

Integration drum test stand and a dynamometer trailer for testing car tires with using LabVIEW

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Located at the Institute for Motor Vehicles and Transport WAT test stand for dynamic tests tires subjected to modernization using to this platform for measurement and control Compact RIO and LabVIEW software.

When conducting research with using drum test stand the position of the drum met with the problem of time-consuming preparation of the trailer dynamometer. The need to enlist the help of another person to use the drive and communicating with her in the presence of high noise levels, especially at the time of full braking the wheels, further hamper the smooth conduct research. Therefore, it was decided the need for modernization of the existing measurement system, replacing it based on the measurement technology and programming system from National Instruments

Developed for this purpose application control and measurement can be divided into three main blocks. The first (Fig. 1) is used to ask the normal load and the observation of the current load and speed of the drum of the drive wheels of the trailer dynamometer. For convenience, use the speed has been converted to linear.

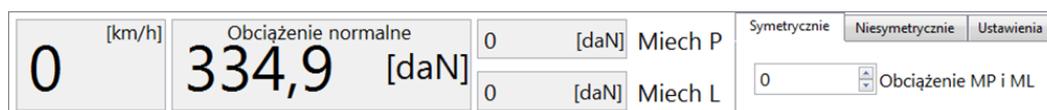


Fig. 1. Panel load and speed

The second part of the application is divided into tabs, which can be shaped waveform control systems regulations corresponding to the braking force and turning wheels. Another two of them allow you to preview the currently recorded values. Figure 2 shows an example for the braking force (corresponding to the steering wheel are) together with the values that allow the formation, both in terms of the rise time of the force, and its peak value.

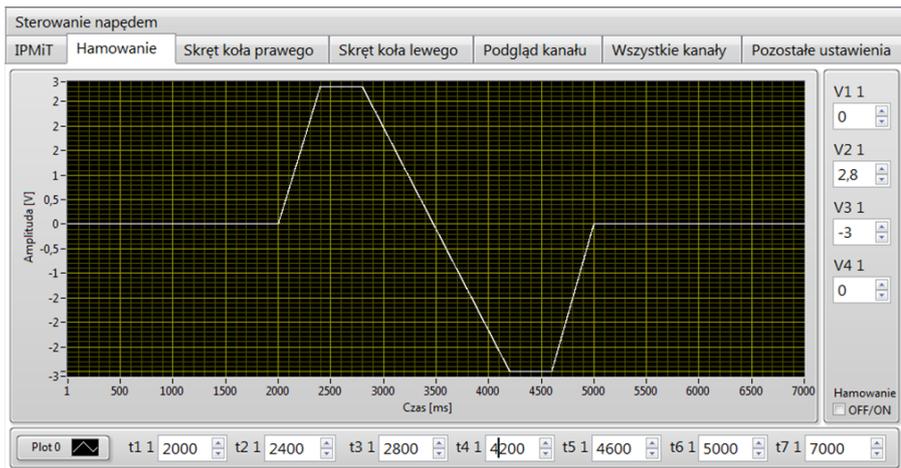


Fig. 2. View course of the control system of the executive power braking

The last main part is used to control the drive (Fig. 3). It allows you to control selection between driving the drum and the braking and turn to the right or left. Achieving the desired speed is automatically controlled using PID algorithm.

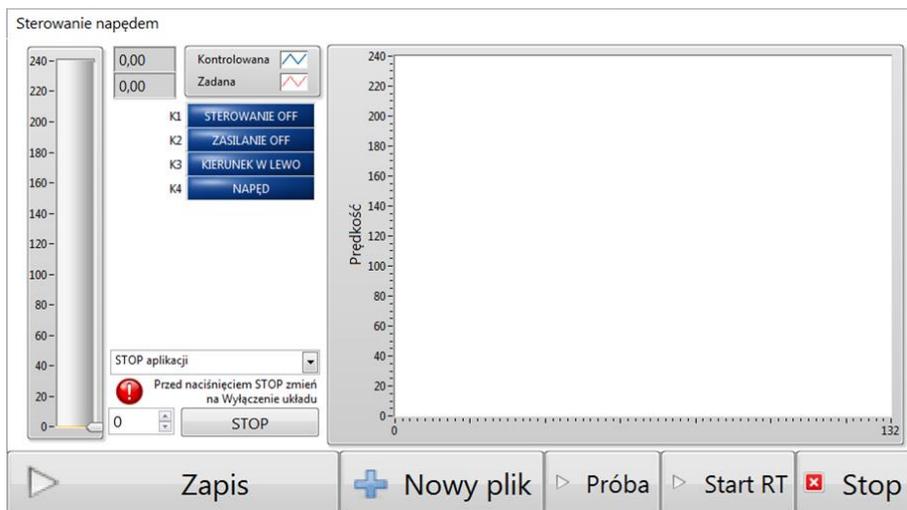


Fig. 3 A view of the application of the control drive drum

With the described application is ensured a significant reduction in time measurements and simplify the measuring circuits. Additionally, the use of the new system control and measurement allows the infliction of test conditions with greater accuracy and repeatability. LabVIEW also allows the use of complex procedures for the analysis of measurement results, which saved the file no longer requires additional treatment. Direct support can be performed by one person, while in the future, the application will be extended to remote control over a network connection.