

## INTERFACE EXPERT GROUP (ES ROZ)

### 1. Characteristics and Objectives of the ES ROZ, Professional Focus

Professional goals:

- Competitiveness and expertness increasing of the cooperating subjects (internal within TP and the external ones) in the sector of railway vehicles; especially on its interface with other subsystems of the railway sector.

Working priorities:

- effort of reinforcement of the long-term cooperation of the public and private sector in the interfaces of railway vehicles and the next subsystems
- intensify of the interdisciplinarity of research, development and international cooperation
- accent on the human resources development

Characteristics of ES ROZ:

- project-orientated expert working team which covers the wide problems range of the railway vehicles and their interfaces with its specialization
- sharing of related expert and organizational skills between the members of the group and within the whole TP and technical public

### 2. Contents of Expert Group Activities

Work Topics:

#### **Railway vehicle – noise emissions and vibrations**

- sound emissions in the railway system, effectivity and solution of the sound protection measures, practical carrying out and evaluation of the related tests, noise parameters research for the wheel-rail contact and interiors, vibration transfer from by means of the earth constructions resulting from high speed trains, Rayleigh vibration and connected effects, related legislations, education

#### **Railway vehicle – track**

- force effects at the wheel-rail contact, research in the area of measuring technology, new tests and evaluation procedures, research of the safety-relevant parameters of the vehicles during their position on the twisted track, cross acceleration effect due to the cant, legislation

#### **Railway vehicle – interior**

- applied research of the interior elements quality to the passive safety of the passengers, simulation of persons movement in the vehicle interior during the vehicle impact and the possible injuries, international legislation, fire safety requirements to the interior elements

**Railway vehicle – aerodynamics**

- calculation and measurement of the relevant force effects, related international legislation, influence of surrounding conditions to the measurement results

**Railway vehicle – dimensions**

- requirements to the dimensions railway vehicles from the point of view of limiting (reference) dimensions, international legislation, linkage to the relevant technical vehicle features

**Railway vehicle – common service safety**

- application of the CSM RA problems, the requests of the up-to-date EU legislation (4.RP)

**Work method of ES ROZ:**

- ES ROZ uses all available groundwork (national + international) related to its aim. ES ROZ uses the qualification of all its members.

**Work outputs:**

- research reports, measuring reports, expert evidences, assessments, articles, lectures, statements, benefits for the working teams activity, consultations, cooperation, pedagogical activity. Outputs are aimed for business partners, cooperative subjects, project's consortiums, national and international working groups, official institutions, academic sector

**ES ROZ's contribution to the interoperability:**

- submissions to the discussion about the international legislation actualization, participation on the work of many international working groups with the referred direction, the work on the questions connected with the praxis of 4.RP, pedagogical activity.

**3. Members of the ES ROZ**

	<i>Name</i>	<i>Company/Institution</i>	<i>Expertise</i>
<i>Manager</i>	Ing. Zdeněk Malkovský, Ph.D.	VÚKV	RST, legislation
<i>Deputy of the Manager</i>	Ing. Jiří Jelének	VÚKV	RST, CSM RA, legislation
<i>Members</i>	Ing. Bc. Lenka Lomoz, Ph.D.	ČVUT FSv	Environmental aspects of the railway traffic, railway constructions, legislation
	Ing. Jaroslav Grim, Ph.D.	TP SÍŽI	RST, INF, ENE, CCS, legislation

	doc. Ing. Josef Kolář, CSc.	ČVUT	RST, pedagogical activity
	Ing. Lukáš Hejzlar	VUZ	RST, testing
	Ing. Michal Petýrek, Ph.D.	ČVUT FSv	Environmental aspects of the railway traffic, railway constructions, legislation
<i>Other co-workers</i>	Ing. Michal Satori, Ph.D.	EŽ	RST, ENE
	Ing. Jaroslav Vašátko	TP SIŽI	RST, legislation
	Ing. Petr Kaván, Ph.D.	EUROSIGNAL	RST, CCS, testing

#### 4. Specific ES ROZ collaboration with the other Members of TP SIŽI

<i>Member of TP SIŽI</i>	<i>Content and Focus of Collaboration</i>
Elektrizace železnic Praha, a.s.	interface current collector-contact line
VUZ, a.s.	RST (noise emission, vibration, running quality of the vehicles)
ČVUT Fakulta stavební	Environmental aspects of the railway traffic, noise and vibration emissions, pedagogical activities
ČVUT Fakulta strojní	RST (running quality of the vehicles), pedagogical activity
ČVUT Fakulta dopravní	RST, rail vehicles (ergonomic, passive safety), CSM RA
UPa DFJP	RST (noise emission, vibration)
ZČU	Interior quality (characteristics), passive safety
EUROSIGNAL, a.s.	general safety of the railway vehicle's operation according to CSM RA
Skanska a.s.	evaluation / assessment of OTM
enteria a.s. .	evaluation / assessment of OTM
Subterra a.s.	evaluation / assessment of OTM
SŽ	RST (tests, projects cooperation)
Vyšší odborná škola a Střední průmyslová škola strojní, stavební a dopravní, Děčín, p.o.	participation in school activity (lectures, according to mutual agreement)

#### 5. Overview of Implemented Projects (*in the period from 2018 to the end of 2024*)

<i>Project Title/ Acronym</i>	<b>Advanced stationary test processes of railway vehicles / TWIST</b>
<i>Project No</i>	TH 0101529
<i>Funded by</i>	TA ČR
<i>Implementation Period</i>	2015 - 2018

<i>Total Budget</i>	17,4 mil. Kč
<i>Beneficiary/ Coordinator</i>	VÚKV
<i>Consortium</i>	VÚKV
<i>Project Goal/ Project Benefits</i>	applied research in the area of safety relevant parameters of railway vehicles

<i>Project Title/ Acronym</i>	<b>Competence centre of railway vehicles / CKDV</b>
<i>Project No</i>	TE 01020038
<i>Funded by</i>	TA ČR
<i>Implementation Period</i>	2012 - 2019
<i>Total Budget</i>	340,23 mil. Kč
<i>Beneficiary/ Coordinator</i>	ZČU
<i>Consortium</i>	ZČU, UPa, ČVUT, VZLÚ a.s., Eurosignal a.s., CZ LOKO a.s., DAKO-CZ a.s., LEGIOS a.s., MSV elektronika s.r.o., ŠKODA ELECTRIC a.s., Škoda Transportation a.s., VÚKV a.s., Wikov MGI a.s. (in the time of project approval)
<i>Project Goal/ Project Benefits</i>	increasing of competitiveness of the Czech Republic in the railway vehicle branch, strengthening cooperation in the branch, strengthening of the research staff mobility, research and development strengthening in the railway vehicle branch

<i>Project Title/ Acronym</i>	<b>Running quality evaluation of the vehicles in the limited ride (directional) conditions, connection with the increase of the load on track, derailment risk caused with high longitudinal compressive forces in the train units</b>
<i>Project No</i>	-
<i>Funded by</i>	SŽDC
<i>Implementation Period</i>	2017-2018
<i>Total Budget</i>	3 mil. Kč
<i>Beneficiary/ Coordinator</i>	-
<i>Consortium</i>	SŽDC, DFJP UPa, VÚKV
<i>Project Goal/ Project Benefits</i>	obtaining the groundwork for the rules for the pushed train operation

<i>Project Title/ Acronym</i>	<b>Numerical simulation of the noise emissions from the bogie when the vehicle's passing</b>
<i>Project No</i>	TH02010775
<i>Funded by</i>	TA ČR
<i>Implementation Period</i>	2017 - 2018
<i>Total Budget</i>	13,2 mil. Kč
<i>Beneficiary/ Coordinator</i>	MECAS ECI
<i>Consortium</i>	VÚKV, MECAS ESI
<i>Project Goal/ Project Benefits</i>	obtaining the groundwork for the methodology for the track and railway wheel model for the vehicle's passing simulation

<i>Project Title/ Acronym</i>	<b>National Competence centre of Josef Božek / JOBNAC</b>
<i>Project No</i>	TN01000026
<i>Funded by</i>	TAČR
<i>Implementation Period</i>	2019 – 2022
<i>Total Budget</i>	
<i>Beneficiary/ Coordinator</i>	ČVUT
<i>Consortium</i>	ČVUT, VÚKV, TUL, Siemens Mobility, ŠT, TUL, UPa, ...
<i>Project Goal/ Project Benefits</i>	Research and development of the future means of the sustainable mobility

<i>Project Title/ Acronym</i>	<b>Safe tram front</b>
<i>Project No</i>	FV20441
<i>Funded by</i>	MPO
<i>Implementation Period</i>	2017-2020
<i>Total Budget</i>	25,5 mil.Kč.
<i>Beneficiary/ Coordinator</i>	ŠT
<i>Consortium</i>	VÚKV, ŠT, ZČU
<i>Project Goal/ Project Benefits</i>	Pedestrian-Tram collision analysis, real accident analysis, static and crash test of windshield

<i>Project Title/ Acronym</i>	<b>Accident analysis: pedestrian-Tram, validation of the simulation models</b>
<i>Project No</i>	CZ.02.1.01/0.0/0.0/16_026/0008401
<i>Funded by</i>	MŠMT
<i>Implementation Period</i>	2018-2022
<i>Total Budget</i>	43 mil. Kč
<i>Beneficiary/ Coordinator</i>	UK Praha
<i>Consortium</i>	UK, VÚKV, ŠT, Advanced Engineering
<i>Project Goal/ Project Benefits</i>	Real collision analysis of Tram and DUMMY, simulation models and its validation, optimized 3D (CDA) model proposal, Tram front MKP design

<i>Project Title/ Acronym</i>	<b>Design and optimization of welded constructions of structure and bogies parts of railway vehicles</b>
<i>Project No</i>	TH03020044
<i>Funded by</i>	TA ČR
<i>Implementation Period</i>	2018-2021
<i>Total Budget</i>	32 mil. Kč
<i>Beneficiary/ Coordinator</i>	ŠT
<i>Consortium</i>	ŠT, ŠV, VÚKV, MECAS ESI
<i>Project Goal/ Project Benefits</i>	Calculation and design of aluminium and steel welded constructions

<i>Project Title/ Acronym</i>	<b>Oblouk</b>
<i>Project No</i>	CK03000237

<i>Funded by</i>	TAČR – Doprava 2020+
<i>Implementation Period</i>	2022 – 2024
<i>Total Budget</i>	10,3 mil. Kč
<i>Beneficiary/ Coordinator</i>	VÚKV a.s.
<i>Consortium</i>	-
<i>Project Goal/ Project Benefits</i>	Force effect measurment during R150 m curve negotiation

<i>Project Title/ Acronym</i>	<b>FEFEFOV</b>
<i>Project No</i>	TN02000054
<i>Funded by</i>	TAČR – Národní centra kompetence
<i>Implementation Period</i>	2023 – 2025
<i>Total Budget</i>	20,2 mil. Kč.
<i>Beneficiary/ Coordinator</i>	ČVUT Praha
<i>Consortium</i>	ČVUT, VÚKV, ...
<i>Project Goal/ Project Benefits</i>	FuturE strategies For Environement Friendliness Of surface Vehicles

<i>Project Title/ Acronym</i>	<b>FACME</b>
<i>Project No</i>	TN02000054
<i>Funded by</i>	TAČR - Národní centra kompetence (podmínky NPO)
<i>Implementation Period</i>	2023 – 2026
<i>Total Budget</i>	2,4 mil. Kč
<i>Beneficiary/ Coordinator</i>	ČVUT Praha
<i>Consortium</i>	ČVUT, VÚKV, ...
<i>Project Goal/ Project Benefits</i>	Fast Change of Mobility GHG Emissions

6. Overview of Implemented ES ROZ Activities (in the period *from 2019 to the end of 2024*)

<p>(ES ROZ members participate repeatedly on the following activities)</p> <ul style="list-style-type: none"> <li>• Technical Meeting UNIFE</li> <li>• Technical Assembly UNIFE</li> <li>• ASBO Cooperation - plenary meetings ERA</li> <li>• work and meetings organized by ACRI</li> <li>• national and international trade fairs / professional meetings / conferences</li> <li>• work for professional groups CEN/CENELEC/ISO (01, 2, 10, 32, 269, 256 ... all in the connection with the interface of RST subsystems)</li> <li>• pedagogical activity (ČVUT FS, ČVUT FSv, ČVUT FD, DFJP UPa)</li> </ul>
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- work on projects, see point no. 5
- cooperation on related activities TP SIŽI

## 7. Representation of the ES ROZ in National and European Institutions

<b>National or European Institutions</b>	<b>Name</b>	<b>Place of work</b>
ACRI	Ing. Zdeněk Malkovský, Ph.D	VÚKV
UNIFE	Ing. Zdeněk Malkovský, Ph.D	VÚKV
CEN/CENELEC	Ing. Zdeněk Malkovský, Ph.D	VÚKV
ISO/CEN/CENELEC	Ing. Radek Westfál	VÚKV
CEN/CENELEC	Ing. Jan Čapek, Ph.D	VÚKV
CEN/CENELEC	Ing. Tomáš Heptner	VÚKV
CEN/CENELEC	Ing. Jiří Jelének	VÚKV
ERA	Ing. Jiří Jelének	VÚKV
CEN/CENELEC	Ing. Emanuel Mergl	VÚKV
ČsAS	Ing. Bc. Lenka Lomoz, Ph.D.	ČVUT FSv
ČAS / TNK 141	Ing. Jan Lutrýn	ACRI / VÚKV