indicated fuel consumption with calculated fuel consumption. We divided the litters tanked into fuel tank by covered distance for calculation. Covered distance was 10 000 kilometres. The on-board computer indicated 0,05 l per 100 km below the calculated consumption. Average fuel consumption was 5,8 litres per 100 kilometres.

We had to install fluid meter Pierburg into fuel system therefore vehicle Škoda 105 L is not equipped by the on-board computer. Fluid meter was installed into extrusion branch behind fuel pump. Computer Correvit calculated fuel consumption with accuracy ± 1%. It is necessary ensure permanent changeless resistance on the vehicle wheels for comparability of the results. The cylinder power test stand MAHA LPS 2000 fulfils this request. It is possible to set constant resistance in N on the vehicle wheels on that stand. Display of the stand shows value of resistance in N and speed in kilometres per hour. It works with accuracy ± 2 % of measured parameter.

The driver had to warm up tyres to the working temperature by driving and by the arbitrary speed. He had to achieve required speed then for required gear. He was obliged to keep the speed on that value for 1 minute. It was necessary to start new measurement if the speed was higher or lower more than 2 kilometres per hour in that interval 1 minute.

The vehicle engine produces pollutions which are released into the environment by the vehicle exhaust system. Toyota Yaris exhaust system was equipped by the catalytic converter and Škoda exhaust system was without it. Difference in the pollution production was tested by SUN MEA 1500 SL equipment.

3. Received results

The quantity of CO₂ production depends directly on quantity of fuel consumption. Fuel consumption comparison of both vehicles we can see on Fig. 1, 2, 3.

Figure 1 compares fuel consumption if both cars use II. gear for driving. Engine of the vehicle Škoda with mixture preparation by the carburettor indicate more steepness growth of the fuel consumption in opposite to the Toyota Yaris vehicle whose mixture preparation is administrated in accordance to the λ sound signals. Škoda vehicle fuel consumption goes up on 129,33 % and Toyota Yaris consumption go up only to 118,37 % when speed increases from 40 to 60 kilometres per hour. The Škoda vehicle fuel consumption is 53 % higher than the Toyota Yaris consumption in speed 40 kilometres per hour.

Figure 2 compares fuel consumption if both cars use III. gear for driving. Fuel consumption goes up to the 172,72 % for vehicle Škoda and to 140,54 % for Toyota Yaris if speed was changed from 40 to 80 kilometres per hour. Curved line of fuel consumption for Toyota Yaris indicates constant growth. Curved line for vehicle Škoda indicates different slope. The reason of it is quality of preparation mixture in the carburettor. Vehicle Škoda fuel consumption is higher about 48 % at speed 40 kilometres per hour and difference increase to 80,77 % at speed 80 kilometres per hour.

The vehicles engines work with partial load if they use II. and III. gear. The Fig. 3 indicates fuel consumption if vehicles use the highest possible gear. It manifests in higher load of engine and it starts to work in optimal mode. Vehicle Toyota engine keeps still constant inclination of the consumption, but vehicle Škoda engine change inclination. For speed from 40 to 60 kilometres pre hour it decrease and from 60 to 100 kilometres pre hour it starts to increase.

4. Conclusions

Vehicle Škoda consumption is equal to 184 % of consumption of Toyota at speed 40 kilometres per hour and it decrease to 148 % at speed 100 kilometres per hour.
The production of CO\(_2\) depends directly on vehicles consumption. We can draw conclusion that vehicle Škoda had higher fuel consumption in all measured area and so it produced higher quantity of CO\(_2\) in whole measured area, too. Exhaust fumes contains more kind of pollutions, not only CO\(_2\). Composition of the exhaust fumes is indicates in Table 3.

Mixture preparation in carburettor reflects in higher percentage of CO and HC. Carburettor works only on base of under pressure in the intake system. It leads to the worse composition of the mixture.

Toyota engine prepares mixture on base of \(\lambda\) sound signal and its composition is always the best. Redundance of the oxygen in exhaust fume is very closely to the one. The exhaust system of vehicle Toyota includes catalytic conventer. This both reasons lead to the lower contents of the CO and HC in the exhaust fume.

5. References


