For Discussion on
12 July 2002

Legislative Council Panel on Transport

Preliminary Feasibility Study of
Installing High-speed Travellators in Hong Kong

PURPOSE

This paper informs members of the findings of the preliminary feasibility study of installing high-speed travellators in Hong Kong.

BACKGROUND

2. The normal speed of conventional travellators ranges from 0.5 metres per second (m/s) to 0.75 m/s with a maximum travelling distance of 200 metres. A high-speed travellator is one designed to be faster (above 1.0 m/s) and longer than the conventional travellator. This concept of high-speed operation is still at the research and development stage and there is no operational model in the market.

3. In the 2001 Policy Objectives booklet, the then Transport Bureau has undertaken to examine the feasibility of installing high-speed travellators in selected new developments. The target was to commence the study in 2002 for completion in 2003. Transport Department has been tasked to carry out a technical feasibility study to examine the technology available and assess its applicability in Hong Kong.

THE STUDY

Review and Evaluation of Available Products

4. As far as we can identify, there are only four different types of high-speed travellators, three from Japan and one from France, under research and development. All these four products have been included in the current study and their technical feasibility, safety and comfort level, operational requirements and cost-effectiveness have been evaluated.

5. The operating speed of the four travellator systems under study ranges between 1.2 m/s and 3.0 m/s and the maximum travelling length can be up to 500 metres. Unlike conventional constant-speed travellators, all high-speed travellators adopt a variable-speed design to carry passengers. The speed at the entrance is about the same speed as that of the conventional travellator, and accelerates gradually until a constant high speed is attained. Passengers will then stay on to travel at the higher speed. The speed decelerates gradually when approaching the exit to allow passengers to get off safely.

6. The available high-speed travellators have not demonstrated their safety for public use. Up to the present, these new systems are only being developed to pre-production prototypes or put under trial installation subject to further improvement and evaluation. None is fully commercialized.

Findings

7. Except for one of the Japanese models which did not have a demonstration model at the time of the study, hence only documentary evaluation had been carried out, documentary evaluation and actual testing were conducted for each of the three products. The evaluation summary of each product is at the **Annex**.

8. The findings of the study are summarized as follows:

(a) *Speed Performance*

All four products could achieve the specified speed performance, i.e. above 1.0 m/s.

(b) *Safety and Comfort Assessment*

All four products failed to attain the acceptable safety and comfort level, causing such problems as off-balance, trapping and noise. Indeed none of the existing systems has been granted the requisite approval for public use by the local authority concerned, owing to the less than satisfactory safety performance.

(c) *Operational Evaluation*

Owing to the unique design and construction of the respective products, their operational requirements are quite different. Generally, large floor space for housing the travellator is required.

(d) *Cost-Benefit Analysis*

The capital cost of high-speed travellators is substantially higher than that of the conventional ones. For example, a 200-metre long conventional travellator costs about $7.5 million, whereas a high-speed travellator of the same length costs between $10 million and $36 million. To compare the cost-effectiveness of the various high-speed travellator products, the payback periods (i.e. number of years after which the estimated cumulative benefits due to time savings would outweigh the relevant investment costs involved) for products with different length and speed were assessed. It was found that the higher the speed and longer the travellator, the shorter would be the payback period. For a travellator of operating speed not less than 2 m/s, the payback period would be about 11 to 13 years for a 100-metre travellator, 7 years for a 200m travellator, about 4 to 6 years for a 300-metre to 500-metre travellator.

9. Overall speaking, two of the Japanese models do not meet our requirements and are considered outright unacceptable for implementation. It will take at least nine months to improve the third Japanese model. The prototype in France will be opened in July 2002 for public trial use for one year to evaluate its safety performance by the French authority. In view of the present status of the available products, it is estimated that high-speed travellators will not be mature for market use for at least another year.

WAY FORWARD

10. We will keep in view the technical development and operational experience of the prototypes and initiate further study. After the system is proved feasible for public use, we will identify a suitable site for installing high-speed travellators as a pilot project to verify the effectiveness, safety, comfort and public acceptance level in Hong Kong.

ADVICE SOUGHT

11. Members are invited to note the content of this paper.

Environment, Transport and Works Bureau
July 2002

Annex

Summary of Products Evaluation

Product / Evaluation criteria	**A** (Japan)	**B** (Japan)	**C** (Japan)	**D** (France)
Speed Performance	Achieved medium speed (1.2 m/s)	Achieved High speed (1.7 m/s)	Achieved high speed (2.0 m/s)	Achieved high speed (3.0 m/s)
Safety & Comfort Assessment	Safety level is not sufficient	No model for assessment	Noise Problem (over 80 dBA)	Relatively high risk on roller
Operational Evaluation	Normal	Large spacing requirement	Large spacing requirement	Normal
Cost-benefit Analysis	Not cost-effective[1]	Not Cost-effective[3]	Cost-effective for length over 200m	Cost-effective for length over 200m
Overall Evaluation	Not acceptable[2]	Not Acceptable[4]	Not mature	Not mature

1 The model is considered not cost-effective due to the low speed and long payback period.

2 The model is considered unacceptable for implementation due to the less than satisfactory safety performance.

3 The model is considered not cost-effective due to the low speed and long payback period.

4 The product is considered unacceptable for implementation as there is no demonstration model available for actual testing.