

Market Consultation

Track trial, an alternative rail quality in medium curved tracks



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In the past decades the wear resistance and strength of rails has been increased to combat the widespread problem of Head Check initiation and propagation. A combination of wear resistant rails, planned preventive grinding and specific target profiles has been the standard design. ProRail has used the R370CrHT rails in medium curved track ($1000 \text{ m} \leq R < 2000 \text{ m}$) where the Head Check problems are most pronounced. In combination with the UIC54E5 profile and cyclic grinding (with 15MGT interval), ProRail has suppressed the Head Check problems successfully.

In response to the development of a new type of rail defect ProRail recently has changed its strategy. The Stud type of rail defect has led to spalling of R370CrHT material on a large scale, resulting in large scale rerailing, at most locations within 100 MGT after installation. When rerailing medium curved track the standard grade R260Mn with an UIC54E5 profile is now installed. The R370CrHT is only used in narrow radius curves ($R < 1000 \text{ m}$)

Before the introduction of R370CrHT in 2007, always the R260Mn rail grade had been installed. This standard grade rails performs well in the large and medium range curves. However, for the lower range of the medium curve radii ($1000 < R < 1500 \text{ m}$) the rail head profile wear in combination with the applied cyclic grinding regime, is too high. This is also shown from the ProRail maintenance data: the upper range of medium radius curves as well as large radius curves equipped with R260Mn require rerailing after 20-25 years and 300-500MGT in service due to reaching the rail head wear limits. Which, in most situations, corresponds to the expected rail life for these types of curves.

For the medium curved tracks ProRail is searching for new rail grades that are currently not used in their network. The ideal rail grade has a crack resistant microstructure, low RCF and Stud susceptibility, as well as a wear behavior fitting to currently applied rail maintenance strategies. Thereby should it fill in the gap between the two grades currently used in the Network.

This document is the invitation to show your interest to participate in the consultation phase. The remainder of this document will provide you with some information on the procedure, planning, contacts etc.

ProRail

ProRail BV is the rail infra provider in the Netherlands, and responsible for maintenance, renewal and traffic control. Every day, round the clock, employees ensure that 1,200,000 passengers and 100,000 tons of goods reach their destination, carried on 6,550 trains using over 7,000 kilometers of track. The railway network is rightly called the beating heart of the mobile Netherlands. ProRail distributes the capacity on the rails, regulates all train traffic, builds and manages stations and builds new track. ProRail also maintains existing infrastructure such as track, switches, signals, level crossings and noise barriers. See also www.prorail.nl.

For ProRail, innovation is an essential ingredient in fulfilling its high ambitions and improving the accessibility of the Netherlands in a sustainable and affordable manner. The need for mobility is growing. ProRail therefore needs to further expand the capacity of the already heavily used network. New technologies and developments present new opportunities in this respect. To be prepared for the future, ProRail is focusing on three ambitions:

- ProRail connects: more mobility
- ProRail improves: more reliable mobility
- ProRail enhances energy efficiency: more sustainable

Within the next years the number of passengers is expected to show a 30% rise. To facilitate this the timetable will be more dense, especially on the main lines, and track closures for maintenance will be further decreased. To limit the travelling time of those traveling by train, the track speeds are increased to 160 km/h, and trains will run at higher speeds when approaching the platforms.

Scope and objectives

ProRail is aware that several rail producers have developed and launched new rail grades, and would like to invite producers and developers for an inquiry. The objectives of the market consultation are to obtain knowledge on the application and to prepare for a track trial. We are interested in both innovations and products that are currently on the market already.

We would like to discuss the different aspects of the rail steel with the producer and developers. They have the best insight in the motivation for developing the rail grade, the specific application, and are most aware of the results of the track trials in Europe. We think that will give us the best base to decide on a track trial in the near future.

The technical scope and application conditions of rails are:

- Selection of rail grades to test in the outer rail of medium curved tracks;
- Medium curved is defined as: $1000\text{ m} \leq R < 2000\text{ m}$ with speeds up to 160km/h. The focus is on the bottom half of the radius range.
- The axle load is 22.5 tons.
- In $r = 1500\text{ m}$ curves we expect the service life of the rail to be between 300-500 MGT;
- Preventive grinding every 15MGT must be sufficient to suppress RCF cracking.

The discussions during the consultation phase will be used to clarify the selection criteria.

Procedure, schedule, and contacts

A market consultation can be time-consuming for you and us. The COVID pandemic has learned that online meetings can deliver a good quality discussion as well. So, for the market consultation we will schedule most of our meetings online.

We would like to discuss the current developments on rail steels at your company, and the results of track trials, if available, and you are cordially invited to send us a notice of your interest. You will find some basic questions at the bottom of this form.

General information will be presented in a group meeting. There will also be the possibility to answer your questions, which can also be send to us upfront. In this way we hope to maximize the available time for in-depth discussions during the 1-on-1 meetings which will be scheduled in June.

To prepare for the 1-on-1 meetings we will send you a questionnaire after receiving your notification of interest.

This consultation will be round off with an end report, which will be shared. The results will be anonymized and during the meetings it will always be possible to address answers as confidential.

Tabel 1: Schedule

Date	Activity
2022/05/18	Publication of the invitation
2022/06/01	15:00 CET, general presentation of the project scope and objectives. Attending this meeting is without obligation and not mandatory.
2022/06/03	Deadline notification of interest
June 2022	Meetings
August 2022	Report with anonymized results and announcement of the track trial

Procedure

The procedure followed in this market consultation is:

- The market consultation is published on www.tenderned.nl and on Tenders Electronical Daily (TED);
- When downloading, it is registered which parties have the document;
- If you decide to participate to the general presentation of the project please send an reaction via TenderNed mailbox and to bart.schotsman@prorail.nl so we can send you an MS TEAMS invite;
- ProRail would like to receive the answers to the questions posed in this document no later than Friday June 3rd EOB via TenderNed mailbox and bart.schotsman@prorail.nl;
- If you decide not to participate after downloading this document, ProRail greatly appreciates feedback on why you are not participating;
- The link to the general presentation will be send upon request. Send an email to TenderNed mailbox and bart.schotsman@prorail.nl;

- Individual meetings / explanation rounds will be held in June 2022. The parties concerned will be invited by ProRail for this;
- If further information is required, you can contact ProRail via TenderNed mailbox and bart.schotsman@prorail.nl.

Confidentiality of the information

- Participation in the market consultation is entirely voluntary and will not lead to any privileges or disadvantages in a possible tender procedure. Likewise, will not participate in the market consultation does not lead to exclusion from any follow-up process/procedure.
- The information you provide will not be provided by ProRail to third parties and will only be used for self-orientation.
- By participating in this market consultation, you agree that the information you provide, without any form of reservation, may be used by ProRail in (the preparation of) a possible tender.
- Commercial numerical information provided by you will be treated confidentially by ProRail and does not bind either you or ProRail in any tender. It is only an indication of the budgeted cost.

Cost reimbursement

- ProRail does not reimburse the participating market parties for any costs incurred.

Contact information and experience

Before inviting you for the consultation we ask you to provide us with information on:

1	The name of the company (developer and producer of railway rails)	
2	The contact for the consultation • Name • Position • Email and telephone number	
3	A description of your relationship with ProRail or the Dutch rail market • Did you deliver any products to ProRail or maintenance companies hired by ProRail, during the past 3 years; • Do you have a Dutch representation?	
4	Which rail grades do you currently think might be interesting for ProRail to be tested in medium radius curves?	
5	Do you have any other suggestions?	