



**University of Banja Luka**  
**Faculty of Mechanical Engineering**  
**Faculty of Electrical Engineering**



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## TRENDS IN THE DEVELOPMENT OF BRAKE SYSTEMS OF THE AGRICULTURAL TRACTORS AND TRAILERS

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**Summary:** As agricultural tractor size and speeds have increased during recent years, heavier loads are transported on public roads at higher speeds. With the combination of higher-energy level and more rapid deceleration, brake systems with excellent heat dissipation characteristics are required. Wet multiple-disc brakes have similar multiple-disc construction, but operate in an oil bath. ABS is the next step in the development of a brake system of the tractor that brings an additional level of safety and control. In addition to the illustrations of development trends of the various components of the braking system of agricultural tractors and trailers, the aim of this paper is to describe the FE modelling of wet multiple-disc brakes and their brake performances.

**Key words:** agricultural tractors; trailers; multiple-disc brakes; brake performances

### 1. INTRODUCTION

There is a tendency worldwide to improve tractor's transporting performance by increasing tractor speed. Faster, bigger, more powerful and more manoeuvrable machines are capable of developing ever higher speeds. Nevertheless, the increase of the agricultural vehicles' speed requires efficient braking system that should enable agricultural vehicles to keep the pace with the other fast vehicles participant in road traffic, taking into account traffic safety. Braking technology for the mega-machines of today and tomorrow needs to be equally efficient, low-maintenance, convenient and economical. Highly effective, oil-cooled multi servo disk brakes guarantee a solid, reliable braking performance.

Tractor standards include three basic types of standards: safety, performance and interoperability. There are seven different major Standard Development Organizations (SDOs) for the agricultural tractor industry: the Organization for Economic Co-operation and Development (OECD), International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), Society of Automotive

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