
<td>CH₄, CO₂, O₂, CO</td>
<td>O₂, CH₄, CO</td>
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<tr>
<td>Maximum number of detectors</td>
<td>30-1128</td>
<td>80</td>
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<tr>
<td>Predicted gas flows</td>
<td>—</td>
<td>Sudden emissions, blowers, methane excesses; endo- and exogenous fires (at the 3-rd stage)</td>
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<td>Prediction tools</td>
<td>—</td>
<td>Software for on-line processing of detectors data and geological database</td>
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**Application areas**
Coal mining.

**Development stage**
The software for the system operation tested at Kuzbass mines. The method is allowed for application at mines in Russia.

**Patent situation**

**Commercial offers**
Investment contract for commercial development.

**Estimated cost**
100,000 US$.

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