Subject: Re: Different ways to model tractive effort
Posted by Joerg von Lingen on Tue, 26 Feb 2019 09:53:43 GMT
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Hi,

in our old tools we a mechanism to describe such curves per (speed) interval just marking the type and possible coefficents.

1) Polynom $F=A+B*v+C*v^2+D*v^3$ - by choosing the coefficents A, B, C and D one can describe a wide range of different
curves from just konstant to more complex ones

2) Hyperbolic $F=A/v$ - hyperbolic curve is used for intervals with constant power (A) diveded by speed

3) Quadratic $F=(A*v1)/v^2$ - quadratic curve is used for intervals (start at v1) with field weakening from power (A)

This principles I had in mind when I presented in Nov. 2003 a possible representation in MathML - refer attachment.

Regards,
Jörg von Lingen, Rollingstock coordinator

Laura Isenhoefer wrote on 26.02.2019 09:40:
> Hi,
>
> Jernbanedirektoratet has the need to define the tractive
> effort of an engine in a more flexible way than it is
> possible right now. Our aim is to cater for all the needs
> that our different tools have and ideally allow for a
> lossless transfer from one railML-file to each of the tools.
>
>
> In general, our tools seem to use 3 different approaches:
>
> 1) Discrete value table: same as railML-value table. Each
> pair of speed and tractive effort get one entry, values
> between the given value pairs need to be interpolated
> (linear). Accuracy is user-defined.
>
> 2) Hyperbolic curves: the curve of the tractive effort curve
> is defined by a hyperbola. All you need to know are the
> coordinates of the start and the end point of the hyperbola
> and with the the equasion F=P/v (+c) you will be able to
> interpolate every point on the hyperbola. Additionally to

> the given value pairs there's the need to specify if those
> points should be connected linear or hyperbolic, which can
> currently not be done in railML. (But could probably be done
> easily with a simple extension).
>
> 3) Quadratic curves: The tractive effort can also be given

> This equasion allows to precisely define the tractive effort
> for both the linear part as well as the curve, by giving b0,
> b1 and b2 (for different intervals). This could e.g. be
> implemented by using different z-values in the railML-value
> table to define the bi for the different speed-intervals.
>
> As mentioned above, we would love to find a solution that
> allows all 3 possibilities, so that we are able to enter the
> tractive effort into all of our tools we use.
> Mathml does not seem to be the solution here, since it does
> not seem to be able to unambiguously define those equasions
> or tables.
>
> One of our suggestions would be to have a table with 6
> columns, so that each reading system can pick the values it
> needs:
> (speed | tractive effort | linear/hyperbolic? | b0 | b1 |
> b2)
>
> We're happy to hear other suggestions. The solution could
> first be a Norwegian extension and later be implemented into
> railML2.5.
>
> Best regards,
> Laura
>

File Attachments

1) railML-MathML.pptx, downloaded 610 times