LF620 Electromagnetic Flowmeter Converter

The electromagnetic flowmeter is an industrial instrument that measures the volumetric flow of conductive fluids such as the water or wastewater by applying Faraday's law of induction. Recently, in addition to high accuracy and low cost, demand has increased for improvements in such areas as operational safety, wiring work, etc.

Toshiba has developed the LF620 electromagnetic flowmeter converter in response to these needs. The main features of the LF620 model are as follows:

- It incorporates the industry's first(*) removable terminal block, allowing wiring work to be easily performed outside the case.
- The display is a full-dot large-screen liquid crystal display (LCD) (128 × 128 pixels) that is 2.4 times the size of our former model.
- This model is equipped with an infrared-ray switch, so that parameters can be set without opening the cover.
- Digital communication methods such as HART communication, PROFIBUS, and Modbus (RS485) are selectable, offering flexibility of connection with the host control system.

(*) As of August 2009 (as researched by Toshiba)

Combined type electromagnetic flowmeter consisting of LF620 converter and LF650 detector

PMSM Propulsion System for Tokyo Metro Marunouchi Subway Line Renewed 02 Series Trains

PMSM

Toshiba has supplied a permanent-magnet synchronous motor (PMSM) propulsion system for the renewed 02 series trains of the Marunouchi Subway Line (third-rail 600 V system, 27.4 km) operated by Tokyo Metro Co., Ltd.

This motor achieves higher efficiency compared with the existing induction motors thanks to permanent magnets in its rotor, as demonstrated by test running results confirming that the Toshiba PMSM system can cut power consumption by 20%. Moreover, low generation of heat by this system makes a totally enclosed type structure possible, leading to lower noise and reduction of maintenance.

We have also developed a 2-in-1 type inverter unit that incorporates two inverter units in one radiator, resulting in downsizing of variable-voltage variable-frequency (VVVF) inverters. Commercial operation of the renewed 02 series trains started on the Marunouchi Subway Line on February 16, 2010. This system is expected to contribute to environmental conservation.

2-in-1 type VVVF inverter unit

Renewed 02 series train
(photo courtesy of Tokyo Metro Co., Ltd.)

Integrated Train Information System for New Airport Express of Keisei Electric Railway Co., Ltd.

New Airport Express (AE)

26-inch LCD indicator

Toshiba has developed an integrated train information system with a passenger guidance display, an industrial television (ITV) for security, and a train information monitoring system. We have supplied the system to Keisei Electric Railway Co., Ltd. for its new Airport Express (AE) to Narita Airport.

This system is equipped with a 26-inch LCD that displays not only the standard type of passenger guidance, but also the landscape in front of and behind the train, an ITV to monitor the train deck and luggage shelves, and a high-performance monitoring system that assists train crews with a train operation path information display, as well as recording information of the train itself and conducting equipment tests.

We have our own original onboard dedicated train communication network system named TEBus (Train Ethernet Bus).

The integrated train information system is realized by applying a TEBus system with 100 Mbits/s capacity and optimizing the train onboard networking (e.g., data holding in each terminal, and the timing of sending/receiving between the central system and each terminal).

SCiB™ High-Energy-Density Rechargeable Battery Cell

20 Ah SCiB™ rechargeable battery cell

Society is faced with an urgent and critical need to reduce the consumption of fossil fuels in order to shift to a low-carbon society. Plug-in hybrid vehicles (PHVs) and electric vehicles (EVs) are now entering the stage of practical use, especially in the transportation sector. The advent of these vehicles powered by electricity is attracting a great deal of attention.

Among the important enablers for PHVs and EVs are rechargeable batteries for storing electric energy. Rechargeable batteries are also the object of increasing expectations for smart-grid applications, as a means of locally storing energy generated by renewable sources to secure stable energy supplies.

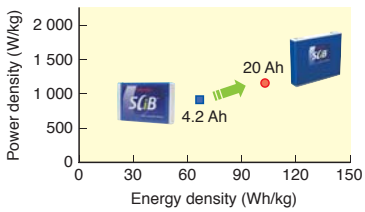
To address these needs, Toshiba has developed the SCiB™ rechargeable battery cell featuring high capacity and high energy density without compromising the safety and reliability advantages of rechargeable batteries.

The new SCiB™ cell boasts a capacity of 20 Ah (five times that of its predecessor), a volume energy density of approximately 200 Wh/L (1.5 times), and a weight energy density of about 100 Wh/kg (1.5 times).

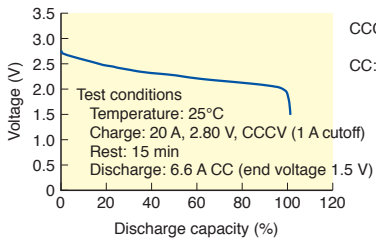
The features of the SCiB™ include:

- a long service life, which translates into lower environmental load and easier maintenance;
- a short charging time due to quick charging performance;
- a wide state-of-charge (SOC) range; and
- superior input/output performance, even at low temperatures.

Shipment of samples commenced in September 2009, and volume production is scheduled to begin in the third quarter of 2010.



Trends in development of SCiB™ cells



CCCV: constant current, constant voltage
CC: constant current

Discharge characteristics of SCiB™

New SPACEL-EX™ Machine-Room-Less Elevator

Toshiba Elevator and Building Systems Corporation has commercialized the New SPACEL-EX™ machine-room-less elevator.

The New SPACEL-EX™ has the function of protection against unintended car movement specified in the revised Japanese safety regulations. It is equipped with a liquid-crystal indicator that is the first in the industry(*) to have received color universal design (CUD) certification, as well as a new-style ceiling and a light-emitting diode (LED) lighting system, all of which enrich the artistic design of the elevator cars.

Easy operation is assured by antibacterial buttons and an antibacterial car operational panel, which conform with the standards of the Society of Industrial Technology for Antimicrobial Articles (SIAA). Safety functions in addition to those mandated by the safety regulations are also taken into consideration, such as a function that makes a car move to the top floor and stop at the time of occurrence of a typhoon or localized storm.

(*) As of February 2009 (as researched by Toshiba)

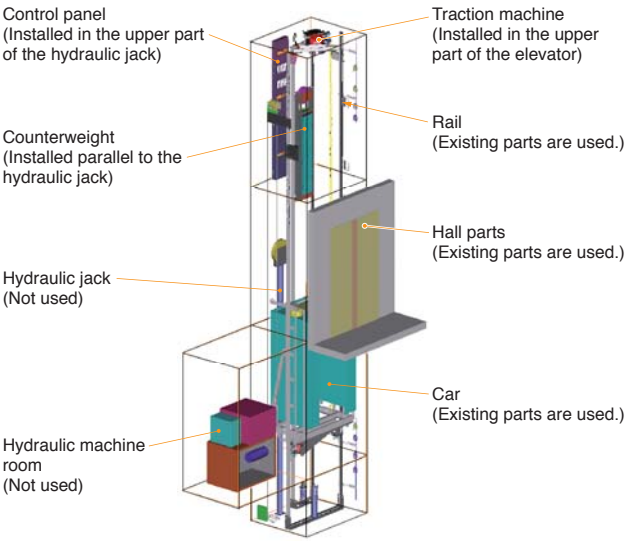
Features of New SPACEL-EX™ elevator car design

Renewal Type Machine-Room-Less Elevator

Many customers request the replacement of an installed hydraulic elevator with a rope traction-type elevator. However, since a conventional renewal type elevator requires a long work period and incurs high costs, the renewal market for hydraulic elevators is not expanding.

Toshiba Elevator and Building Systems Corporation has developed a renewal product of its latest machine-room-less elevator that is environmentally friendly, saves energy, and provides a comfortable ride. A shortened work period and low cost are achieved by using the existing hall parts, car, rail, etc.

The renewal product eliminates the need for hydraulic operating fluid; reduces power consumption, switching parts, etc.; takes environmental conservation into consideration; and offers a higher safety system that conforms with the revised Japanese safety regulations.



Hydraulic elevator renewal system