



# MONTOREM

Automation systems

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Head of enterprise

Dear Sirs and Madams!

Our company has been organizing automation of technological processes at coal separating plants since 2008. During this time, more than 20 factories have been automated and more than 70 systems have been implemented. We offer a full cycle of work: design, delivery, installation, debugging and maintenance of systems during operation.

In the process of our work, we have accumulated a lot of experience that allows us to automate any technological process not only at coal separating plants.

We offer systems that allow to get the maximum economic effect with a minimum payback period.

The main tasks that our automation systems solve are increasing the output of concentrate of the specified quality, reducing the influence of the human factor, reducing the consumption of reagents and flocculants.

Automation systems:

1. The preparation of heavy suspensions of magnetite.

The system is used for automatic preparation of super-heavy suspension in the magnetite warehouse and sending it to the technological process.

2. Separator for enrichment in magnetite suspension and hydrocyclone.

This system is used for the automatic maintaining of the density in the separator for enrichment in magnetite suspension and the level in the sump of the conditioned and substandard suspension. Density control is carried out by changing the number of suspensions supplied for regeneration by flow dividers and additional dilution with water. Density regulation of the conditioned suspension is also provided for the hydrocyclone, and the most important point is the maintenance of the set pressure through frequency control. According to the experience of previous projects, the increase in concentrate for heavy medium is at least 0.85% and the reduction of magnetite losses up to 5% for these processes.

3. The spiral separator.

In order to obtain high technological indicators in the process of the enrichment of small-grade coals on spiral separators and hydrosizers, it is necessary to provide an effective preliminary classification. To do this, it is implemented to maintain pressure on the hydrocyclone by frequency control of the pressure sensor. And for stable and efficient operation of the spiral separator, it is important to ensure the necessary solid content in the separator feed and the level in the distribution cups. The level in the distribution cups is a key factor that determines the speed of the particles moving through the separator, and determines the gravitational forces that affect the particles. This system is unique. For its implementation, we have developed a density meter and gate valves, because there are no existing analogues suitable for this task. In this process of coal enrichment, we managed to increase the output of concentrate by an average of 0.4%.

4. Flotation.

The system is designed to maintain a given consumption of reagent-collector according to the solid content entering the flotation, reagent-foaming agent in the amount of solid content or volume of the original pulp and maintenance of a predetermined level in the chambers of the machine. After the introduction of this system, we managed to achieve an increase in concentrate by at least 0.5% and reduce the reagent consumption. Our company also produces emulsifiers (dispersants) of reagents, which are appreciated by such customers as the world manufacturer of flotation machines FLSmidth. The use of our dispersants guarantees a reduction in reagent consumption by at least 10%.

## 5. Thickening.

The system is designed to stabilize the specific flow rate of anionic and cationic flocculant fed to the thickener, taking into account the deposition rate. Our company has developed its own complex for measuring the particle deposition rate, which allows more effective control and management of the thickening process in radial thickeners.

## 6. Filter presses.

This system provides automatic control of the consumption of flocculants, according to the amount of solid content supplied to the filter press. The implementation of the system also involves full dispatching of the filter press with the ability to control it from a dispatcher. Accurate dosing of flocculants will reduce their consumption by at least 1%.

Each of the presented systems includes a self-diagnostics subsystem with monitoring of motor resources of the equipment.

Auxiliary problems:

### 1. Lack of qualified personnel.

In order to minimize the human factor when operating a processing plant, we set up each of our systems with the participation of technologists, which in turn ensures correct operation according to the specified algorithms. All our systems are equipped with panels for operators and engineers, which allow you to monitor the progress of the technological process and have an intuitive clear interface.

### 2. Reduction of accidents and deterioration of process equipment (A);

It is often happens so that the staff operates the equipment at their own discretion and it is not possible to provide full control over their actions.

To solve this problem, we developed the MRT reporting system (Montoremreportingtools). Our System allows you to conduct the effective control of production and technical index of equipment with the formation of reports, as well as keep a register of erroneous actions of personnel. Reports are generated in a WEB browser environment with the ability to upload the report to print or save it to a file.

For the convenience of remote monitoring, we have provided a mobile platform.

### 3. Improving work safety.

The introduction of automated systems allows you to improve safety, reduce the severity and tension of working process, and also makes it possible to reduce the time spent by workers in harmful conditions.

Our company offers not just automation systems, but technology. Each system and engineering solutions were developed not theoretically, but directly in production with the participation of technologists who have a great experience in the preparation of mineral resources.

For a more detailed presentation of our company we offer to meet in person and make a presentation for you.

General Director



A.A. Kuranov