

<Company Profile>

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URL	http:// www.technoace.co.jp (in Japanese only)
No. of employees	38 / 26 IC staff
Capital	10 million yen
Established	May 1989
Representative	Koichi Tomoigawa, President

<Business Overview>

Development and sale of extendable emergency escape ladders with handrails for railway vehicles, and prefabricated extendable pipe-structure work benches

Design of railway vehicles

Technical personnel dispatch business (mainly middle-aged and elderly staff)

<Technology>

Skills of middle-aged and elderly professionals help improve functions, safety and storage!

Extendable emergency escape ladder with handrails for railway vehicles



Frequent earthquakes, unpredictable fires in train cars, sudden train accidents—Techno Ace Ltd. has developed the Super Quick Ladder, an emergency escape ladder for railway vehicles that enables passengers to escape from a train promptly and safely in such emergency cases. The results of research conducted by the Railway Technical Research

Institute confirmed that people using the Super Quick Ladder completed an emergency evacuation within three minutes (five minutes including the time required for the ladder's transportation and installation). In contrast, it took more than 30 minutes to escape from a train car when a conventional stepladder-type emergency escape ladder was used, with which passengers had to step down one by one facing the ladder. Meanwhile, the emergency escape ladder Techno Ace developed allows passengers to get out of a train car promptly and safely while facing forward (away from the ladder) holding the handrails, like when using an airplane boarding ramp. In addition, the ladder's structure is sufficiently robust to hold the weight of three 80-kg people at the same time, thereby shortening the time required for escape.

Meanwhile, handling the ladder is simple and easy. It can be used simply by placing it on the floor, raising its handrails, setting the latches on the floor rail at the exit of the train car, and untying the band that fixes the steps. You do not need assemble it, and it takes only three steps to install it on a train car. Moreover, the ladder is extendable depending on the surroundings of the tracks at the escape location. The ladder can be easily installed by anyone because its feet expand under its own weight until they are placed on the ground. The ladder is lightweight and compact, and easy to carry around. The ladder has been adopted by approx. 90% of railway companies in Japan.

[Circumstances leading to the development of the product]

What made the company develop the product was a request from a railway vehicle manufacturer in Japan to develop an emergency escape ladder to be equipped on train cars used by Taiwan High Speed Rail. Techno Ace once declined the request because of the stringent conditions written in the specifications—for example, “The ladder should have handrails,” “The ladder should enable passengers to evacuate from a train car while facing forward,” and “In the case of an emergency, all the passengers should be able to escape within three minutes”—as well as failure to overcome the challenges: the ladder should be lightweight and strong. However, serendipitously, the company came to change its way of thinking from producing a stepladder-type emergency escape ladder through talks with an employee of a ladder manufacturer. Techno Ace was inspired by an extendable aluminum-tube ladder with a pipe structure for construction use. Since then, the company has accelerated the ladder's development.

[Originality]

Emergency escape ladders for railway vehicles manufactured by Techno Ace are all custom made. The company designs ladders tailored to the specifications of train car structures and railway track conditions by the railroad company to which the ladders are delivered, ranging from the ladder length and the number of steps, to the mechanism for fixing the ladder when installing it in a train car. This is a strength unique to Techno Ace, a team of middle-aged and elderly professionals that has long been engaged in railway vehicle design and is extremely knowledgeable about railway vehicles. The design of the ladders manufactured with safety and user-friendliness in mind, featuring improved functions, safety, storage and other basic performances, won the Good Design Award 2006.

[Future developments]

Recently, Techno Ace has received increased the number of orders for an even wider range of uses such as expandable work benches for the inspection and repair of railway vehicles, flip-up ladders used in airport control rooms, and ladders for emergency evacuation doors in factories. Meanwhile, even higher levels of functions are demanded of the ladders: they should be even simpler to set up so that passengers can escape from a railway vehicle more easily in the case of an emergency. One of the examples of such efforts is a fixed-type emergency escape ladder that anyone can set up with very simple steps, even in an emergency. Going forward, all the staff members of Techno Ace will work together to develop new products with even higher functions and pursue the achievement of an even higher level of safety.

<Topics>

Spread the use of emergency escape ladders to unmanned operation trains without a conductor! Revamped function so that anyone can install it easily

As the use of emergency escape ladders for railway vehicles has spread in the railroad industry, the requests of customers have become increasingly demanding and complex. To satisfy such customer demands, Techno Ace collects its techniques and wisdom to respond to each and every request. For example, the company was requested by the Kobe New Transit Port Island Line, which had introduced an unmanned operation system, to design and develop an emergency escape ladder that could be easily set up by a passenger even if no train crew were on board. The Kobe Municipal Subway Kaigan Line requested that the company design an emergency escape ladder with handrails that rise automatically and feet that do not make contact with the ground. The company will continue to meet such special orders of customers by using its accumulated experience and ingenuity.

Aluminum alloy developed for the emergency escape ladders Lightweight alloy with rigidity has been expanding its scope of adoption.

The pipes used for the emergency escape ladders are made of lightweight and high-strength aluminum alloy, originally produced by Techno Ace, manufactured specially for the ladders. In recent days, the company has received many orders for products with the characteristics of lightweight pipes other than emergency escape ladders. Examples of applications of such products include inspection workbenches used when replacing wipers for Shinkansen and safety fences used for daily inspection and maintenance for steam locomotives. The skills and wisdom of middle-aged and elderly technical personnel are utilized in these fields. Such unique services are offered only by Techno Ace.

<History>

- 1989 Establishes the Railway Vehicles Design Office
- 2000 Fabricates electrical arcade roof operation devices and starts its installation work business
- 2001 Acquires the License for General Worker Dispatching Undertakings and starts dispatching middle-aged and elderly technical personnel
- 2004 Launches the business of emergency escape ladders for railway vehicles
- 2006 The emergency escape ladder for railway vehicles wins the Good Design Award
- 2009 The ladder for a Shinkansen train roof wins the Good Design Hyogo Award.
- 2016 Achieves sales of 10,000 emergency escape ladders for railway vehicles