

Canadians and Kazakhstanis team to train techs

Technology
at Work

Southern Alberta Institute of Technology commissions process lab at Kyzalorda State University using Fluke 744 Documenting Process Calibrators

The fall of the Soviet Union in December 1991 created 15 separate independent states and a wealth of problems for the region. One of those states, Kazakhstan, overnight became the largest country – and the largest democracy – in Central Asia and the second largest post-Soviet republic after Russia.

Kazakhstan's large reserves of petroleum and natural gas in the western Caspian Sea area thrust it quickly into the world economy, with foreign investments increasing rapidly. One of those investments came from Hurricane Kumkol Munai, a Calgary-based company which in 1996 purchased the rights to an oilfield outside of Kyzylorda that developed into one of the largest oil production facilities in Kazakhstan.

Finding qualified workers

One of the problems left over from the Soviet's centrally-planned economy was the shortage of workers qualified to manage and maintain a bustling oil operation, as well as a lack of educational facilities to train new workers. Kyzalorda State University (KSU), based in the oil region of Kazakhstan, was the logical educational facility to train workers, but was limited because its instructors lacked industry and practical experience with western technology.

The lack of experience made it difficult for instructors to design and teach industry-relevant courses.

Another limitation of KSU was the history of the Soviet post-secondary education system. Under the conditions of a centrally-planned economy, the curriculum of Kazakhstan's colleges and technical schools was determined by the demands of the various regions and sectors. In a non-market economy, this arrangement seemed satisfactory to all parties involved, at least in terms of the training that was provided. However, during the transition period, all the defects and deficiencies of Kazakhstan's technical education capability became apparent. The curriculum for technical training had lost its relevancy due to the increase of western technology used by companies in all industries. The financial reporting requirements being placed on companies as a result of western involvement created a demand for training programs designed to meet the employer's needs.

SAIT delivers technical training

Thanks to its relationship with Hurricane Kumkol, the Southern Alberta Institute of Technology (SAIT) began working with the oil sector in Kazakhstan shortly after Hurricane Kumkol's rights purchase. During the early stages of the development of the oil field, SAIT was awarded a contract to deliver courses in



both technical and management skills to Hurricane's Kazakhstani workforce.

"The Southern Alberta Institute of Technology has offered distance programs for over 40 years," said Randy Coyes, Instructor of Instrumentation Technologies for SAIT. "SAIT has projects in Pakistan, Indonesia, Russia, Vietnam, Malaysia, Nigeria, Ecuador and Trinidad. As a result of this project, we've also established an office in Almaty, Kazakhstan, and have offers to conduct training to the energy industry developing reserves in the region."



Fluke 744 Documenting Process Calibrator

The CIDA project began in 1998 when several professors from Kyzalorda State University, audited courses at SAIT in petroleum, chemical, instrumentation, information technologies, AutoCAD and business disciplines. One professor, Kennes Abdikalikov, who audited the industrial instrumentation program, requested a process and calibration lab similar to the SAIT lab to train Kazak Petroleum engineering students. Through CIDA funding, SAIT purchased the equipment, built the lab and tested it before delivery to Kyzalorda. Hurricane Kumkol then shipped the equipment to KSU. And since Hurricane operates the Kumkol oil field north of Kyzalorda, the equipment is also being used to train Hurricane operators and instrument technicians.

“The Fluke 744 Documenting Process Calibrator is the calibration tool used in the SAIT labs in Alberta, so we purchased the Fluke 744 model as the calibration standard and Fluke 80 Series III Digital Multimeter for the Kyzalorda lab,” said Coyes. “Fluke calibrators and digital multimeters are state-of-the-art and we know how well they work even in extreme field conditions.”

The KSU lab teaches basic theory for pressure, level, flow and temperature measurement applications supplemented with practical labs on a process trainer. This includes labs on valve characteristics, proportional-only control, reset action and reset wind-up, derivative action, gain and stability relationship, time lags and stability relationship, and tuning a controller. The lab also provides specific training in operation and setup of the 275 HART Communicator to configure transmitters, and calibration, operation and configuration of Rosemount 3144 smart temperature transmitters and Rosemount 1151 d/p transmitters for level and flow applications.

In January 1998, SAIT and the Canadian International Development Association (CIDA) signed a contribution agreement for a three-year Kazakhstan Higher Education Technical Assistance Project (KHETAP) with the Kyzylorda State University. The goal of the project was to develop the capacity of KSU to deliver training for the oil and gas sector.

SAIT quickly realized the capacity of KSU to deliver relevant training for western companies was very limited.

“It soon became apparent that emerging companies in Kazakhstan, such as Hurricane, required a work force trained to manage modern companies as well as operate and repair modern equipment and technology,” said Coyes. “The infrastructure – equipment, instructors and programs – was not in place and, as a result, modern technical training programs were in demand by foreign companies.”

Instrument engineers, technicians and operations personnel are trained on 744s. “With Fluke 744s in the lab, engineering students can now calibrate and tune instruments, which makes the theory portion of their studies come alive,” said Coyes.

The 744 is used primarily for calibration of differential pressure transmitters (level and flow) and temperature transmitters (thermocouple and RTD). When the labs were commissioned in July 2001, the Fluke 744s did not include a pressure module. When Coyes returned in November to train Kumkol oil field personnel in the operation of the labs, they had purchased pressure modules and incorporated them into the curriculum.

At the beginning, language differences were a problem. “We used a translator for all the courses and familiarization of the equipment. However, instructors from KSU have recently completed translations of the Fluke documenting process calibrator instruction manual and the lab projects from SAIT are now translated to Russian.”

SAIT benefits from project

While KSU clearly benefited by the training program, SAIT instrumentation instructors learned too. KSU uses the latest version of instruments available for the lab – even newer than in Alberta. The instructors were impressed by performance of the Fluke 744 and SAIT has investigated upgrading its existing process training devices, which would not only improve education, but save money over the long run.

There were also additional benefits to SAIT’s Almaty office, including the opportunity to offer night and weekend seminars to the oil companies in the area. And with the Russian language course modules, SAIT Kazakhstan will market the course to several companies around the Caspian Sea area.

Hands-on training

“Before we built the lab at KSU, they were teaching with basically a few gages as demos,” said Coyes. “The lab we built consists of a calibration bench, instrument air compressor, Rosemount, Moore and Foxboro Transmitters (temperature and d/p), HART communicators, Fluke DMMs and calibrators, as well as a real process to demonstrate level, flow and cascade control. Twenty labs can be performed on the process trainer from studying valve characteristics to configuration and tuning a cascade loop.

“The students are grateful to have ‘hands-on’ training that is relevant to the industry in which they will be employed. Before we started the training program there was no instrumentation equipment at the university, only classrooms. We are very fortunate to have this alliance with Fluke in our goal to deliver quality and relevant training for our students as well as industry clients.”

Fluke recently updated the SAIT ISA measurement lab with Fluke 744 Documenting Process Calibrators with HART ability and DPC/TRACK software.

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