

Resilient R&D

EVRAZ concentrates on product innovation for rail, wheels, beams, plates, tubular goods and vanadium to enhance the Group's capabilities and strengthen its market position. Until now, the research and development (R&D) process at EVRAZ was driven by several engaged teams working largely independently at the production sites and in the corporate headquarters.

To maximise our expertise and strengthen the Group's competitiveness, we are developing a new comprehensive integrated R&D system that will unite existing R&D centres and help to unlock the full potential of EVRAZ innovative thinking.

R&D teams provide engineering and metallurgical expertise to our production and quality teams to offer innovative solutions and develop new products. An integrated R&D function will harmonise the overall R&D strategy, goals and KPIs. It will also improve the sharing of knowledge and experience, support the execution of highly specialised tasks and promote R&D work across production units globally.

Three phases of R&D system development

Fact-finding phase: 2019

Collect data and generate ideas

Definition phase:

2019–2020

Assess the goals and resources of the Group's existing R&D centres; define the target state of the organisation, resources and infrastructure; and assign roles and responsibilities

Plates, tubular goods

- Develop new products and processes for increasingly specialised, high-quality large-diameter welded pipes
- Fill gaps in evolving portfolio of tubular goods, including OCTG for unconventional market
- Develop specialty plates for various steel applications such as defence, construction, shipbuilding, mining, transportation and energy
- Build strategic and technical partnerships with customers and operators in the development and testing of new products
- Conduct physical testing to demonstrate products' performance and reliability for customer quality tests

Vanadium

- Technological R&D centre (Tula, Russia)**
- Supporting the continuous technical improvement process
 - Developing new products and technologies
 - Deep processing of EVRAZ raw materials
- Marketing R&D centre (Zug, Switzerland)**
- Developing a network of marketing, R&D institutions and technology enablers
 - Promoting the development of new vanadium-alloyed steel applications
 - Deploying technical assistance on vanadium usage for customers and EVRAZ operations
 - Exploiting opportunities arising from regional gaps in vanadium consumption caused by different standards or technological habits
 - Enriching EVRAZ steel product portfolio in connection with vanadium usage

Wheels

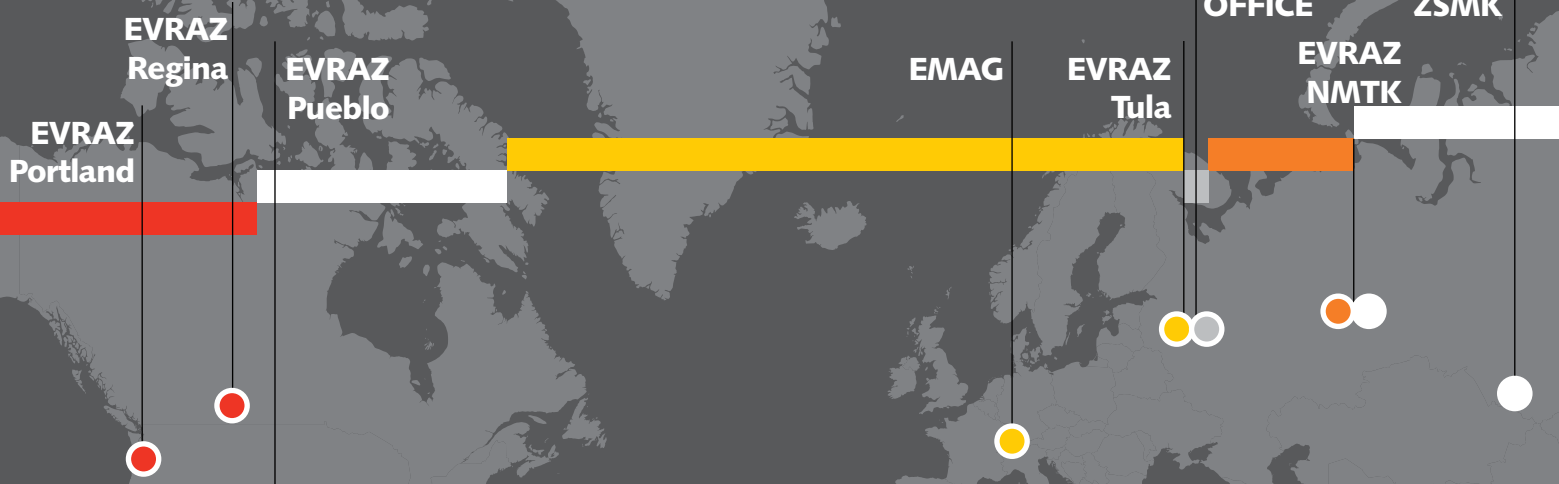
- Creating a larger variety of wheels, including wheels for heavy haul freight trains and high-speed traffic
- Improving strength and corrosion resistance
- Strengthening rolling fatigue resistance

Rails

- Creating a larger variety of rails, including rails for high-speed mixed traffic and high-load small curve tracks
- Developing rails for heavy haul freight trains
- Increasing the production lifespan, wear and temperature resistance of the Group's premium products

Beams

- Creating new architectural solutions based on beams
- Improving beam properties in terms of strength and corrosion resistance
- Developing in-demand new profiles



- Rails
- Tubular goods, Plate
- Beams, Wheels
- Vanadium
- General

Our goals

- **EVRAZ is building a resilient R&D system to develop innovative new products and solutions that will benefit all the Group's customers and leverage its long-term competitiveness;**
- **This will give EVRAZ more flexibility to utilise all of its production capacity by balancing volumes within different markets, strengthening the Group's position as a premium producer able to provide prime service to our customers.**

Execution phase: 2020–2021

Establish an expert network to execute R&D projects; define a medium- to long-term R&D strategy; use R&D infrastructure efficiently; define cross-location R&D projects; and foster knowledge management

Benefits of a comprehensive new R&D system

- Satisfy market and customer demands through better product efficiency and services
- Develop new and innovative products and solutions to satisfy current and upcoming customer needs
- Leverage EVRAZ vast global experience and know-how, and promote product innovation and knowledge management