3.2 Ha

A new handrail system was needed for the variable-speed pallet unit. Conventional handrails eliminate the potential safety problems associated with loss of synchronization between the rubber belt and the surface of the conventional constant-speed walkway. A rubber belt-based system consisting of multiple rubber belts along the longitudK*ISthing 1KGISow–I’zC(G*nD’’**’’**’’n 1K*GSc’Gngitu1K*GS 1PDSA1*GSc’GP[Ss (’I1K*ISa

4. E a a a

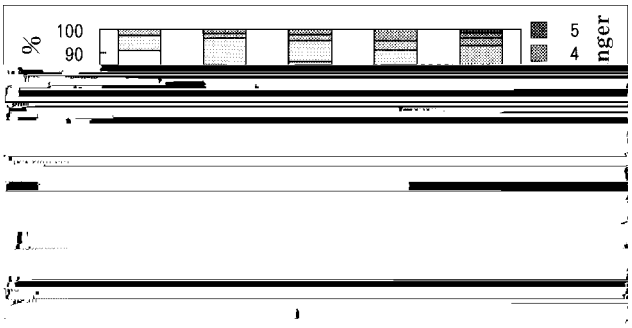
The various safety problems associated with the different functions and shapes of the accelerating walkway compared to a conventional constant-speed walkway were investigated experimentally on the basis of ergonomic criteria. These evaluations are outlined below[6]. See **P 2**.

P 2 E a a a

4.1 S a

The speed at entry and exit is similar to that of a conventional walkway and therefore presented no particular problems. The speed in the high-speed zone is 54–72 m/min, which is approximately 1.8 times that at the entrance and exit (30–40 m/min). This approximates a normal walking speed and, as such, does not seem unfamiliar to the user. However, some problems remain that are associated with the acceleration from the low-speed zone to the high-speed zone, and the deceleration from the high-speed zone to the low-speed zone.

As seen in **F . 6**, an experimental evaluation of ergonomic factors in terms of the perceived danger and transport speed showed that the most appropriate entry and exit speed range is 30–40 m/min, with an average acceleration of 0.008–0.015 G.



F . 6 Q a

4.2 Sa a

The structure of the pallets is such that the space between the main pallets increases in the acceleration zone after entry and decreases between the deceleration zone and the exit. Deceleration at the exit is a possible cause of congestion, and a number of experimental evaluations were therefore conducted from an ergonomic standpoint to provide data for improving the system. An outline of these evaluations is provided below.

4.2.1 G a a a a

(1) Coloring of pallets

Congestion at the exit can be avoided if passengers are on the main pallets at the beginning of the deceleration zone. A method of coloring the main pallets was investigated to determine whether passengers could be induced to consider auxiliary pallets as temporary pallets, and thus be unconsciously guided towards the main pallets. The main pallets were therefore colored black, while the auxiliary pallets were colored red.

(2) Handgrips

The handgrip pairs are located at either side of the center of each main pallet. The handgrips and main pallet are therefore completely synchronized during movement. When passengers hold the handgrips they are therefore riding on a main pallet (see **F . 7**).

When used in combination with warnings, taking hold of a hand grip or moving to the location of a hand grip will naturally result in the passenger riding on a main pallet and avoid congestion at the exit.

F . 7 Sa a a a a

4.2.2 E a a

tion zone suggested that passengers tend to alter their position in relation to other passengers, thus eliminating any possibility of danger.

The prototype unit has pallets that are 400 mm wide and auxiliary pallets that are approximately 320 mm wide. Thus, under normal conditions of use, it is very