Cycle highways & speed pedelecs









Who am I?

• head of energy technology department @ Odisee

• technical director@ LEVA-EU

• researcher on light electric vehicle since 2012 @ KU Leuven









What do we know about the speed pedelec?







Belgian commuters do buy it

• sales numbers show clear interest

• > 14 000 registered in 2020 (comparable to registration of BEVs)

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\rightarrow offers alternative for car commuting









Social advantages









Hours lost in traffic



 Jan Mai Sep Jan Mai Sep

 11
 11
 12
 12
 13
 13
 14
 14
 15
 15
 16
 16









Typically used for commuting



commuting distance [km]

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Rotthier B., Huyck B., Dikomitis L., Motoasca E., Cappelle J. (2016). *Social benefits and legislative challenges of speed pedelecs*. Velo-city Global 2016. Taipei, February 27 - March1 2016.





Personal advantages

- commuting time competitive with car commuting or public transport
- low variation in commuting time
- cost
- sport
- fun
- •









What is the typical speed of a speed pedelec user?





Cruising speed of speed pedelec users





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Cruising speed of speed pedelec users



Rotthier B., Stevens G., Dikomitis L., Huyck B., Motoasca E., Cappelle J. (2017). *Typical cruising speed of speed pedelecs and the link with motor power as a result of a Belgian naturalistic cycling study*. International Cycling Safety Conference. Davis, USA, 20-23 September 2017







Cruising speed of speed pedelec users









What about Belgian legislation?







Bike lane users in Belgium



Pedestrians



Bicycles



Mopeds (in some cases)







Original difference







~ 1995: Introduction traditional electric bike









- pedal assistance
- maximum assistance speed ≤ 25 km/h
- max. cont. rated motor power ≤ 250 W

















~ 2013: Introduction speed pedelec





- mainly pedal assistance
- maximum assistance speed \leq 45 km/h
- max. cont. rated motor power ≤ 4000 W (typically 350 W or 500 W)







~ 2013

















The speed pedelec in Belgium

if speed limit \leq 50 km/h



if speed limit > 50 km/h





Is the current legislation future proof?









Future

• more innovations in Light Electric Vehicles

• more "intermediate" vehicles







Future

• more innovations in Light Electric Vehicles • more "intermediate" vehicles







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Option 1: Extra categories and exceptions

→ For every innovative vehicle, creation of new category or extra exception?



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Option 2: Dogmatic approach





















Option 2: Dogmatic approach

what about?







Motor?









Back to the essence of traffic regulations

"A set of agreements, which regulate traffic behaviour on the road in advance, general rules that are applicable in every situation and that regulate the positions and movements on the road in such a way that collisions are avoided"

- Is "motor \Leftrightarrow muscle power" a good distinction to avoid collisions?
- alternative: based on objective parameters
 - → actual speed (road dependent)
 - \rightarrow mass and dimensions (vehicle dependent)
 - \rightarrow impulse and kinetic energy





Speed pedelec \Leftrightarrow cycle highway







Speed pedelecs on bicycle highways

- greater speed differences
 - \rightarrow Shouldn't these car free roads, outside cities, not be supportive of
- alternatives for car use over larger distance?
 - \rightarrow Are there greater speed differences?
- silent, overtaking vehicles



- \rightarrow e-mobility = silent mobility, the speed pedelec is just the frontrunner
- infrastructure not adapted for speed pedelecs
 - \rightarrow Road users can adapt to difficult situations







Speed pedelecs on bicycle highways

possible actions:



- Imposing (reasonable) speed limits on bicycle highways?
 - \rightarrow linking to technical regulations?
- future proof: wide, smooth surface, road marking, lighting,...







Conclusion

• The speed pedelec offers various social and personal advantages.

• Typical speed varies between that of bicycle and moped.

• Back to the essence of traffic regulations?

• Embrace the speed pedelec as a bicycle highway user, the cyclist will profit from this.







Questions, ideas or suggestions?

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