

**TEACHING CHEMICAL THERMODYNAMICS IN JOINT PROJECTS
WITH EMPLOYERS: A CASE STUDY OF THE VYKSA BRANCH
OF NUST MISIS, VYKSA, NIZHNY NOVGOROD REGION**

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Chemical thermodynamics is a key topic for metallurgical production. At the Vyksa Branch of NUST MISIS, located in an industrial center with OMK and VMZ, the integration of employers into the educational process enhances the practical value of training.

The entire project can be divided into three parts:

1. Joint Projects:

- Development of laboratory work based on real production problems (calculations of reaction heat effects, process energy efficiency).
- Participation of VMZ specialists in master classes on applied thermodynamics.
- Implementation of case studies from enterprises (optimization of iron reduction, analysis of the corrosion resistance of materials).

2. Practical Results:

- Students master not only theory but also tools in demand in production.
- Increased motivation: 85% of project participants note the connection between the material they are learning and their future careers.
- Reduced adaptation periods for graduates at partner companies.

3. Prospects:

- Expanded cooperation with other industrial enterprises in the Nizhny Novgorod Region.
- Creation of digital twins of thermodynamic processes for training.

Joint projects with employers transform the teaching of chemical thermodynamics from an abstract discipline into a tool for solving industrial problems, which is in line with NUST MISIS's strategy for training personnel for the metallurgical industry.