

## REGARDING THE INTENDED PROCUREMENT “AUTOMATED ROLLING STOCK CONTROL SYSTEM (RAKS)”

2020-11-  
Vilnius

### GENERAL INFORMATION

AB LTG Infra (hereinafter - Contracting Authority) plans to implement the project “Automatic Rolling Stock Control System (RAKS)”, in the scope of which it intends to upgrade the existing automatic rolling stock control devices by adding new, previously unused subsystems and integrating them into a unified system.

During the implementation of the project, the Contracting Authority intends to announce the public procurement of RAKS. It is planned to announce the project public procurement in the beginning of 2021, the completion of the project is expected by the end of 2023.

The purpose of this questionnaire is to obtain additional information on the market possibilities to provide the Contracting Authority with the equipment of the desired functionality, obtaining the most optimal result. The information obtained will be used in the preparation of project procurement documents.

In order to prepare procurement requirements reflecting the latest market trends, possibilities and ensure fair competition of suppliers, **we ask you to provide answers in free-form by 25/11/2020** to the questions below. Were you to require additional information, please feel free to submit your questions through the CPV IS system.

This consultation is not a public procurement notice or a prior public procurement notice. With the announcement of this market consultation, participants are not invited to compete for the public procurement contract, however on the basis of the received information, future projects and procurements will be planned. In any case, the results of the market consultation will not be tailored to a specific supplier.

No competent entity will be given priority over others, for example by providing more information than others.

Consultation participants will not be communicated to in a way that would give an advantage to any participant, group of participants or other competent entity.

Consultation participants provide consultations free of charge. No costs are reimbursed to the participants in the consultation. Participation in the consultation does not exclude the right to submit a tender in the future. The information obtained during the market consultations, without breaching the requirements of the Law on Public Procurement, will be used in making decisions on the organization and execution of procurement.

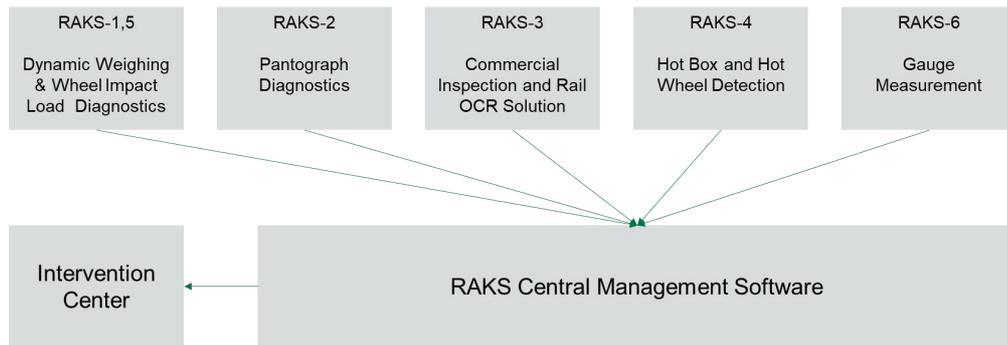
### CURRENT SITUATION

The RAKS system currently operated by the Contracting Authority consists of three subsystems:

- RAKS-1 – dynamic weighing for measuring weigh-in motion of rolling stock;
- RAKS-5 – wheel impact load diagnostics, detects geometrical and running surface defects (which have an adverse effect on contact forces between the wheel and the running rail);
- RAKS-4 – hot box and hot wheel detection;

Apart from these subsystems, two more subsystems are operated, the control function of which is not integrated with the RAKS system:





The automated rolling stock control system will consist of these subsystems:

- RAKS-1 – dynamic weighing for measuring weigh-in motion of rolling stock (planned quantity - 21 units);
- RAKS-2 – pantograph diagnostics subsystem for electric traction rolling stock (planned quantity - 10 units);
- RAKS-3 – commercial inspection and rail OCR solution, reads freight wagon numbers and allows visually assess the overall condition of rolling stock (planned quantity – 15 units);
- RAKS-4 – hot box and hot wheel subsystem (planned quantity – 59 units);
- RAKS-5 – wheel impact load diagnostics, detects geometrical and running surface defects (which have an adverse effect on contact forces between the wheel and the running rail (planned quantity – 21 units);
- RAKS-6 – gauge measurement system (planned quantity – 31 units).

## KEY QUESTIONS

Below are the questions we kindly ask you to answer:

1. Which of the subsystems and/or software/information system do you intend to offer for the tender of RAKS? Could you provide descriptions/key specifications of your proposed equipment?
2. What software/information system could you offer to unify the RAKS system solution?
3. Is your software (application) a central management software (CMS) solution that can store data from different diagnostic systems (subsystems)? Can it collect data from different diagnostic systems (subsystems)? If so, could it integrate diagnostic systems (subsystems) from different manufacturers? What are the requirements for diagnostic systems? Do you see any challenges to integrating systems CMS? How would you suggest managing them?
4. Does your software store data from different diagnostic systems (hardware) regardless of the manufacturer? What are the requirements for diagnostic systems and their transmission signals to the CMS?
5. Is your software an existing solution (commercial off-the-shelf)? Is it a solution tailored to a specific order?
6. What are the requirements for your software (application)?
7. What data formats, protocols, and methods could be used to send data from sensor controllers to a central DB? What solutions can be used at the sensor controller level?
8. What is the recommended/default period for sending diagnostics data to the central database? How is the data transfer confirmation procedure implemented?

Given that the planned RAKS solution would use the Contracting Authority's data network and services, and the RAKS components will be distributed in RAKS check points, stations, Private DC, cloud (or SaaS), please advise how the data network should be organized.

What are the network requirements (WAN, Internet) for your solutions (e.g. bandwidth, latency, availability)? What data flows need to be anticipated when planning a data transmission network?

9. What are the requirements for a control network LAN? (e.g. number of SW ports, type of ports)?

10. Currently, an increasing share of the rolling stock contains axle boxes with cassette bearings. The operating temperature of such axle boxes is higher than that of conventional axle boxes with roller bearings. Since the existing equipment cannot distinguish axle box types, this results in false alarms generated for wagons with cassette bearings

Does your proposed hot box and hot wheel detection (RAKS-4) equipment have/can implement algorithms that allow to distinguish axle box types (with cassette or roller bearings) without human intervention and to set different temperature allowance levels accordingly?

11. The existing gauge measurement system uses a stretched wire. In case of gauge violation, the wire is severed and an alarm signal is generated. The wire gauge control cannot be adjusted, i.e. one level of gauge violation is determined.

The rolling stock gauge, controlled according to standing instructions, is defined by a complex line (see drawing at the end of the questionnaire). Can your proposed gauge measurement subsystem detect gauge violations exactly by the definition line (except for the lower gauge), including the upper gauge in electrified sections?

Does/can the proposed subsystem have one or more levels of gauge violation detection? If more, are there any limitations to violation levels?

Within what limits and how many levels can be set for lateral gauge violation, as measured from the road axis?

Within what limits and how many levels can be set for upper gauge violation, as measured from the rail head?

Does/can your proposed subsystem have a lower gauge violation control function? If so, how many levels can be set and within what limits?

12. In some rail sections it is planned to install several subsystems (RAKS-2, RAKS-3, RAKS-6) in a single check point, the outdoor equipment of which is installed on portal structures. LTG is considering the possibility of installing outdoor equipment of different subsystems on the same portal structures in such check points.

Have you had experience installing outdoor equipment of more than one subsystem on the same portal structure (e.g. RAKS 2, RAKS 3, RAKS 6)? Please confirm that the same portal constructions can be fitted with outdoor equipment of another subsystem from another manufacturer in addition to the one offered by you. If not, please justify why.

Please also indicate the main parameters of the outdoor equipment (weight, quantities, required dimensions of the portal, installation locations on the portal, requirements for access to the equipment), general requirements for these portal structures and provide installation drawings of your proposed outdoor equipment to identify areas, which must not be affected by any other equipment or structure that prevents the subsystem from performing its assigned function.

Would it be preferable to you to install the portal structures yourself in the places where only the outdoor equipment of your proposed subsystem will be installed on the portal structure, or would you like the Contracting Authority to do so? I.e. which is preferable to you: delivering a turnkey project or only your part/equipment/software?

If the portal structures were installed by your company, would you agree to the installation of outdoor equipment of other suppliers' subsystems on these structures?

13. In some railway sections it is planned to install not one, but more subsystems, in some check points even up to five. In such check points, LTG plans to install the equipment of all subsystems in a single room/space. As standard, this would now be a metal container with an internal dimension of about 4x2, 5x2.5 m, containing all the equipment of the subsystems to be installed together with the power supply automation panel, uninterruptible power supply (UPS), heating, cooling and other necessary equipment.

Please confirm that not only yours but also equipment offered by another manufacturer can be installed in the same container. If not, please justify why.

Please also indicate the main requirements of your proposed equipment to be installed in the container (dimensions, climatic requirements, layout requirements, access restrictions, etc.). This information would help to determine more precisely the required size of the equipment room.

14. Please indicate the power inputs required to power the subsystem you supply. Please indicate separately the power required to power the equipment from the UPS in the event of an external power failure.

This information is needed to calculate the required mains power at newly installed RAKS check points.

Would you wish to install the required power supply yourself, or would you like to have it installed by the Contracting Authority?

If more than one subsystem is installed in a single RAKS check point, would you prefer installing UPS for your supplied subsystem separately, or would you prefer to use UPS that other to be installed subsystems will use?

15. The premises of each RAKS post will be equipped with a security and fire alarm and electrical input with an automatic transfer switch (ATS). Does the equipment you offer have the ability to integrate these devices and other signals (door opening, etc.) into a common data transmission equipment and transmit them in real time to a common database?

16. Does your RAKS-3 subsystem have a developed image analysis tool. i.e. assess the position of the rolling stock components (doors or hatches) (open, half - open, etc.)?

17. Does your RAKS-3 subsystem have the ability to obtain visual footage of the lower part of rolling stock, withstanding any weather conditions in Lithuania?

18. Can the software you offer also perform scheduled maintenance planning functions (i.e. assess the condition of RAKS equipment, including sensors, and provide recommendations for their maintenance / replacement)?

19. It is planned to install RAKS-3 subsystems not at stations or the surrounding areas, but further away, at railway sections where trains run at normal speed. Therefore, please indicate the maximum speed of freight trains your proposed RAKS-3 subsystem is designed for.

20. What protocols can RAKS CMS solution use to exchange data with third-party applications? Is there a standard API offered/already used? Provide examples if so.

Answers and any inquiries regarding additional information for the preparation of the answers can be submitted by e-mail [justas.baranauskas@litrail.lt](mailto:justas.baranauskas@litrail.lt) or via the CPV IS system.

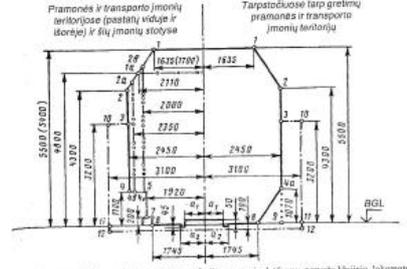
STATINIŲ ARTUMO GABARITAI S IR SP



- — — — — ilgiu perdangu, tunelių konstrukciniai elementai, galerijų, peronų ir platformų, pervažų klojinis, lokomotyvų signalizacijos indikatorius, iškimo mechanizmas ir jų ribose įrengti signalizacijos įrenginiai, taip pat statinių ir įrenginių, esančių stotelių tarpkelėse, artumo linijos;
- 0 — — — — via statinių statinių ir įrenginių, išskyrus įrengtus keliuose, kurie nebūna elektrifikuojami net jeigu šis geležinkelio linijos ruožas bus elektrifikuojamas, ir jų I-II-III - tarpstočiuose, taip pat stotelių keliuose (indikatorius, statinių ribose)\*, kuriose nomenklatūrai technologiniai ribiniai stotelių, Ia-III-IIIa - kitiuose stotelių keliuose, artumo linijos;
- x — — — — statinių ir įrenginių, esančių keliuose, kurie nebūna elektrifikuojami net jeigu šis geležinkelio linijos ruožas bus elektrifikuojamas, artumo linija;
- — — — — pastatai, statiniai ir įrenginiai (išskyrus ilgiu perdangas, tunelių konstrukciniai elementai, galerijas, peronų ir platformas), įrengtus stotelių ir tarpstočių kelių šoniniuose keliuose, taip pat prie atskirai įrengtų stotelių kelių, artumo linijos;
- — — — — linija, virš kurios tarpstočiuose ir stotelių šoniniuose keliuose (raudonųjų ilgiu ribose) neįrengiamas nei vienas įrenginys, išskyrus indikacinius statinius, pervažų klojinis, lokomotyvų signalizacijos indikatorius, iškimo mechanizmas ir jų ribose įrengtus signalizacijos įrenginius;
- — — — — pastatai, statiniai ir atramos, požeminių lygų, kabelių, vamzdynų ir kitų, nepriklausančių kelių statinių tarpstočiuose ir stotelių, išskyrus indikacinius statinius ir signalizacijos įrenginius signalizacijoje ir transliavimo taikų įrengimo vietose;
- — — — — tunelių konstrukcinių elementų, ilgiu turėklų, estakadų ir kitų indikacinių statinių artumo linija
- \*) Statiniai, pabrūkiami ir apbrūkiami taikomos bendros terminas "statiai", indikacinius įrenginius laikomais: tiltai, šiluminių, vandens, estakadų, kelių pabrūkimas, tuneliai, atramos stotelių, taip pat pabrūkimas ir kitu paviršiumi paskirties statiniai, lokomotyvų vietas, kur pagal reikalavimų pobūdį, būtina tiksliai nurodyti, apie kokias kelių ir indikacinius įrenginius kalbama

1.1 pav. Statinių artumo gabaritai S

- PASTABOS (Iri. 1-1 pav):
1. Esant vėžės plotiui 1520 mm  $a_1=670$  mm,  $a_2=760$  mm, esant vėžės plotiui 1524 mm  $a_1=672$  mm,  $a_2=762$  mm.
  2. S gabaritai statiniams taikomos ir kelivų stoteliams.
  3. Nurodytas 1.1 pav. 1 taškais taikomas S gabaritą apybraižai neelektrifikuojamose ruožuose (linija — x — ).
  - 0 1 taškais — vietoje S gabaritą apybraižai elektrifikuojamose ruožuose (linija — o — ).
  4. Skaitlyje - kortatinio pakabai su laikinuoju lygu, vandens - be brūkšnių lygu.



- — — — — ilgiu perdangu, tunelių konstrukciniai elementai, galerijų, peronų ir platformų, pervažų klojinis, lokomotyvų signalizacijos indikatorius, iškimo mechanizmas ir jų ribose įrengti signalizacijos įrenginiai, taip pat statinių ir įrenginių, esančių pramonės ir transporto įmonių teritorijose (išskyrus statinius ir įrenginius, kurių artumo gabaritai apibrėžti neįrengtinis linijomis — o — , — x — ), taip pat statinių ir įrenginių, esančių tarpkelėse (pagal GOOST 92 38-83, 2.10 p.), artumo linija;
  - — — — — pastatai, statiniai ir įrenginiai (išskyrus ilgiu perdangas, tunelių konstrukciniai elementai, galerijas, peronų ir platformas), įrengti stotelių ir tarpstočių, esančių tarp greitųjų pramonės ir transporto įmonių teritorijų, kelių šoniniuose pusėje, taip pat išoriniuose pusėje kraštinių kelių, jungiančių pramonės ir transporto įmonių esančias stotis, artumo linija;
  - — — — — linija, virš kurios tarpstočiuose ir raudonųjų stotelių kelių šoniniuose keliuose (raudonųjų ilgiu ribose) neįrengiamas nei vienas įrenginys, išskyrus indikacinius statinius, pervažų klojinis, lokomotyvų signalizacijos indikatorius, iškimo mechanizmas ir jų ribose įrengtus signalizacijos įrenginius;
  - 0 — — — — pokarniai ir kitos, statiniai, vėžės statiniai ir pervažų statiniai bei įrenginiai keliuose, skirtuose tik pramonės įmonių specialiajam naudojimui, kurių aukštis ne didesnė kaip 4700 mm, pravažiavimai ir į kurtus nuleidžiamas (valiuzės) riedlenimis, kurių aukštis didesnė kaip 4700 mm (iki 5300 mm), artumo linija;
  - oo — — — — atskirai suvirintų kelių, gamybinis pastatai vėžių statybinėse, pastatai šiluminėms dalims (pilisaitis, kontraktorai, laiptai ir kt.), kuriose ilgiu ribose kelių ne daugiau kaip 1000 mm, artumo linija;
  - oo — — — — pakarnimo ir remonto, kitų technologinių įrenginių (kai jie yra medžiaginėje pusėje), įrengtų stotelių (išskyrus požeminius ir atvirkštinius bei išvirkštinius) ir statuliuose, artumo linija;
  - — — — — tunelių konstrukcinių elementų, ilgiu turėklų, estakadų ir kitų statinių artumo linija
- PASTABOS:
1. Esant vėžės plotiui 1520 mm  $a_1=670$  mm,  $a_2=760$  mm; esant vėžės plotiui 1524 mm  $a_1=672$  mm,  $a_2=762$  mm.
  2. Matavimų mas kelių atstus iki 1, 1a taška ir nuo begalo galvutės lygio iki 1 - I linijos nurodyti neelektrifikuojamose keliuose; skliaustuose nurodyti matavimų leidžiami pastatų viduje.
  3. Vietoj SP gabaritą apybraižai elektrifikuojamose keliuose poimama pagal normas, nurodytas GOOST 9238 - 83 3 pav. ir 1 lentelėje.

1.2 pav. Statinių artumo SP gabaritai