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Rail Transport—Systems Approach

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Train Protection Systems in Different Railway Gauges

Lionginas Liudvinavičius and Aleksander Sladkowski

Abstract This chapter analyzes the train traffic control systems for 1435- and 1520-mm railway gauges, as well as their compatibility issues. The British Rail Traffic control system is analyzed. European train control systems (ETCS) and ETCS levels are described. Differences between European train control systems in 1435- and 1520-mm railway gauges related technical problems and proposed solutions are presented with regard to ETCS implementation in the Baltic states. The existing train control systems do not meet requirements of traffic safety in light of increased train speeds.

Keywords Train protection system · Interlocking · Track circuit · Moving block · Balises · Train speed · Axles counters · Global positioning system (GPS)

1 Introduction

Today, many countries apply interval train traffic control, where trains in a section are separated using fixed-block principle. Increased train speeds dictate the necessity to improve train control in order to reach ETCS level 3. This may be achieved by using the principles of moving block and radio transmission instead of interval train control. At the same time, reliable automated braking systems for high-speed trains have to be developed. Examples of such systems used for stopping high-speed trains of Japan, France and Italy are analyzed in a dedicated chapter. This chapter also presents new opportunities arising from the modernization of Lithuanian railways

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