Success Story

Honeywell

Russia's Gubkin University Improves Training with Honeywell Simulation and Modeling Solutions

"Thanks to Honeywell we have a high fidelity application that allows us to simulate oil refinery units. We decided in favor of Honeywell after taking account of the following competitive advantages: accuracy, comfort, smooth performance."

Vladimir Kapustin, Head of Oil Refinery Technology Chair, Gubkin Russian State University of Oil and Gas

Benefits

Gubkin Russian Sate University of Oil and Gas was looking for a solution to provide in-depth, real world training on refinery simulation, modeling and production planning for its engineering students. After a detailed search, the university decided to utilize Honeywell's UniSim® Operations and Refinery and Petrochemical Modeling System (RPMS) in its curriculum.

As a result of applying UniSim Operations to classroom studies, there has been a considerable extension of the range of oil refinery virtual processes included in labs and classes of students and master's degree candidates at the university. Faculty has seen a dramatic improvement in the understanding of the principles of operation and control of oil refinery production plants by manufacturing engineers.

The RPMS and estimate of expenditures system allows trainees (students, master's degree candidates, postgraduates and advanced training faculty) to better comprehend the economic aspects of refinery unit operations and the oil refinery complex in general. Exercises and creation of optimization schemes show trainees an interrelation between changes in the technological data of the processes and maximizing the profit of the enterprise, taking account of the raw materials quality and the production. Students can see clearly that use of the system enables the ability to increase profits by at least 10-15 percent.

Background

Gubkin Russian State University of Oil and Gas, Russia's principal higher educational institute of petroleum engineering, has existed for nearly 75 years with a wide research capacity, which has led to the development of many new methods of exploration, production, transportation, refining and processing of hydrocarbons. Gubkin University has trained over 70 000 diploma engineers, candidates and doctors of science, many of whom are presently top executives of oil and gas companies.

Today Gubkin has 7,000 students with a faculty of 200 professors, doctors of science and about 600 assistant professors and candidates of science.

Since 2000 Gubkin Russian Sate University of Oil and Gas has run a classroom equipped with simulators of typical refinery units designed by Honeywell.

Challenge

University faculty of chemical engineering and ecology was looking for a better way to educate engineering students on refinery processes, planning and economics. The activities of engineers at oil refineries were changing considerably with increasing computerization and IT penetration. In their professional environment, engineers are acting as information receivers, transmitters and translators. However, because of the lack of educational tools at universities that properly model the real work environment of oil refinery professionals in the 21st century, graduates cannot obtain many crucial professional skills.

"Today it is crucial for the student to not only get hold of theoretic preparation but as well get practical skills," said Vladimir Kapustin, Head of Oil Refinery Technology Chair, Gubkin Russian State University of Oil and Gas. "The use of modeling and a virtual oil refinery not only offers a unique opportunity to hold practical classes in real conditions, but enables us to approximate the education for the students to the work at a real oil refinery. The system fully gives the impression of a real plant."

An advanced modeling tool was seen as one clear way to help achieve a higher level of training but acquiring the hardware and software for such a solution was not simple. With overwhelming support from the TNK oil company, based in Russia, and Honeywell, the Gubkin University was able acquire sponsor aid to realize the project and find the funds to overhaul and renovate the premises and purchase the equipment.

Solution

In Russia, Honeywell is recognized as a leading supplier of industrial automation components necessary for building a virtual oil refinery complex, including high-precision simulation node models, devices and refinery units, enterprise resource planning systems and industrial process control planning systems. As a result, Gubkin selected Honeywell to supply UniSim and RPMS for refinery modeling.

Upon the completion of the first stage of the work on the virtual oil refinery complex, the university has been able to implement training simulators of crude oil distillation unit, catalytic reformer, catalytic cracker, hydrotreaters and binary distillation unit that are largely available in the learning process. It also has installed RPMS, estimate of expenditures system.

The university is now able to educate students at a high level and prepare professionals that meet today's requirements. Upon the completion of the entire virtual oil refinery complex course, students will achieve a dramatic new level of understanding of the operation of the entire oil refinery complex, including various services of the enterprise. The professionals who have obtained this kind of education are better prepared to work at a real oil refinery complex.

"Honeywell and Gubkin University are harmonious partners," said Leonid Sorkin, Honeywell Process Solutions. "The university gives the students solid theoretical knowledge while we help the future professionals in oil and gas refineries to get practical experience."

UniSim Operations gives students a robust understanding of plant behavior under normal and abnormal situations. As a result they obtain the skills of maintaining production by recognizing and avoiding incidents that result in production losses, equipment damage, injury and environmental hazards.

The RPMS system allows students to simulate not only production processes but also the production activity, fostering analysis skills for decision making and management.

More Information

For more information on Honeywell solutions, visit www.honeywell.com/ps or contact your Honeywell account manager.

Automation & Control Solutions
Process Solutions
Honeywell
1860 W. Rose Garden Lane
Phoenix, AZ 85027
Tel: 800-822-7673
www.honeywell.com/ps

SS-10-27-ENG
August 2010

Honeywell