TBS PROVIDES THE BEST SAFETY MANAGEMENT

Company Profile

TBS is pursuing the most effective total fire protection systems
combined with the latest automatic fire alarm systems

ISO 9001 JACO QC12J0034 UKAS MANAGEMENT SYSTEMS 051

Nuclear Power Dept.
Overseas & Special Project Dept.

ISO 14001 JACO EC05J0395 UKAS MANAGEMENT SYSTEMS 051

Head Office
Rokkasho Office
Fukushima Office
Hamaoka Office

TBS TOKYO BOSAI SETSUBI CO., LTD.

PHILOSOPHY

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's latest engineering technology and 60-years of experience in fire protection systems for nuclear power plants are also made best use for Intelligent High-rise Building.

Kaoru Akatsu
President

On the Occasion of Publication

We all say that time passes quickly, so we should not be surprised that TBS celebrated its 60th anniversary on July 31, 2019. I would like to take this opportunity to express my sincere appreciation to our customers for their ongoing patronage.

Let me look back over our history: In 1955, TBS opened for business with a foundation philosophy of the maintenance of fire protection systems installed on US military bases in Japan. In 1959, TBS became a joint-stock corporation, and improved the business framework as a partner of the embryonic Fire Protection Division of Oki Electric Industry Co., Ltd. TBS then established a fully fledged fire protection engineering division and strengthened design, installation, maintenance, and other divisions.

In 1965, the Japan Atomic Power Co., Ltd. built Japan's first commercial nuclear power plant in Tsuruga, Fukui. TBS was chosen among many candidates, including several dominant Japanese fire protection system manufacturers, by General Electric (GE) of the United Sates, and successfully designed, supplied, installed, and commissioned the fire protection systems, which put us in the position of having established Japan's first fire protection and technical consulting business for nuclear power plants. Since then, TBS has delivered fire protection systems and security systems to 19 nuclear power plants in Japan and 7 overseas, 26 in total, including the Fukushima 1 Nuclear Power Plant of the Tokyo Electric Power Company. Inc.

Today, TBS is responsible for providing fire protection systems having unique designs for chemical plants and skyscrapers, as well as for airports, hotels, and public buildings.

In 1985, TBS was assigned the contract to provide the fire protection systems for "Monju," Japan's first fast breeder reactor (FBR) by the Power Reactor and Nuclear Fuel Development Corporation (PNC), now known as the Japan Atomic Energy Agency (JAEA), and successfully completed them in June 1991, under the guidance of PNC.

For the Reprocessing Plant of Japan Nuclear Fuel Limited (JNFL), which was built as Japan's first commercial nuclear fuel recycling plant in the village of Rokkasho, Aomori, TBS started the design/installation of the fire protection systems for the vitrified waste reception and storage building (E-Bldg.) in December 1992, completing the work in November 1994. TBS participated in the 15-year project, which started in 1989, to construct the reprocessing plant, and supplied the fire protection systems for many buildings such as the purification building (AC-Bldg.), control building (AG-Bldg.), and uranium/plutonium mixture/denitration building (CA-Bldg.). Most of these were completed by July 2004. Later, in 2007, TBS was awarded a contract to install fire protection systems for the Oma Nuclear Power Plant of the Electric Power Development Co., Ltd.

In 2013, new regulatory requirements were promulgated by Nuclear Regulatory Authority of Japan and we are working hard with utility companies to provide suitable fire protection systems to nuclear power plants.

TBS is continuously making efforts to provide our clients with the best safety management through our abundant experiences and technical capabilities we have developed over past 60 years.

I very much hope that TBS can rely on your continued support in the years to come.

Kaoru Akatsu
President

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's experience and technologies in fire protection systems accumulated for 60 years are also made best use to protect nuclear pow -er plants.

▲Tsuruga Nuclear Power Plant of Japan Atomic Power Company (Electric output: 357,000kW, Photo: Reactor No. 1), Tsuruga, Fukui, is a boiling water reactor (BWR) type, constructed by GE from 1966 to 1970. As a pioneer of great honor, TBS provided fire protection systems to this first commercial nuclear power plant in Japan to develop and establish fire protection business specialized in the fire risk management for atomic power plants. TBS is still making contributions to this plant by taking charge of the maintenance of the fire protection systems.

▲Fukushima Nuclear Power Plant No. 1, of The Tokyo Electric Power Co., composed of 6 reactors, was built from 1970 to 1979. TBS successfully conducted the design, installation, and maintenance work on automatic fire alarm systems, hydrant systems, carbon dioxide (CO_2) fire suppression systems, air foam fire protection systems. Since then, TBS has been making a record of no casualty.
The electric output is as follows:
No.1 Reactor:460,000kW, No.2 Reactor:784,000kW, No.3 Reactor:784,000kW, No.4 Reactor:784,000kW,
No.5 Reactor:784,000kW, No.6 Reactor:1,100,000kW

▲Shimane Nuclear Power Plant, Kashima, Shimane, (Electric output: 406,000kW) of The Chugoku Electric Power Co., Inc., commenced the commercial operation in March, 1973. TBS has installed wide range of fire protection systems such as automatic ire alarm systems, hydrant systems, carbon dioxide (CO_2) fire suppression systems, air foam fire protection systems for the diesel oil tanks.

▲Fukushima Nuclear Power Plant No. 2, of The Tokyo Electric Power Co., composed of 4 reactors, was built from November, 1975 to August, 1987. TBS also successfully conducted the design, installation, and maintenance work on automatic fire alarm systems, hydrant systems, carbon dioxide (CO_2) fire suppression systems, air foam fire protection systems. We are proud that TBS has been making a contribution to the safety power plant operation.
The electric output is as follows:
No.1 Reactor: 1,100,000kW, No.2 Reactor: 1,100,000kW, No.3 Reactor: 1,100,000kW, No.4 Reactor: 1,100,000kW

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's experience and technologies in fire protection systems accumulated for 60 years are also made best use to protect "Monju," Reprocessing Plant in Rokkasho and New Tokyo City Hall.

▲Hamaoka Nuclear Power Plant of Chubu Electric Power Co., Inc., was built from March, 1971, and the construction of Reactor No. 1 to No. 4 (on the right to left in the above photo) is completed in February, 1989. Reactor No. 5 is currently under construction. We supplied fire protection systems to all these reactor buildings. Since then, TBS has also conducted maintenance work on the fire protection systems, making not a little contribution to the safe operation of the nuclear power plants.
The electric output is as follows:
No. 1 Reactor: 540,000kW, No. 2 Reactor: 840,000kW, No. 3 Reactor: 1,100,000kW, No. 4 Reactor: 1,137,000kW, No. 5 Reactor: 1,380,000kW

▲Japan's first fast breeder reactor (FBR), "Monju" of Power Reactor and Nuclear Fuel Development Corporation, was built from 1987 to 1993 in Shirakl, Tsuruga City by 4 major Japanese nuclear power enterprises. TBS is very proud of joining the area of fire protection systems for this challenging project of the latest nuclear technology.
The output is 714,000 kW (thermal), and 280,000kW (electric).

▲This is a panoramic photograph of Reprocessing Plant, and nuclear waste management facilities of Japan Nuclear Fuel Limited (JNFL), which are being constructed in Rokkasho, Aomori. This amazingly huge plant is first introduced in Japan.We have delivered to those facilities indoor hydrants including fire pumps, carbon dioxide (CO_2) fire suppression systems, automatic fire alarm systems, fire extinguishers, and etc., which are all regulated by Japan Fire Service Law and related regulations. The construction of E-Bldg. started in December, 1992, and was completed in March, 1995. AC-Bldg., AG-Bldg. and CA-Bldg. are currently given a test-run.

▲New Tokyo City Hall is a national icon. TBS provided the latest automatic fire alarm systems for Metropolitan Assembly Bldg. We have also been in charge of the maintenance since then.

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's latest technology in fire protection systems and security systems are also made best use to protect intelligent of -fice buildings.

▲Shinjuku Center Building, Tokyo, 223m high, with 54 stories above and 4 stories under the ground, was built in 1993. This building stands conspicuously among the famous skyscrapers in Shinjuku District. The automatic fire alarm systems were provided by TBS.

▲World Trade Center Bldg., Tokyo, with 40 stories above and 4 stories under the ground, was constructed in October, 1989 with the most advanced technologies of the time. TBS provided this latest building with automatic fire alarm systems including a addressable automatic fire alarm systems of 2,000 circuits.The maintenance of the systems has been in the charge of TBS.

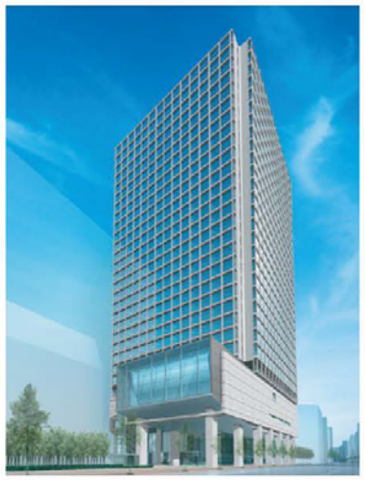
▲Toyosu Center Bldg, Tokyo, with 37 stories above and 2 stories under the ground, was built in October, 1992. The sprinkler system with more than 9,200 heads was installedby TBS.

▲Washington Hotel, Shinjuku, Tokyo, with 1,301 rooms was constructed in March, 1984. The automatic fire alarmsystems were completed, and have been maintained by TBS.

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's experience and technologies in fire protection systems accumulated for 60 years are also made best use to protect various types of large facilities.

▲Haneda Airport Passenger Terminal Bldg., commonly known as "Big Bird," is an entrance of Metropolitan Tokyo. TBS was in charge of the design and installation for the wing for All Nippon Airways Co., Ltd. (ANA) to complete the sprinkler systems with the central control panel and local panels. We took charge of the system with 10,000 sprinkler heads including a central control panel and local panels, and completed in March, 1993 after two-year construction work.



▲We are now involved with the construction project again after 50 years when we completed the design and installation of the automatic fire alarm and fire protection system for Former Iino Building.

▲Tokyo Sakurada Building, Tokyo, with 9 stories above and 4 stories under the ground, was completed to provide addressable automatic fire alarm systems of 128 circuits, carbon dioxide (CO_2) fire suppression systems, and indoor hydrants in August,1995. These systems are interlocked with a security system with ITV cameras. We position it as our most important task to keep this building properly maintained as well as Iino Building among non-governmental buildings/ facilities.

▲MOA Art Museum, Atami, Shizuoka, which enjoys worldwide fame, is a sanctuary of ancient arts of national treasures / important cultural properties with huge exhibition halls. Security systems, automatic fire alarm systems and fire protection systems were provided by TBS. In addition, TBS also takes charge of the maintenance on all the facilities of Sekai Kyusei Kyo.

▲Tama Branch Building of Tokio Marine and Fire Insurance Co., Ltd. boasts the glass-walled stylish structure of 18-story main tall building, 7-story central building, and 7-story annex. We completed the design and installation of the automatic fire alarm systems and sprinkler systems in March 1992.

▲Asahi Mutual Life Insurance Company's Headquarters, Tama, Tokyo, with the 22-story main building and 8-story Annex is the company's most important building, dealing with all the data processing of Asahi Mutual Life Insurance Company. The most advanced automatic fire alarm systems were provided by TBS in March, 1994, and have been maintained by TBS. This high-rise building has been playing a big role of the city's landmark since then.

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's products maximized by our 60 years of experience and accumulated technologies in fire protection and security

TBS's production / engineering policy

1. We develop and build the best fire protection / security system for clients, complying with regulations and laws. We do design, procure, and set up a complete system, based on our full engineering experience.
2. The operation and performance of the products we deliver are examined and verified in our test facilities before delivery. Our new product R & D is focused on in our Saku Test Facility, located in Saku, Nagano.
3. Not only design and installation, but maintenance on the system we deliver is provided by our engineers who are well-versed in the system itself.

Standard Products

Fire Protection Systems

1. Automatic fire alarm system
2. Carbon dioxide (CO_2) and IG100-TBS™ fire suppression system
3. Indoor hydrant system
4. Outdoor hydrant system
5. Fire dept. connection
6. Air foam system
7. Sprinkler / water spray system
8. Fire pump system
9. Integrated system of the above

Original Products

Security Systems

1. ***Burglar Arrester System for Professional*™ (patent pending)**
   The system is designed to fight off burglars for offices, convenience stores, and banks by discharging CO_2 and/or capsaicin tear spray with a portable wireless remote control switch, push button or foot switch or control panel
2. ***Burglar Arrester System for Personal*™ (patent pending)**
   The system is for personal resident use, so that it successfully combines the advanced features with a cost.
3. ***Inertia Sensor Security System*™**
   The system is designed to detect specific shock wave on fences traveling upon sensing irregular impact generated by an intruder.

Original Products

Our Products and Fire Protection Systems for Special Needs

1. ***Compact Foam/Water Monitor*™ (patent pending)**
   Powerful but compact water monitor capable of 1,000ℓ/min (Various flow rate types available)
2. ***Intelligent *AFEX*™ (patented)**
   Standalone automatic fire extinguishing robot, good for a place unattended during evening hours or 24hrs
3. ***Flying AFEX*™ (patent pending)**
   Full-automatic fire extinguishing robot of suspended monorail type, carrying two foam cylinders of 30 to 50 litters
4. ***Mini AFEX*™ (patented)**
   Automatic small scale fire extinguishing system for an electrical fire inside an enclosure/panel

*The name, "AFEX" Stands for Automatic Fire Extinguishing System/Robot.

Research & Development

TBS Eliminates Possible Hazards and Provides Total Safety.

TBS's policy of "detecting and extinguishing a fire at an early stage" is achieved in our products of automatic fire extinguishing systems through our research and development.

SAKU TEST FACILITY

◀Our test facility consists of Test Bldg. No. 1, Test Bldg. No. 2, Test Bldg. No. 3, Tunnel Test Bldg., and Guest House

Test Bldg. No. 1 is a facility with a workshop designed to focus on tests and demonstrations for

1) *Flying AFEX*™
2) *Compact Water Monitor*™
3) *Intelligent AFEX*™
4) *Mini AFEX*™
5) *Sprinkler System*™

Test Bldg. No. 2 is a facility for the test and demonstration space specially for Compact Water Monitors of max. 40m discharge range.

Test Bldg. No. 3 is provided with test and demonstration rooms for sprinkler system, *IG100-TBS*™ (nitrogen gas fire extinguishing system), *Burglar Arrester System*™ (Fighting-off Type Security System).In Tunnel Test Bldg., 50m long, 10m wide, 8m high, designed for R&D of tunnel fire extinguishing system has been promoted to develop various automatic fire extinguishing systems employing *Compact Water Monitors*™ with infrared cameras, as well as the second generation of *Flying AFEX System*™ to extinguish a fire at an early stage.

DISCHARGE TEST AREA

◀Discharge Test Area is used mainly for purpose of 1) testing the discharge distance and collecting data of discharge pattern and examining system efficiency of our *Compact Water Monitor System*™, and 2) study on extinguishing an oil tank fire with our patented air foam chambers. The discharge distance is 70 meters long.

TUNNNEL TEST BLDG.

◀In September 2003, we conducted a series of simulated tunnel fire tests using real vehicles in collaboration with Fukui National University, Sohatsu System Laboratory Inc. and Kokan Keisoku Co. Ltd. Our experiments are mainly stressed on 1) the study on the velocity and flow of smoke, and temperature at various points in the tunnel by setting fire on vehicles including microbus and large-sized bus as well as fire pan as simulated fire scale, and 2) the research for the most effective way of detecting and extinguishing a vehicle fire with our *CWM System*™. The data collected are all invaluable. We truly hope that as many people as possible will make the most of this tunnel test facility to eliminate the tragedy of tunnel fires.

◀*Flying AFEX*™, full-automatic., fire extinguishing robot of suspended monorail type, installed in Tunnel Test Bldg. is a second generation model improved from the first model installed in Test Bldg. No. 1. *Flying AFEX*™ is activated by an alarm signal from infrared fire detectors or temperature sensing cables, and travels at the speed of 30m/min., carrying two cylinders of either a 30-litter foam agent or 20kg-ABC dry chemical, automatically stops at the nearest point to the fire, and discharges the agent after locating it with an infrared camera.

Flying AFEX™ is also available in the modified model specially for the purpose of extinguishing a large scale fire, which is capable of towing two additional cars for 100-litter foam agent or 50kg-ABC dry chemical cylinders like a trailer truck.

We are proposing one *Flying AFEX*™ be installed every 300 meters on the both upper sides of inner tunnel wall, each approaching to the nearest point to the fire, and discharging the agent from both sides.

TBS Eliminates Possible Hazards and Provides Total Safety.

At Saku Test Facility we are trying to create the ultimate safety for society achieved by our ideal fire protection systems and security systems.

SAKU TEST FACILITY

Burglar Arrester™, Fighting-off Type Security System

Banks and convenience stores tend to give away cash to hold-ups and let them run away without any resistance for the sake of their employees' safety. This is why those who work for offices or stores dealing with cash become repeated victims. For burglars those places are so easy to target. We are different! Our philosophy is to subdue and apprehend burglars rather than let them get away with whatever they want to rob.

Inertia Sensor Security System™

"Inertia" is a physics term, which means the tendency of a body to remain at rest or to stay in motion, action or change. Vibration caused by earthquake or automobile would not activate the system, but metallic impact of the inherent frequency between 10 to 1,500Hz would not trigger an alarm signal to a central location. The system is also activated if the cable is cut off, or an intruder attempts to climb a fence. The sensitivity of the sensors can be adjusted at a remote location, not at the sensor. The system is recommended to many enterprises and companies for the security of both public and private premises.

SAKU TEST BLDG. No. 3

Saku Test Bldg. No. 3 is equipped with the various types of sprinkler heads set up, *IG100-TBS System*™ (nitrogen gas fire extinguishing system) set up in accordance with NFPA Code. The building also consists of *Burglar Arrester System*™,our fighting-off type security system. Various tests and experiments are conducted every day and night to provide our customers with reliable and high quality products. We truly hope we can put an end to all kinds of burglar and the bank robbery one day.

Burglar Arrester™ Fighting-off Type Security System

- Our systems come with sections of fighting-off agents such as capsaicin, ABC dry chemical and carbon dioxide gas. This system can be automatically activated when a safe, cash resister, automatic teller machine or vending machine is forced to open by an unauthorized person.
- *Inertia Sensor*™ is also recommended to elderly people and those who live alone because this model is inexpensive, reliable and easy to install. Imagine how much you can be feeling safer than before once installed. It can be integrated with *Burglar Arrester System*™ that fights off the intruders with capsaicin, ABC dry chemical and/or carbon dioxide gas.

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At Saku Test Facility we are trying to create the ultimate safety for society achieved by our ideal fire protection systems and security systems.

Saku Test Facility

Our motive of having set up Saku Test Facility

Our Saku Test Facility is located in Arafune Seminational Park in Nagano Pref. We are proud of the splendid environment and the large facility premises of 17,000 m². Test Bldg. No. 1 of Saku Test Facility has been completed in September 24, 1998 while Test Bldg. No. 2 completed in June 1999, Test Bldg. No. 4 in June 2002, and Tunnel Bldg. in October 2002 after 4 years since the construction of Test Bldg. No. 1 started. Fire protection equipment are manufactured in accordance with the national fire equipment regulations, and inspected by Japan Fire Equipment Inspection Institute (JFEII). Basically, the performance and reliability will not be tested after they are installed in the true sense. Our motive of having set up Saku Test Facility is to test the fire protection equipment and systems to prove the performance and reliability from the long-term standpoint of our customers, and to keep improving them on behalf of our customers as a fire protection system engineering company.

i) Test Bldg. No. 1 is a test facility for the following:

1. *Flying AFEX*™: Automatic fire extinguishing robot traveling on a monorail below the ceiling of the facility
2. *Intelligent AFEX*™: Floor-mounted automatic fire extinguisher
3. *Mini AFEX*™: Automatic fire extinguisher suitable for electrical panel enclosures automatic fire protection
4. *D-system* : American designed alternative sprinkler/indoor hydrant system
5. *Compact Water Monitor*™: Automatic water monitor system of short discharge distance

ii) Test Bldg. No. 2 is a test facility for the following:

1. *Compact Water Monitor* : Automatic water monitor of 40m-discharge distance

iii) Test Bldg. No. 3 is a test facility for the following:

1. *Burglar Arrester System*™: Zero ozone depletion potential and zero global warming potential agent automatic fire protection system
2. *IG100-TBS System*™: Fighting-off Type Security System to subdue and apprehend burglars
3. *Compact Water Monitor* ™: Automatic fire protection of 60m-discharge distance (Outdoor)
4. *Compact Water Monitor* ™: Water/foam water monitor system (Outdoor)

iv) Tunnel Test Bldg. is a testing facility for the following:

1. *Compact Water Monitor System*™ focused on highway tunnels
2. *Flying AFEX* ™ focused on highway tunnels

v) Seminar House

GENERAL SUMMARY

Company Name	**Tokyo Bosai Setsubi Co., Ltd.**
Head Office Address	Ochiaitakayama Bldg. 4F, 2–28–7, Kamiochiai, Shinjuku-ku, Tokyo 161–0034, Japan
Capital	¥96,000,000
Established	**July 31, 1959**

Construction License Number: Japan Ministry of Land, Infrastructure, Transport and Tourism
Electrical work, ordinary construction license-28, No.16648
Telecommunications work, ordinary construction license-28, No.16648
Firefighting facilities work, special construction license-1, No.16648

Board of Directors:

Kaoru Akatsu	President
Shigeo Kanke	Vice President
Hideo Shiraishi	Senior Executive Director
Tomohiro Sakakibara	Senior Executive Director
Toshio Fujiwara	Executive Managing Director
Tadahiro Sawairi	Director
Hitoshi Sato	Director
Satoshi Kimura	Director
Makio Kobayashi	Executive Officer
Yoji Takatsuka	Executive Officer
Tetsushi Aita	Executive Officer
Hiroshi Kawana	Auditor

Area of Business / Expertise:
Design, manufacture, installation, maintenance, and supply of system, equipment or material for Fire Protection System, Security System, Pollution Control System, and Communication System for nuclear power plants, various kinds of plants, and buildings.

Banks of Account:
Mizuho Bank, Ltd., Shinjuku-Nishiguchi Branch
The Bank of Mitsubishi UFJ, Ltd., Okubo Branch
The Shoko Chukin Bank, Ltd., Fukutoshin Business Division
Japan Finance Corporation, Shinjuku Branch

Major Customers:
Asahi Real Estate Management Co., Ltd.
Chubu Electric Power Co., Inc.
Electric Power Development Co.,Ltd.
FUJI ELECTRIC CO., LTD.
Hitachi, Ltd.
Hitachi-GE Nuclear Energy, Ltd.
Hitachi Zosen Corporation
IHI Corporation
Iino Building Technology Co., Ltd.
Japan Atomic Energy Agency
The Japan Atomic Power Company
JAPAN NUCLEAR FUEL LIMITED
JGC JAPAN CORPORATION
J-tech Co., Ltd.
Kajima Corporation
Kakimoto Co. Ltd.
KANDENKO CO., LTD.
Kobe Steel, Ltd.
Mitsubishi Electric Corporation
Mitsubishi Heavy Industries, Ltd.
Mitsubishi Power, Ltd.
MOA International
NGK INSULATORS, LTD.
NITTOCHI BUILDING SERVICE Co.,Ltd.
Nittsu Real Estate Co.,Ltd.
Nuclear Engineering and Services Company
Panasonic Life Solutions Engineering Co., Ltd.
Sekai Kyusei Kyo
SHIMIZU CORPORATION
Shinjukusatellite CORPORATION
STEC
Summit Wind Corporation
Taikisha Ltd.
Takasago Thermal Engineering Co., Ltd.
Takenaka Corporation
TOENEC CORPORATION
Tokio Marine & Nichido Facilities,Inc.
Tokyo Electric Power Company Holdings, Incorporated
TOKYO ELECTRIC POWER SERVICES CO., LTD.
Tokyo Power Technology Ltd.
Toshiba Energy Systems & Solution Corporation
Toyo Engineering Corporation

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