

TOSHIBA REVIEW

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Special Reports

New Framework of Water Supply and Sewerage Business

Tasks and Prospects for Future Business Activities in Water Supply and Sewerage Field

SAKAMOTO Hiromichi

New Framework of Water Supply and Sewerage Businesses Including Privatization

SHINOHARA Tetsuya / KADOISHI Shinichi / SHINOZAKI Tsutomu

The water supply and sewerage businesses, needless to say, support social infrastructure. There is a strong requirement for water, sewerage, and environmental plants and systems, which form the core of these businesses, to be safe, stable, and reliable. On the other hand, cost reduction and administrative rationalization are major social requirements, and privatization is being studied as the best means of achieving these objectives. The water supply and sewerage businesses in Japan have been operated under public management for more than 100 years, but recently the tendency toward privatization has been slowly growing.

Toshiba has been occupying an important position in the market for motor-application systems and supervisory control systems for water supply and sewerage. To provide new types of services in this business field as it opens up to private enterprises, Toshiba has begun to change into an all-round service company.

Trend and Impacts of ISO/TC224 International Standardization of "Service Activities Relating to Drinking Water Supply and Sewerage"

HOMMA Juichi / YUKAWA Atsushi

The International Organization for Standardization (ISO) established technical committee TC224 in 2002 to promote standardization work for "service activities relating to drinking water supply and sewerage," with the aim of publishing ISO standards in July 2006. These standards will deal with fundamental factors regarding the above-mentioned service activities.

The standards will be considered as guidelines, and will cover guidelines on system management, quality criteria for services, performance indicators, and so on in relation to the service activities. In particular, the performance indicators will influence the management of related organizations, and business activities concerning operation and maintenance (O&M) work. The standards will also influence business activities involving the Agreement on Technical Barriers to Trade (TBT) and governmental procurement based on the World Trade Organization (WTO) treaty.

Toshiba O&M Services to Establish Best Partnership with Water Supply and Sewerage Business Proprietors

MINAMOTO Takeshi / YAMAKAWA Masahiro / SHOJI Masahiro

Various ways of privatizing facility management and operation in the water supply and sewerage business have begun to be studied and applied on a practical level. This is because the management and operation of such facilities are affected to some extent by the deterioration in the financial position of local governments due to the economic recession in Japan, the amendment of relevant laws, and also the international situation such as the movement toward standardization by technical committee TC224 of the International Organization for Standardization (ISO).

Toshiba has accumulated considerable know-how in water supply and sewerage plant construction as well as after-sales service capabilities as a result of more than 30 years of experience in this field. Based on our know-how and capabilities, we are promoting operation and maintenance (O&M) services to match changing social needs by establishing a best partnership with water supply and sewerage business proprietors from the viewpoint of a private company.

Equipment Maintenance Management and Information Technologies

NISHIYAMA Kazuyoshi

In waterworks and sewerage system plants, efficient maintenance management of existing plant equipment has become important rather than expanding plant capacities. The management of equipment maintenance is a difficult task, because it is necessary to have the know-how of a skilled engineer for operations as well as an understanding of the various conditions of the complex equipment involved. Information technology is expected to be an effective means of improving productivity, by formularizing the know-how of skilled engineers as well as analyzing and evaluating equipment conditions for maintenance work.

Toshiba provides a total solution of computerization for efficient equipment maintenance management, consisting of planning, analysis, definition of requirements, system development, and operation service.

Advanced Water Quality Control System for Filtration Plants

KURIHARA Shioko / INOMATA Yoshinori / MENJU Takashi

Requirements for drinking water quality have recently been expanding and water quality control in filtration plants has become more stringent in order to ensure the supply of safe and good-quality water.

Toshiba has developed an advanced water quality control system to help operators address these challenges, and applied it to a plant. This system features a coagulant dose feedback control system using a streaming current detector and a decision support system for chlorine dose control parameters.

Control Technologies for Sewage Treatment Systems under Institutional Reforms

YAMAMOTO Katsuya / OBARA Takumi / ASHIKAGA Nobuyuki

In recent years, under an environment of institutional reforms such maintenance performance orders, sewage works divisions have been taking a progressive approach to the utilization of private capital. Sewage works become more efficient by sharing risks with companies related to their works. For this to be properly realized, however, the need has arisen for risk management to be implemented not only by the conventional static planning approach but also by a dynamic approach.

Toshiba has been developing system control technologies based on the modeling of biological processes and a hierarchical control structure with an economic performance index. These technologies are suitable for operating sewage treatment plant systems with risk management and reduced costs.

Mobile Sludge Dryer System for Wide Area Treatment to Cope with Mergers of Municipalities

MORIKAWA Akira / HAYASHI Koji

Toshiba has been developing mobile sludge dryer systems that are capable of drying the sludge of small sewage treatment facilities.

Recently, we have developed a larger system than the conventional types. This system permits the mobile treatment of sludge and does not emit unpleasant odors. The dry sludge can be fermented and used as fertilizer.

Feature Articles

High-Power Blue-Violet Semiconductor Laser Diodes

TACHIBANA Koichi / NUNOUE Shinya / ONOMURA Masaaki

GaN-based semiconductors (InGaAlN alloys) have the characteristics of a wide band gap and direct transition. They are useful for optical devices emitting light at wavelengths from the ultraviolet to the visible. GaN-based blue-violet semiconductor laser diodes will be used as the light sources of next-generation DVD systems.

Toshiba has been developing GaN-based blue-violet semiconductor laser diodes with ridge waveguide structures on GaN substrates using metal organic chemical vapor deposition. The maximum light output power of the laser diodes was as high as 200 mW under continuous-wave operation at 25°C. A low relative intensity noise of -132 dB/Hz was achieved at a low light output power of 3 mW.

A5504T CDMA Cellular Phone for Japanese Market

KIHARA Yoshihiko / KUROIWA Keisuke / IKEGUCHI Yuko

Bluetooth™ is a close-range radio communication technology that was standardized in 1998 by Nokia, Ericsson, IBM, Intel, and Toshiba as its promoters. It enables a wide range of equipment to wirelessly intercommunicate at a maximum speed of 1 Mbps within a distance of about 10 meters.

Toshiba has developed the A5504T CDMA cellular phone for the Japanese market. This model is Toshiba's first cellular phone supporting Bluetooth™. In addition to the multimedia features of previous models such as video, e-mail, and camera functions, the A5504T realizes hands-free calling, dialup connection, picture sending, and so on through wireless connection to a car navigation system, PC, or printer. This further enhancement of mobile functionality makes the A5504T a highly useful device suitable for the ubiquitous era.

Remote Operation and Maintenance Support Services for Nuclear Power Plants

SHIMIZU Shunichi / SONODA Sachio / KANEMOTO Shigeru

In the operation of nuclear power plants, it is necessary not only to preserve and improve reliability and safety, but also to simultaneously introduce more efficient and lower cost maintenance strategies due to the deregulation of power trading in recent years. Moreover, as the number of experienced operators and maintenance personnel decreases, there is a strong need for comprehensive implementation of objective and transparent information provision systems for plant operation and maintenance (O&M) compliant with the relevant laws, as well as further refinement of various plant O&M business activities.

As a plant manufacturer, Toshiba has responded to these requirements by introducing remote O&M services called e-TOPS™ (e-Toshiba Operating Plant Service) for O&M of nuclear power plants, making full use of the latest information technology.

"Air Quality Conditioner DAISEIKAI" Room Air Conditioners with High Efficiency and Comfortable Air Stream

SHIMIZU Katsuhiko / TAKEYA Nobuyuki / SUGISAKI Satoko

Toshiba Carrier Corporation has recently launched the "Air Quality Conditioner DAISEIKAI" series of room air conditioners on the market, offering greatly enhanced energy-saving and the ability to supply comfortable and healthy air in all types of residences. This series is equipped with a dual-stage compressor that incorporates a variable-cylinder system for the first time in the world, in which one of the two cylinders can be stopped. This new technology has realized the top level of energy-saving in the industry, winning the Energy-Saving Award of the Energy Conservation Center, Japan in fiscal 2003. These air conditioners are equipped with "skin-care mode," which softens dry skin, as well as a new ventilating unit and a plasma air purifier to eliminate dust particles and contaminated air.

"Super Module Multi" High-Efficiency Multisystem Air Conditioners for Building Use

SATO Takehiko / UENO Kiyotaka / KASAI Junji

There is an urgent need for the air-conditioner industry to develop products that protect the global environment and effectively use resources. In response to this need, Toshiba Carrier Corp. and Chubu Electric Power Co., Inc. have developed the "Super Module Multi" series of high-efficiency multisystem air conditioners for building use, with cooling capacities ranging from 14 kW to 135 kW. These air conditioners use refrigerant R410A and incorporate a dual-inverter system with artificial intelligence that provides optimal inverter compressor control. The "Super Module Multi" series far exceed the reference coefficient of performance (COP) that will come into effect in 2007 under the revised Energy-Saving Act.

Asteion™ Super4 Edition Whole-Body CT scanner

WATANABE Naofumi / KUWAMURA Otoharu / ISHIDA Katsuhiko

Toshiba Medical Systems Corporation has developed the Asteion™ Super4 Edition whole-body multislice X-ray CT scanner, which enables the simultaneous acquisition of four slices, for use in general hospitals. Technologies developed for high-end systems have been incorporated. In addition, the system structure has been designed with the aims of safe use and easy operation. During the design of the system, the CT examination process was analyzed in detail using industrial engineering methods to improve examination efficiency while ensuring excellent patient care. Effective X-ray exposure dose reduction techniques have also been incorporated in the system, allowing highly accurate examinations to be performed with minimum patient exposure.

Frontiers of Research & Development

CPP-GMR Head Using Nano-oxide Layer with Current-Confined-Path Structure Refrigeration Cycle with 2-Stage Compressor