

Survey on Incidents with Platform Screen Doors in Hong Kong

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As reported recently by the principal author [1], there are fire safety concerns in the use of platform screen doors (PSDs) in transport systems of many large cities, including Hong Kong. PSD systems are found to be very effective in reducing energy use while the cooling and ventilation system is in operation. PSD system appears to be effective in the prevention of railway suicides.

Since 2000, PSDs started to be installed. Many incidents, including breaking glass panes of PSDs, were reported frequently in Hong Kong. A survey on PSDs-related incidents since 2000 is shown in Table 1. About 3000 passengers were affected in the 32 incidents recorded. Detailed news can be read from newspaper website [2].

Very few studies look into the associated operation problems for PSDs. Works on PSD systems mainly focuses on indoor environment with energy consumption of full-height PSDs [3], piston effects [4,5] and safety management [6].

There are deep concerns over the fire safety of PSDs. It might take a longer time for passengers on platforms with PSDs and ventilation system to evacuate. A preliminary study [7] without including the effect of PSDs on emergency evacuation indicated that the time delay can be longer than 350 s. The problem can be very serious if the train doors and PSDs do not open at the right position, as observed many times in Hong Kong and mainland China [8].

Evacuation of passengers on platforms with PSDs was studied by using the subway system in Hong Kong as an example [1]. It is observed that passenger flow is very high during peak hours, posing a greater challenge to the emergency management under big fires.

The effect of PSDs on emergency evacuation in crowded stations must therefore be studied carefully. Passenger flow characteristics should be examined first. Evacuation times under different passenger loadings from a train vehicle can then be estimated from the compiled data. Hazardous scenarios with different opening conditions of PSD can then be assessed.

References

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Table 1: Summary of PSDs incidents reported in news since 2000

Year	Incident date	Time of incident	Time incurred	Station	Cause	Number of passengers affected directly
2002	21 August	09:25	30 min	Yau Ma Tei	Screen doors failed to operate	Unknown
	29 September	14:00	--	Po Lam	Door gap clamped 4 year-old boy's finger	1
	11 November	16:00	--	Tiu Keng Leng	Door gap clamped 9 year-old girl's finger	1
2003	20 September	17:10	20 min	Prince Edward	Screen doors failed to operate	Unknown
2004	4 September	17:00	--	Mong Kok	Screen doors clamped a lady	1
	7 September	14:11	30 min	Jordan	Screen door broken and hurt a lady	1
	20 October	09:22	1 min	Central	Screen doors failed to open	2000
2005	29 June	--	--	Admiralty	Screen doors failed to open	About 200
	6 July	18:15	--	Hang Hau	Screen doors failed to open and passengers had to alight at the next station	About 50
2006	3 February	16:50	--	East Tsim Sha Tsui	Train moved while screen doors still opened	Unknown
	23 March	06:13	--	Quarry Bay	Screen doors failed to open	Unknown
	October 2006	--	--	Yau Ma Tei	Screen door broken	Unknown
	November 2006	--	--	Tseung Kwan O	Screen door broken	Unknown
2007	12 January	13:00	--	Shek Kip Mei	Screen door broken	Unknown
	28 July	14:30	--	Mong Kok	Screen doors clamped a baby trolley and hurt the baby	1
	7 December	09:06	--	Admiralty	Screen doors failed to open	Over 600
	11 December	afternoon	--	Prince Edward	Screen doors clamped a man with mobility impairment	1
2008	21 April	17:30	--	Tiu Keng Leng	Screen door broken	Unknown
2009	19 March	18:00	--	Lok Fu	Screen doors clamped two women	1
	24 August	evening	--	East Tsim Sha Tsui	Train moved while screen doors still opened	Unknown
	23 December	20:00	--	Hang Hau	Screen doors failed to open and passengers had to alight at the next station	About 100

Year	Incident date	Time of incident	Time incurred	Station	Cause	Number of passengers affected directly
2010	27 January	18:05	--	Shau Kei Wan	Screen door broken	Unknown
	1 May	23:30	--	Tsim Sha Tsui	Screen door broken	Unknown
2011	15 May	18:55	4 min	Kowloon Bay	Screen doors failed to open	About 10
	17 June	09:40	--	Tin Shui Wai	Screen doors failed to open	Unknown
	2 August	08:24	2 hours	Kowloon Bay	Screen doors failed to open	Unknown
	7 September	17:00	--	Ngau Tau Kok	Screen doors failed to open	Unknown
	21 September	--	--	Ngau Tau Kok	Screen doors failed to open	Unknown
	22 September	06:00	8 hours	Kowloon Bay	Screen doors non-smooth operation	Unknown
2012	11 April	06:30	3 hours	Chai Wan	Screen doors failed to open	Unknown
	3 May	08:40	--	Nam Cheong	Screen door broken	Unknown
	4 May	17:50	5 min	Prince Edward	Screen doors failed to open	Unknown

Total: 32 incidents

About 3000 persons affected directly