Minutes of the meeting

GRRF IG R 55 Task Force Agricultural
Couplings (TFAC)
Small Group for definition of Formulas and Test procedure for agricultural towing devices
Components: Mr. Inverardi, Mr. Afflerbach, Mr. Conrads, Mr. Mc Mahon and Mr. Stokreef

TUEV NORD ESSEN, 18 December 2013

1- **Opening of the meeting**
   Mr. Conrads welcomed all the participants and open the meeting at 10.00.

2- **Roll call of participants**
   All the components of the small group were present and introduce themselves.

3- **Definitions of the characteristic values**
   Mr. Inverardi has prepared a document summarizing the history and the main reasons behind the definition of the actual characteristic values. The document has been distributed before the meeting and have been discussed in all the details during the morning.
   There is a general agreement regarding the use of the values D and Dc as they are defined in the ECE R55-01 also for the actual agricultural towing devices.
   For the S value it is necessary to extend the applicability to the value of 4000 kg as this value is common on the agricultural application.
   The V value, as is defined in ECE R55-01 cannot be used for the rigid Drawbar Trailer commonly used in the agricultural applications. The simplifications of the original complete formula to come to the V value formula used in R55 are not justified for rigid drawbar trailers with a relative high S value.
   Using only some specific parameters, that take in consideration the real behaviour of agricultural trailer, the V-value formula seems that can be applied also to the agricultural trailers.
   The general opinion is to use the values **a= 1.8** and **x/l = 1** for the calculation of the V value.
   This because:
   - The air suspension effect is compared to the agricultural tractor tyres behaviour
   - The high S value used in agricultural require a long drawbar length for the trailer with the centre of the axes positioned far from the centre of gravity.

4- **Test procedure**
   In ECE R55-01, Annex 6, par. 3.5 for the hook coupling the pulsating test procedure is already stated and can be considered as basis for the test procedure also of the agricultural towing devices in case of dynamic test.
   Many examples and consideration around this hypothesis has been developed during the afternoon and the first results show that the same approach can be used.
   In summary, using the formulas:

$$Fv = 9.81S + 0.4V$$

   Where V is calculated as:

$$V = a * C * \left(\frac{x^2}{l^2}\right)$$

   With   a = 1.8
           x/l = 1

The values given by these formulas are in line with the values obtained from the actual TA31 formulas for speed over the 40 km/h ($F_{s\ sch} = g \cdot S + 0.24 \cdot D_c$) for all the examples evaluated.

5- Next steps

All the experts are requested to develop the above calculation with some practical examples in order to compare the results obtained.

The valuation of the x/l parameter with practical examples is also requested to the expert in order to find the best representative value.

(some example have been evaluated using the parameters:

x/l = 1.2
and

$$Fv = 9.81S + 0.3V$$

with convergence to the same values as the previous combination of values).

6- Conclusion

One more meeting should be necessary to become to a definitive conclusion

Meeting is closed at 17.00