ON CREATING A FIREPROOF COMPOSITION FOR HEAT SHIELDS OF OIL AND GAS WELLS

Background
In the process of construction and operation of oil and gas wells various heat shields and reflective screens are used to protect them in case of emergency fire or open gas blowout. The most commonly used are metal structures with the highest fire resistance. However, they have some weak points.

Aims and Objectives
To improve heat resistance of the metal structures of heat shields.

Methods
Theoretical and experimental studies using test stand of the Ural Institute of State Fire Service of EMERCOM of Russia.

Results
Composition for heat-resistant coating has been developed.
The results of the conducted research allowed to formulate the method of selecting cross-section of the bearing metal structures with fire-resistant coating of different thickness depending on the required fire resistance of structures of protective screens for oil and gas wells. Built is the algorithm of methods of designing physical and mechanical properties and fire resistance of compositions based on heat-resistant mineral fillers for specific applications in oil and gas wells, comprising:
1. Determination of the required fire resistance for metal structures of oil and gas wells in compliance with regulations and/or determination of higher fire resistance depending on the operating conditions (remoteness, difficult access, possible prolonged exposure to high temperatures, etc.);
2. The determination of the actual fire resistance of metal structures according to the results of fire tests or to the results of the engineering calculations;
3. Check of the condition of the actual fire resistance to calculated one (P₀ ≥ P₀) at which fire protection is required or not; if the condition is true, the structure is designed without fire resistant coating; if not, then the required fireproof coating is designed;
4. Determination of fire resistance of metal structures of protective screens depending on the thickness of the coating and/or on the thickness of the metal and the coating, as well as estimation of their cost;
5. Optimal implementation of metal structures in conformity with all requirements.

Key words: fireproof, heat shield, heat resistance

References

The authors

• Akulov Artem Yu., Candidate of Technical Sciences
Ural Institute of State Fire Service of EMERCOM of Russia
Head of Post-graduate Course
22 , Mira str., Yekaterinburg, 620062, Russian Federation
e-mail: uigps@uigps.ru
• Barakovskikh Sergei A., Candidate of Technical Sciences
Ural Institute of State Fire Service of EMERCOM of Russia
Head of Chair
22, Mira str., Yekaterinburg, 620062, Russian Federation
e-mail: uigps@uigps.ru