
Subject: Re: railML 2.3 infrastructure extension proposal tunnel resistance factor
Posted by on Thu, 19 Jan 2017 18:50:29 GMT
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Dear Christian and Torben,

> Dear community, what are your preferences?

I can of course not write for all the community... ;-) But possibly you do not expect a consolidated answer. At least, I have considerable experience with tunnel resistance.

As written in both of your posts, the tunnel resistance is (as far as I know) represented by a factor which increases the "normal" air resistance. (The tunnel resistance is a special kind of air resistance.) To be exactly, the air resistance is represented by the formula $F_{w,air} = 0,5 \rho W A v^2$ and the tunnel resistance raises the cW of the vehicles.

I totally agree with Christian that this factor depends on the three named parameters, especially on the ratio of train cross section and tunnel cross section, also by the ration of train length and tunnel length. I am convinced that all necessary values can be modelled in railML 2.x.

I would see no advantage in a rather "empiric" solution like

> resistance formula: $F(tun) = A \cdot v^2$ [V]=km/h

but if F(tun) is the (absolute) tunnel resistance (F=force in kN?), it leads to the question: Does that tunnel resistance replace the air resistance or is it additional?

I think for railML we should leave it by the attributes necessary for the tunnel resistance factor, without any formula.

But this is, of course, my opinion only...

With best regards,

Dirk.

Am 02.01.2017 um 17:30 schrieb Christian Rahmig:

> Dear Torben,

>

> Am 20.12.2016 um 18:32 schrieb Torben Brand:

>> [...]

>> tunnel

>> In most runtime calculation software the tunnel resistance

>> factor is calculated. We suggest to indicate a simple tunnel
>> resistance factor (A) for the simple additional tunnel
>> resistance formula: $F(\text{tun}) = A \times V^2$ [V]=km/h
>> The element <tunnel> is extended with the new attribute
>> @NO:tunnelResistancefactorA [datatype integer].
>
> railML.org philosophy so far was to primarily model explicit
> infrastructure parameters and to derive other parameters where possible.
> The tunnel resistance factor is a secondary parameter that is influenced
> by:
> * the ratio of train cross section and tunnel cross section
> * the length of the tunnel
> * the roughness of the tunnel wall
>
> The tunnel wall roughness is given by the attribute <tunnel>@kind, where
> the wall material (natural stone, quarystone, brick, concrete) can be
> specified. The attribute <tunnel>@length defines the length of the
> tunnel. The tunnel's cross section area is given with the parameter
> <tunnel>@crossSection. Taking into consideration that the train's cross
> section area can be derived from the clearance gauge profile, all
> parameters that are required for calculating the tunnel resistance
> factor are available.
>
> However, calculating a tunnel resistance factor remains complex. So, I
> see two options for improvement: Either, the formula for calculating the
> tunnel resistance factor is provided in the railML wiki (see [1]) or an
> attribute for a calculated tunnel resistance factor is introduced. The
> latter solution allows for applying different formulas for calculating
> the tunnel resistance factor while the first solution would
> unambiguously define the way to calculate the factor.
>
> Dear community, what are your preferences?
>
> [1] <http://wiki.railml.org/index.php?title=IS:tunnel>
>
> Best regards
> Christian
>
