

NOBODY IS LEFT BEHIND

NOW THAT THE USE OF SUPPLEMENTAL EVACUATION TECHNOLOGY FOR HIGH-RISE BUILDINGS HAS BEEN APPROVED BY THE NFPA, JOSE DE MUNIAIN SPEAKS WITH SINGAPORE-BASED JOHN NG OF MOBILTEX TO GET THE LOWDOWN ON THE INGSTRÖM ESCAPE CHUTE.

BACKGROUND

The Ingström Escape Chute is an evacuation chute that allows people in high-rises and other tall structures to safely slide vertically down to the ground. The chute has a three-layer construction made up of technical fabrics that protect users from flame, heat and smoke.

The inner layer is made of Twaron and a PVC chlorofibre that is extremely strong (up to 5,600 kg per metre width) and heat resistant up to 650 °C.

The middle layer is a flexible elastic fabric made of Lycra and modacrylic fibres. This layer acts as the 'brake' – think of knee support fabric – for the evacuee, who can control the speed of descent by extending arms or legs.

The outer layer is made of tough fibreglass that can withstand temperatures of up to 750 °C.

The manufacturer of the Ingström Escape Chute, Swedish company Mobiltex, offers exterior and interior egress solutions, ranging from single entry, multi-entry, and mobile rescue systems. In essence, these long tubes are installed as a multi-entry solution if there is provision of a vertical shaft/duct inside the building; or within an exterior structure (ie if there is no option for a shaft/duct inside the building); or even added to an aerial platform for rescue operations.

Has the concept of escape chutes finally arrived?

This concept is not new and the technology has been installed in buildings in Europe for many years. Lately it is increasingly being adopted in the East Asia region.

Indeed, since 1982 Mobiltex has installed over 6,000 escape chute systems worldwide.

How does this type of technology fit in with fire codes and standards around the world?

Every country has its own codes and standards, and although most building codes are similar in their framework, detailed requirements are different. There is no mandatory requirement for buildings to provide fire escape chutes, yet this technology is voluntarily installed by building owners to enhance evacuation preparedness.

These evacuation chutes are not a substitute or replacement for fixed stairs, they are additional egress paths that supplement existing requirements for emergency exits.


On your website, Building Code and NFPA 101 Life Safety Code Handbooks are mentioned in connection with the use of supplementary evacuation technology in official and/or mandatory evacuation plans. What does this mean in relation to escape chutes?

Since the destruction of the World Trade Centre's 110-storey twin towers on September 11, 2001, the National Institute of Standards and Technology (NIST) recognised the limitations of current evacuation and access provisions. Issues and problems highlighted in respect to egress during mass evacuation included the capacity of stairs for occupants; capacity of stairs for emergency responder access during an occupant evacuation; inherent limitations of evacuating persons with mobility impairments; and the lack of redundancy when the access to stairs and elevators is compromised.

For the improvement in building evacuation NIST recommended that the full range of current and



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next-generation evacuation technologies should be evaluated for future use, including protected and hardened elevators; external evacuation devices; and additional evacuation capacity.

The High Rise Building Safety Advisory Committee established by the NFPA considered the recommendations put forward by NIST, and in January 2009 the NFPA approved the use of 'Supplemental Evacuation Technology' in high-rise buildings to assist in rapid escape in an emergency. It has also provided guidance to building owners and others considering the voluntary use of such systems and equipment. If provided, this technology is intended to serve in a supplemental capacity and will not satisfy any code requirements pertaining to means of egress.

NFPA also approved the use of supplemental evacuation technology in official and/or mandatory evacuation plans. If provided, this technology should be used in accordance with the building evacuation plan, as no single set of requirements can cover all contingencies.

The evacuation plan should include deployment by the authorised person(s) of supplemental evacuation means, or a means of escape for disabled persons who cannot use standard methods.

Staff personnel and the person or persons authorised to direct the deployment/operation of such a system should be trained in its procedures. Generally, deployment will be when preferred options no longer exist or when all other means of egress or escape have been compromised; similar to the deployment of lifeboats on a sinking ship.

Fire escape chutes are one of the many supplemental evacuation technologies that provide redundancy and survivability into a building evacuation system.

What is the take up in industrial and high-risk environments?

NFPA 101 Chapter 40 recommendation ('Industrial Occupancies') allows slides – chutes – to be used for 100% of the emergency exiting capacity of high-hazard occupancies, but only when potential evacuees are regularly trained in their use.

Our chutes have been installed for the following industrial applications: bridge cranes/tower cranes; harbour-port traffic control/airport traffic control towers; ammunition plants; space rocket launch pads; giant mining and dirt moving equipment; ferries and offshore rigs; silos and chemical/gas storage tanks; nuclear power plants; and chemical plants.

A market that has been growing year-on-year is the mining industry, where there is a great focus on safety. We have

delivered hundreds of single-entry chutes to the mining industry in Australasia, and we believe other top mining countries will follow and install the escape chute on diggers and dump trucks.

Another sector that has experienced a significant growth is the maritime environment, and hundreds of chutes have been delivered to manufacturers of high-capacity life rafts for large passenger-carrying vessels.

What are the barriers to the adoption of this type of technology?

Firstly, there is no legislation, so in the context of building and fire code regulations there are no requirements for the provision of this type of technology for escape or rescue purposes. When it is not mandatory, why bother?

Secondly, lack of safety culture. Since the escape chute system may sit idly for many years and may never be used in its product lifetime, why waste money?

Next, lack of fire safety awareness – even though NIST recommends that public agencies, non-profit organizations concerned with building and fire safety, and building owners and managers should develop and carry out public education campaigns, to improve building occupants' preparedness for emergency evacuation.

Reliance on emergency response: generally, building owners and occupants expect the emergency response team to come to their rescue.

Fear of safety issues when using the technology during an evacuation: to counteract this, the escape chute system should be used in accordance with the building evacuation plan, which should include user-training and fire drill activities. Once building occupants are familiar with the use of the chute, their safety fears are reduced, especially because they know that there is an alternative way out.

Lack of knowledge – there are many different types of technologies in the market; which evacuation technology should be adopted for redundant means of safe evacuation?

Ingstrom Escape Chute does not come cheap in comparison to the other variations of escape chutes that are available in the market because of the specialised materials used in their construction, and the fact the chute tube and its built-in safety features are tailored to each building's needs. We do not sell an off-the-peg product; we are selling a solution to a problem. Just as each building presents its own unique problems, so our provision to each solution should reflect those needs.

Lastly, what are the benefits of this type of technology?

It provides redundancy and survivability into the building evacuation system, whilst also alleviating problems related to building evacuation in emergency situations.

Our escape chutes also increase the efficiency with which people may be evacuated during catastrophic situations, preventing entrapment via the provision of alternative escape routes. It actively supports the concept that no one should be left behind (Equal Opportunity For Evacuation) by offering a worry-free solution to those people who have difficulty using stairs, giving them the same opportunity as able-bodied people to escape. It also conforms to the emergency response planning requirements of building owners and/or management in making high-rise evacuation quicker and relatively safer.

It should also be acknowledged that the escape chute is accepted by fire authorities in several countries, as a practical alternative to vertical escape, in particular where there are space constraints for the construction of a second staircase, as is often the case with older buildings.