SIMWALK

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Metro underground safety simulation

Project

Pedestrian flows in Lyon's underground metro station at Charpennes

Organisation

Egis Rail (France)

Sector

Public transport
Metro station
comfort and safety

Goals

Analysis and visualisation of passengers transferring simultanously between 2 metro lines via an underground passageway

Topics

- Modelling of pedestrian flows in an underground passageway, transferring between 2 metro lines
- Capacity bottlenecks

Contact

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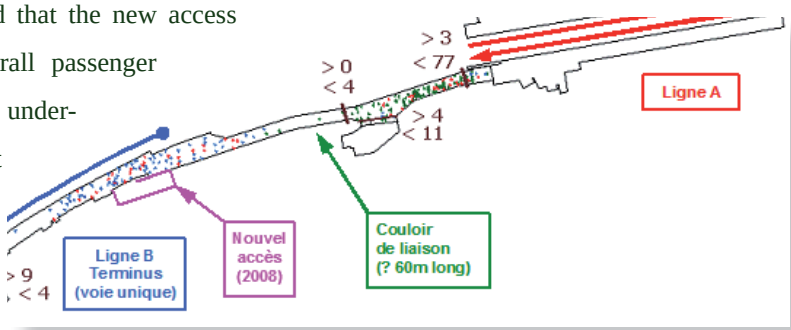
Lyon's underground station at Charpennes (Charles Hernu square) is served by 2 lines: line A (La Soie Perrache) and line B (terminus at Gerland Stadium). Passengers transfer between the two lines using a connecting underground passageway. The simultaneous arrival of trains can generate important passenger densities in this passsageway. Several projects will have an impact on pedestrian comfort, especially in the passageway: 1) *Line A extended towards La Soie and line B extended towards Oullins), 2) New access created for line B (opening 2008), 3) Increase in line's B service frequency.*

Egis Rail has presented to Lyon's transport authority (SYTRAL) the results of dynamic simulations of passenger flows inside Charpennes station, between lines A and B, using this passageway. The simulations were undertaken using SimWalk software. The objective of the study has been to analyse the impacts of these alterations and the projected flows on the movement of passengers in Charpennes station, particularly their comfort and security.

The results indicated that the new access would improve overall passenger exchanges in the underground corridor, but only in the short term and in unequal manner:



1) Temporarily for the eastern part of the corridor, 2) More perennial for the western part of the corridor. By 2013, this improvement will have reached a limit. Regulating some of the passenger flows on line A could bring the corridor back to the present situation. However, implementing this pedestrian management will be complicated and only provide temporary relief. The increase in passenger flows will begin to create some congestion effects in the eastern part of the corridor, reducing the efficiency of the connection. This will require further measures. Present thinking is currently orientated towards widening the corridor or providing a second passageway adapted to the future passenger volumes. The search for practical solutions will not be easy, because of the proximitiy of supporting structures.