



**Economic and Social
Council**

Distr.
RESTRICTED

TRANS/WP.29/GRRF/2003/10
22 November 2002

ENGLISH ONLY

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Brakes and Running Gear (GRRF)
(Fifty-third session, 3-7 February 2003,
agenda items 6.3. and 6.4.)

PROPOSALS CONCERNING ADDITIONS TO REGULATIONS Nos. 30 AND 54 IN
REGARD TO MANUFACTURER'S INFORMATION ABOUT TYRE ROLLING
RESISTANCE COEFFICIENT

Transmitted by the Expert from the Russian Federation

Note: The text reproduced below was prepared by the expert from the Russian Federation in order to make equivalent the inertia dynamometer test with the road test. The document is based on a document distributed in English and Russian without a symbol during the one-hundred-and-twenty-eighth session of WP.29 (informal document No. 7) that WP.29 agreed to transmit to GRRF for consideration.

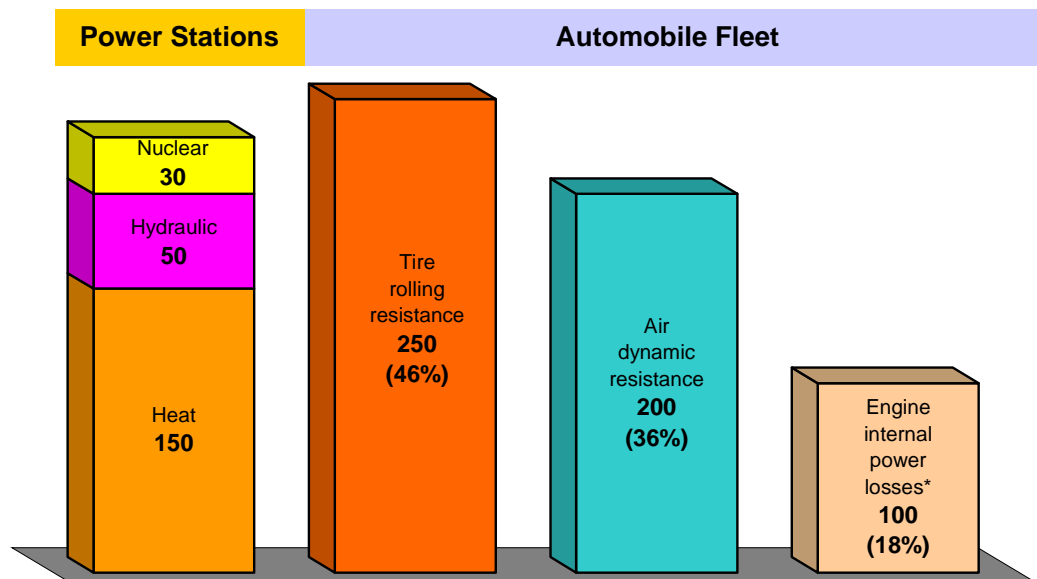
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At the present time, the Regulations Nos. 30 and 54 establish requirements concerning important tyre properties affecting their safety. However, the Regulations do not take into account the energy wasted on tyre rolling resistance transferred to destruction of tyre material, formation of dusty wear and tear products and gaseous emissions. Negative influence of tyres onto the environment is comparable with such influence of automotive engines. Besides that, tyre rolling resistance, according to Russian and foreign research, is the major part of a vehicle fuel consumption balance, which loads an engine and causes its emissions.

According to the test results of vehicle types representing the entire fleet of Russian vehicles and their foreign similarities performed by using a newly developed test method of energy parameters, the total power losses on tyre rolling resistance of the 26-million Russian automobile fleet reaches the value of 250 million kW, i.e. more than total power of all Russian heat, hydraulic and nuclear power stations (fig. 1). The energy developed by power stations produces heat, light, and power for production facilities. The energy loosed on tyre rolling resistance produces gaseous wastes of tyre wear and tear and engine emissions, and the lower tyre quality – the more negative ecological and energetic consequences of usage of 37 million tyres annually manufactured in the Russian Federation.

The tyres of the 2-million Moscow automobile fleet absorb about 25 million kW of their engines. As a result, about a half of 900 tons of the total annual automotive engine emissions is due to power losses on tyre rotation, plus 250 kg of dust annually covers each kilometre of road surface.

It can be assumed that, for the countries with a more developed automotive industry, the similar values would be considerably higher. Thus, the usage of automotive tyres is a significant factor affecting the environment and has to be regulated by national as well as by international requirements.



* do not depend on external load

Fig. 1 Comparison of power rates circulated throughout the Russian automobile fleet (in million kW)

The research results indicate that reduction of tyre rolling resistance is followed by an increase of their durability. Besides that, the tyre rolling resistance coefficient depends on hidden defects due to technological concerns, static and dynamic unbalance, and not homogeneous force distribution.

Therefore, tyre rolling resistance is the basic energetic source reflecting deficiencies in tyre design affecting mostly all spectra of their active and environment safety. That means that the tyre rolling resistance coefficient has to be considered as one of the most important safety parameters to be regulated.

At the present time, several international and national standards (ISO 8767, ISO 9948, SAE J 1269, SAE J 1270, SAE J 2452, Russian GOST 4754, GOST 5513, and Automotive Industry Standard OST 37.001.522-99) establish considerably similar test methods for determination of the tyre rolling resistance coefficient.

In the opinion of the Russian Federation, it is expedient to include into the working programme of WP.29 and, in particular, GRRF, developing of amendments (additions) to the Regulations Nos. 30 and 54, which are actually related to regulation of the tyre rolling resistance coefficient and development of a uniform procedure of its evaluation.

The proposal in this regard is to introduce newly developed additions to the mentioned Regulations related to tyre rolling resistance in two stages:

- in the first stage (tentatively by 2005), the tyre manufacturer, in the application for official type approval, has to state the value of the tyre rolling resistance coefficient measured on a drum-type test bench at an engine load of 80-85 per cent of the maximum net power and the stated tyre pressure, as well as the test method used.
- in the second stage, it is expedient to adopt the agreed uniform method for measuring the tyre rolling resistance coefficient and the range of permissible values of such coefficient, which has to be developed and proved by the Contacting Parties.

In case WP.29 agrees with such proposal concerning amendment of Regulations Nos. 30 and 54, the Russian Federation is ready to introduce in 2003 a draft document concerning uniform testing method for tyres for measuring the rolling resistance coefficient.
