Ergonomics and Visibility in tramway driver’s cab

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Key Presentation Take Aways

- French context
- Methodology
- Focus on visibility requirements
- Example of a new design
- For further information...
French Context

Ends of vehicle = visual identity of a city
French Context

Actors:

- Public authorities in charge of transport organisation
  → defines the specifications for the RS
- Operators
  → users of the RS
- STRMTG
  → delivers authorisation regarding the safety
Methodology

Other European guidebooks?

Based on:

- Needs of operators and STRMTG (safety)
- Standards (buses, conventional railway RS) and regulations (road vehicle)
- Know-how of manufacturers and ergonomics specialist
- Working group with all concerned professions
Focus on visibility requirements

Hazards $\leftrightarrow$ Conditions of Visibility
Focus on visibility requirements

Benefits of visibility and anticipation:

- Reduce collisions with pedestrians
  1 fatality and 1 severe injured victims in 2010 due to the obstruction of the pillars (8° and 18°)

- Reduce collisions with every third parties

- Reduce emergency braking → falls in the tram
  428 victims in France in 2014
Focus on visibility requirements

Tram at standstill ↔ Close field of vision
Child crossing in front of the tram

Driver's cab
Range of cylinder's positions (180°)
Cylinder 300 mm diameter and 1100 mm tall
Extrem cylinder's positions (tangent part to the 180° axis shall be visible)

Driver's line of sight

visible areas
top view to show the obstruction due to a pillar
hidden area
visible area to project

13th National Light Rail & Streetcar Conference
Focus on visibility requirements

Tram moving ←→ Far-off visibility
Focus on visibility requirements
Focus on visibility requirements
Focus on visibility requirements

- Angle without any obstacle $\beta = 100^\circ\ \text{min}$
- $25^\circ\ \text{min}$ above the horizontal plane
- $180^\circ\ \text{min}$ for the forward field of vision
- Angle of obstruction by pillar $\alpha = 6^\circ\ \text{max}$
Example of a new design
Example of a new design
For further information...

Guidebook available on STRMTG’s website
English version coming soon


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