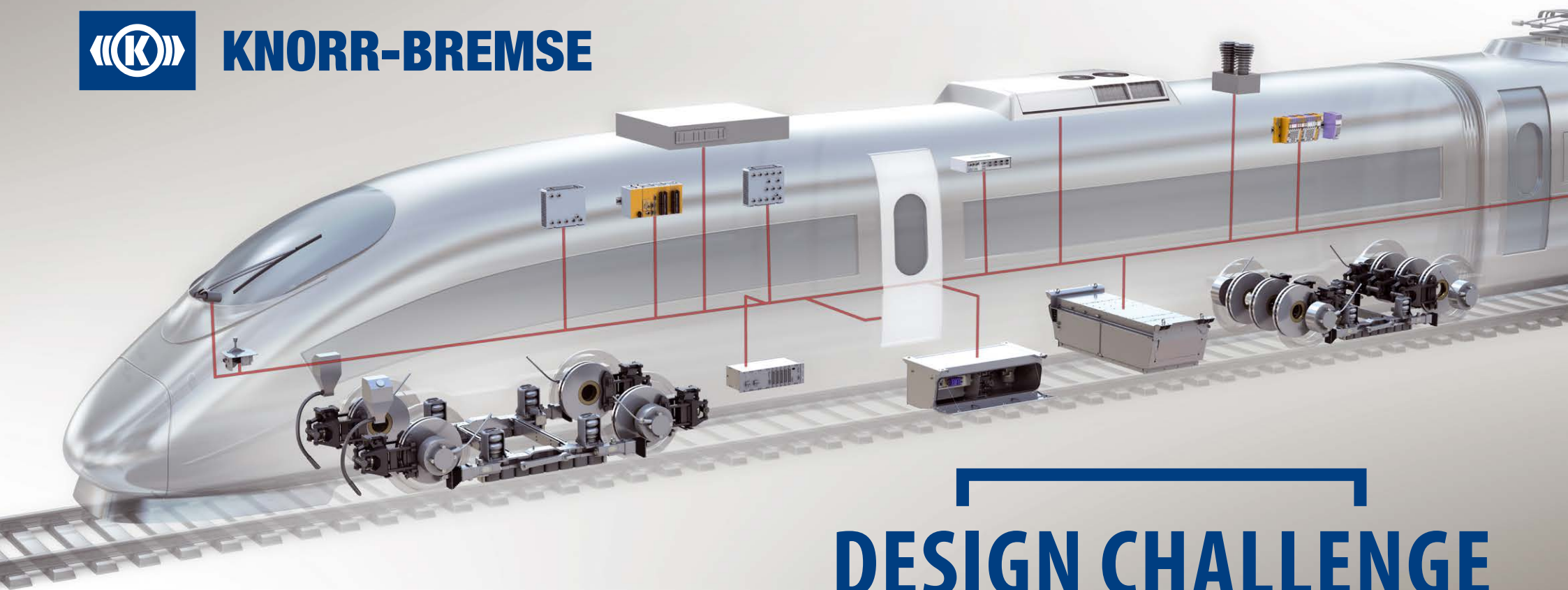




# KNORR-BREMSE



## DESIGN CHALLENGE

### The Challenge

Nowadays weight reduction and efficient structure utilization in favor of green transportation are amongst the most significant goals in the transportation industry. This also applies to the railway industry.

Brackets are widely applied on trains for mounting purposes. In case of special installation requirements, the design of these brackets can be extremely challenging due to the tradeoff between strength and stiffness on one hand and weight on the other.

Participants in this challenge will optimize a bracket. The goal of the optimization task is to minimize the weight of the part while mechanical strength requirements and manufacturing requirements are fulfilled as well.

### Participation

Ones can take part in the present challenge by filling in the registration form on [www.knorr-bremse.hu/en/railvehicles/kb\\_rail\\_challenges/design\\_challenge/design\\_challenge\\_2020.jsp](http://www.knorr-bremse.hu/en/railvehicles/kb_rail_challenges/design_challenge/design_challenge_2020.jsp). Participants must accept the legal notices regarding to the rules of the challenge and to data protection. The detailed specification of the challenge is going to be sent to each participant via email after the acceptance of their registration.

The optimized geometry and the verification documentation (requirements detailed in the specification) must be sent to [RailChallenge.BUD@knorr-bremse.com](mailto:RailChallenge.BUD@knorr-bremse.com). The maximal attachment size is 15 MB.



**Deadline: 31.08.2020.**

### Legal Conditions

By participation participant accepts that the property rights of the sent-in materials (optimized geometry, verification documentation) are going to be belong to Knorr-Bremse Rail Systems Budapest, therefore any usage/share/open up of the sent-in materials outside the scope of this challenge is prohibited.

### The Awards

The submitted designs will be evaluated by FEA of the load cases given in the specification. The submitted verification documents will also be assessed. The overall ranking of each design will be based on the following criteria:

- Mass reduction ratio (mass of new design / mass of original design)
- Maximal von Mises stresses in the evaluated load cases
- Manufacturability
- Overall design assessment of jury

### Limitations of Participation

The employees of Knorr-Bremse Group, private persons having business relation with Knorr-Bremse Group and employees of legal entities having business relation with Knorr-Bremse Group, except the private persons employed via student/school unions, are disqualified from the present challenge.



The top 5 lightest designs fulfilling the requirements will receive rewards as follows:

1<sup>st</sup> Prize – gross 300.000 HUF

2<sup>nd</sup> Prize – gross 250.000 HUF

3<sup>rd</sup> Prize – gross 200.000 HUF

4-5<sup>th</sup> Prize – gross 100.000 HUF

The final ranking of the present challenge is going to be publicly and officially announced on the above mentioned website on 28.09.2020., introducing the names of the rewarded persons and picture of the optimized geometry.