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ISO 9000 QUALITY STANDARDS IMPLEMENTATION IN THE PETROLEUM ENGINEERING PLANTS OF BAKU

ВНЕДРЕНИЕ СТАНДАРТОВ КАЧЕСТВА ISO 9000 НА ЗАВОДАХ НЕФТЯНОГО МАШИНОСТРОЕНИЯ БАКУ

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Abstract. We carried out a comparative analysis of ISO 9000, API Ql, and the Russian GOST standards currently applied in domestic engineering plants to the manufacture of the oilfield equipment such as “xmas trees”, string heads, and well enclosing equipment.

Аннотация. Был проведен сравнительный анализ систем качества ISO и API Q1 с одной стороны и существующих в настоящее время систем качества на машиностроительных заводах города Баку. Анализировалось изготовление нефтепромыслового оборудования, как фонтанная арматура, колонные головки, оборудование обвязки скважины, штанги и др.

Keywords: petroleum machinery, oil field facilities, quality.

Ключевые слова: нефтяное машиностроение, нефтепромысловое оборудование, качество.

Azerbaijan’s new free market economy and growing oil and gas industry has exposed weaknesses in the quality and competitiveness of locally manufactured oilfield equipment. The authors report that ISO 9000 is now considered essential to success in international markets. Although adoption is slow and some managers cling to old systems, a European Union QMS implementation project, and growing recognition of the need for quality training, are having a positive effect.

Azerbaijan's transition to a free market economy, concurrent with the growth of its oil and gas industry, has prompted a new approach to quality in oilfield equipment. As a result, rapid adoption of effective quality management via ISO 9000 is now considered essential if the country is to remain competitive in petroleum engineering. (Many international oilfield equipment manufacturers already use API Ql, a quality management system (QMS) offered by the American Petroleum Institute (API), or that of the American Society of Mechanical Engineers (ASME).

A successful move to such International Standards would make certification of domestic production possible and help establish a share of international markets. An ISO 9000-based QMS differs from existing Soviet control systems in requiring greater consistency of product quality. Furthermore, since oilfield equipment is partly delivered by foreign companies like Amoco, Unocal, LUKoil, and Exxon, and partly manufactured in domestic plants, components must be fully compatible.

This can only be achieved by adherence to a uniform system of standards. Azerbaijan's transition to a free market economy has prompted a new approach to quality in oilfield equipment.

We carried out a comparative analysis of ISO 9000, API Ql, and the Russian GOST standards currently applied in domestic engineering plants to the manufacture of the oilfield equipment such as "xmas trees", string heads, and well enclosing equipment. The analysis revealed that just 20% of welded xmas tree seams are quality controlled, and in most cases are only checked visually (GOST standards do not require any quality control of weld hardness).

International oil and gas industry standards on the other hand have established more rigid requirements for wellhead, drilling and lifting equipment, including continuous control of components working under pressure, and seam zones. These standards consist of four control levels depending on environment, pressure and other factors, and nine control techniques including X–ray, ultrasonic, and gamma radiation. Inspection after repair of welded seams is also required, but this is not stipulated by existing GOST standards.

Radical reorganization

Introduction of ISO 9000 with its stringent approach to control of raw materials, technological processes and test and measurement requires highly trained plant personnel. But ISO 9000 implementation in the Azerbaijan Republic is proceeding slowly because it is still little known among local production managers. The apparent simplicity of the standard's requirements can create the illusion that implementation is problem-free. However, analysis of ISO 9000 principles and criteria reveals that radical reorganization of petroleum engineering procedures is necessary. Successful implementation is only possible by training personnel in appropriate skills.

Foreign companies consider lack of such training as a major industry problem. Centralized training in international QMS standards, with special curricula for different worker categories, must be established. Development of an ISO 9000–based QMS requires managers to overcome traditional thinking centred on the Soviet systems of yesterday. The attitude of both state-owned and private enterprise to modern QMS implementation must be radically reconsidered if the quality control gap between local and leading Western companies is to be reduced.

ISO 9000 implementation is considered essential to the future competitiveness of oilfield equipment manufactured in Azerbaijan.

Rapid adoption necessary

ISO 9000 was recently implemented at several Azerbaijani petroleum engineering plants as part of the European Union TASIS AZ 9401 project to help resolve the industry's problems. The QMS introduces elements missing from the old Soviet style system, such as marketing, timely supply of equipment and materials, packaging, storage, and recycling. It also requires quality control to be focused mainly on preventing nonconformities at the production phase, instead of detection of defects in finished products. As a result of ISO 9000 implementation, maintenance of technological and metrological disciplines can be achieved, and technical specifications fulfilled.

Current control systems in Azerbaijan do not allow the allocation of funds for quality maintenance. In contrast, ISO 9000 implementation will require local organizations to estimate quality–related expense. However, the payback is increased productivity, reduced cost of production and improved competitiveness.

In summary, only the rapid adoption of ISO 9000 by the Azerbaijani oil and gas industry, in parallel with training of experts in metrology, standardization and quality management, will enable domestic petroleum engineering companies to compete effectively in international markets.

ISO standards for the oil and gas sector

In recent years, the petroleum industry has been making a major commitment to working within the ISO system to develop International Standards for the sector. ISO/TC 67, Materials, equipment and offshore structures for petroleum and natural gas industries, has already produced more than 70 standards in partnership with API. Whenever appropriate, API integrates its standards' development activities with ISO's. In addition, the secretariat of TC 67 has been delegated to API because its existing standards provide a base for the majority of International Standards currently in development.

The ISO Web site (*www.iso.org*) hosts a forum for the oil and gas industry with the support of the International Association of Oil & Gas Producers (OGP). Its aim is to provide complete and open information concerning developments undertaken in the oil and natural gas industry sector, to provide additional sector research and monitoring activities, and create a virtual organization to maintain an open and live communication channel with interested parties.

References:

1. Natsional'naya sistema sertifikatsii AZS, Baku, 1993.
2. Efendiyev E., Allahverdiyev R. ISO 9000 oils the wheels of petroleum engineering in Azerbaijan. ISO Management Systems, 2002, no. 3.
3. Isikava Kaoru. Yaponskie metody upravleniya kachestvom. Moscow, Ekonomika, 1988.

Список литературы:

1. Национальная система сертификации AZS. Баку, 1993.
2. Efendiyev E., Allahverdiyev R. ISO 9000 oils the wheels of petroleum engineering in Azerbaijan. ISO Management Systems, 2002, №3.
3. Исикава К. Японские методы управления качеством. М.: Экономика, 1988.

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