



Engineering Excellence For Railway Manufacturing

A purpose-built manufacturing partner for India's railway OEMs.



**Engineering
Focused**



**Quality
Driven**



**Built for
the Future**

Presentation Overview

Our journey to becoming a long-term manufacturing partner for railway OEMs

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- 4 Our Manufacturing Philosophy
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Why We Built
R5Z.

Our Foundation.

Manufacturing
Excellence.

Customer
Partnership.

The Road Ahead.

From vision to manufacturing capability—this presentation outlines how R5Z has been purpose-built to become a trusted railway manufacturing partner



Designed Around What Modern Railway OEMs Value Most



Today's railway OEMs need more than a component supplier—they need a manufacturing partner capable of delivering quality, traceability, consistency and long-term reliability.

What OEMs Expect Today

Predictable Quality

Complete Traceability

Process Consistency

Faster Industrialisation & Approval

Long-Term Manufacturing Partner



How R5Z was designed to deliver

Purpose-Built Manufacturing Campus

Process-Controlled Manufacturing

Digital Manufacturing & Traceability

Quality Built into Every Process

Partnership-Driven Business Model

Every investment at R5Z has been guided by one objective—to become the manufacturing partner railway OEMs can depend on for the next generation of rolling stock

Our Manufacturing Philosophy



Every investment at R5Z has been guided by one objective: becoming a dependable long-term manufacturing partner for India's railway OEMs

Predictable Manufacturing

Standardised processes deliver **consistent quality, repeatable production and operational discipline**

Complete Traceability

Complete material, process and production traceability is maintained throughout manufacturing, **providing transparency and confidence across every batch.**

Long-Term Manufacturing Partnerships

Built around supporting **long-term OEM programmes through consistent quality, dependable deliveries and collaborative engineering**

Future-Ready Manufacturing

Equipment and digital systems are designed to evolve with **future technologies, product requirements and customer expectations**

Scalable Manufacturing Platform

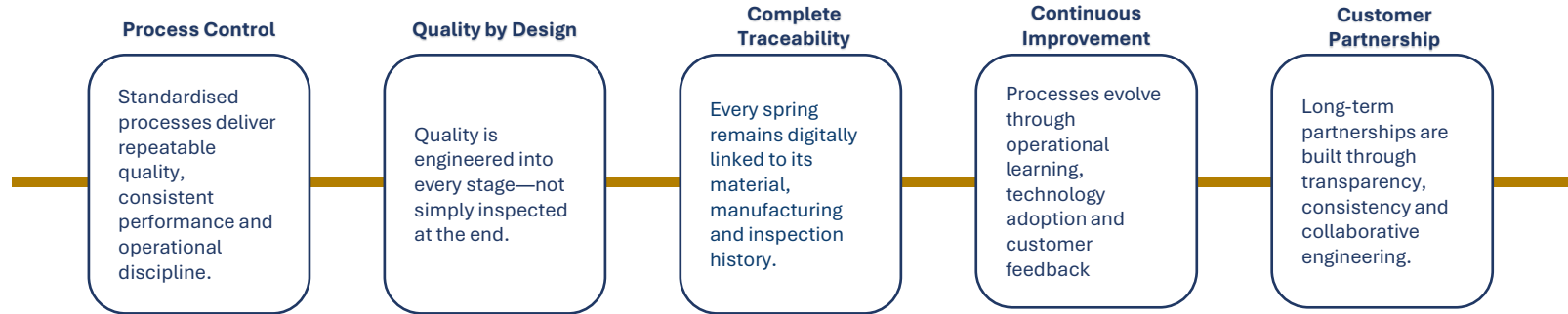
Major investments support **future capacity, new product development and long-term customer programmes**

We are building more than a spring manufacturing facility—we are building a manufacturing partner our customers can rely on for decades

THE R5Z MANUFACTURING SYSTEM



Five principles that guide every investment and manufacturing decision at R5Z



Our objective is not simply to manufacture springs—it is to deliver manufacturing performance our customers can depend on—every time

A PURPOSE-BUILT MANUFACTURING CAMPUS.



Designed specifically for modern railway spring manufacturing.



Greenfield Facility

Purpose-designed from the ground up for manufacturing efficiency—not adapted from an existing facility.



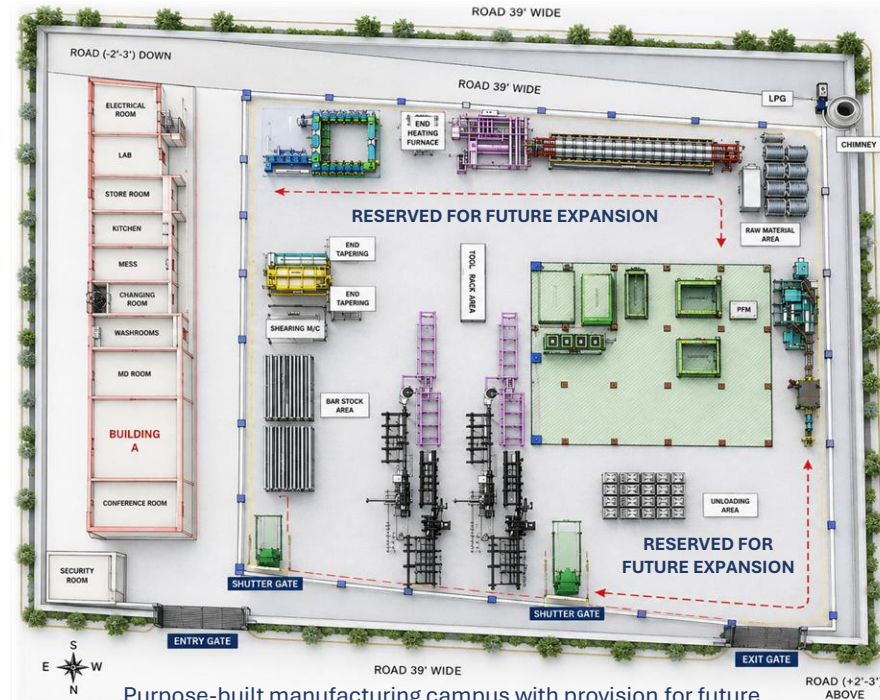
Optimised Material Flow

Manufacturing layout designed to minimise material handling, improve productivity and maximise process consistency.



Expansion-Ready Infrastructure

Infrastructure planned to support future capacity expansion, future production lines and product diversification.



Purpose-built manufacturing campus with provision for future production expansion



Greenfield Campus



24/7 Production Ready



Optimised Material Flow



Expansion Ready

Every design decision was made to improve productivity, competitiveness and long-term manufacturing capability.

Engineered For Stability, Scale & Reliability.



Every infrastructure investment at R5Z has been made with one objective—to provide OEMs with long-term manufacturing confidence.



Reliable Power Infrastructure

- 33 kV
- Infrastructure designed for continuous industrial operations
- 100% power backup

Supports continuous production with reduced operational downtime.



Purpose-Built Industrial Facility

- Heavy-duty industrial construction
- Process-oriented plant layout
- Optimised material movement

Designed for consistent manufacturing performance and long-term durability.



Integrated Process Utilities

- Energy Systems (LPG)
- Utility Network (Compressed Air & Cooling Water)
- Water treatment (RO Plant)
- Safety Infrastructure

Critical utilities engineered to support stable and repeatable manufacturing.



24/7 Operational Readiness

- Infrastructure designed for continuous operations
- Utilities planned for production growth
- Workforce strategy aligned with scalable manufacturing

Prepared to support increasing customer demand with operational continuity.



Designed for Future Growth

- Infrastructure planned for future expansion
- Space reserved for additional production lines
- Ready for new product platforms

Built to grow alongside long-term OEM programmes.

Built to deliver consistent manufacturing performance—not just at commissioning, but throughout the entire life of every customer programme

The Foundation of Precision Spring Manufacturing.



Precision Material Preparation

Surface Integrity
Dimensional Accuracy
Process Ready



Scalable Processing Capacity

Dual Lines
High Throughput
Expansion Ready



Material Quality Assurance

In-house MPT
Incoming Verification
Traceability



Automated Material Flow

Reduced Handling
Continuous Flow
Safer Operations



Manufacturing Readiness

10-40 mm
Railway Grade
STR Compliant



Key Manufacturing Capabilities

2 Processing lines



6 Meter/Sec –
Processing speed



10-40 mm Material
Range



Automated
Material Flow

Purpose-built bright bar processing engineered to deliver process-ready material for precision railway spring manufacturing.

Every high-performance railway spring begins with precision material preparation

Hot Coiling Division



The heart of R5Z's manufacturing operations—where controlled thermal processing and precision coiling deliver repeatable quality, consistent metallurgy and scalable spring manufacturing.



Controlled Thermal Processing

- Uniform Heating
- Process Stability
- Metallurgical Control



OEM Flexibility

- 10–40 mm
- Multiple Spring Designs
- Broad Manufacturing Range



Process Consistency

- Integrated Process
- Repeatable Performance
- Metallurgical Consistency



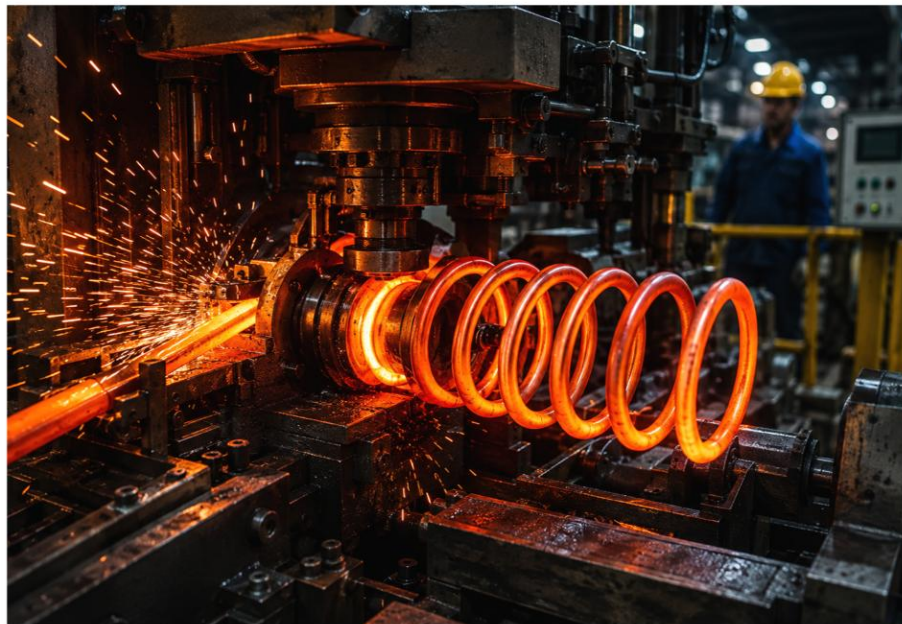
Expansion Ready

- Reserved Spaces
- Additional line
- Future Growth



Scalable Production

- 15 sec/Spring Cycle
- 120,000 Springs/Month
- 1.44 million Springs/Year



Key Manufacturing Capabilities



10-40 mm
Hot Coiling Range



3600 mm/1.25 Mt/hr.
Walking Beam Furnace



15 sec/ spring
Cycle time



1.44 Million Springs
Annual Capacity

Purpose-built walking beam furnace and hot coiling line engineered for repeatable thermal processing, precise spring geometry and scalable railway spring manufacturing

Built for today's production volumes. Designed for tomorrow's customer programmes.

Surface Engineering & Final Validation



Every spring is engineered, validated and protected to deliver long-term field performance, complete traceability, and customer confidence.



Surface Performance

Controlled Shot Peening
Fatigue Enhanced
Longer life



Mechanical Reliability

Stable Characteristics
Repeatable Performance
Service Ready



Long-Term Corrosion Resistance

≥800+ Hours
Protective Coating
Environmental Resistance



Validated for Delivery

Final Validation
Complete Documentation
Dispatch Ready



OEM Confidence

Reliable Performance
Complete Traceability
Customer Confidence



Validation Highlights



≥ 800 Hours **Salt Spray Resistance**



100% **Production Traceability**



Customer Ready **Inspection & Documentation**



RDSO-Compliant Validation

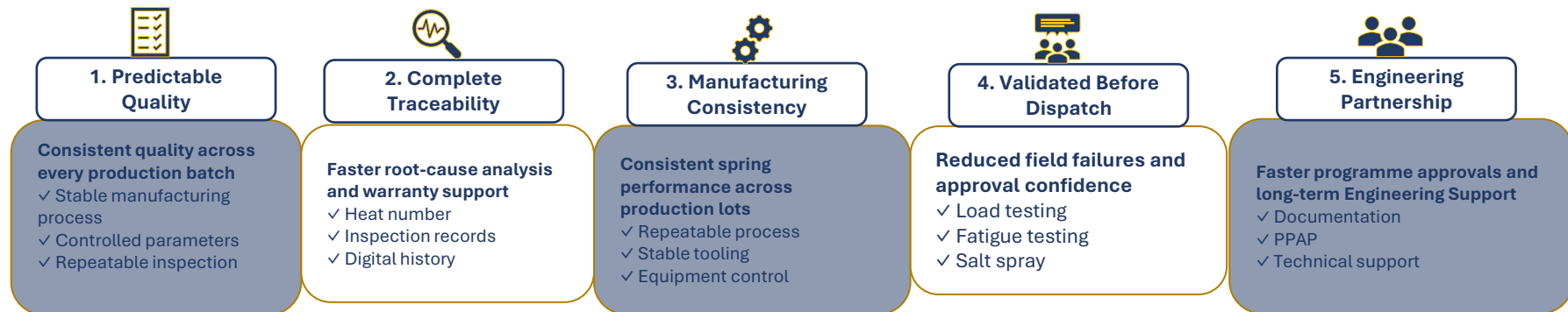
Every spring leaving R5Z is inspected, validated and fully traceable before customer dispatch.

Every spring leaves R5Z fully validated, fully traceable and ready for decades of reliable service

Engineered To Reduce OEM Risk



Every investment at R5Z has been made to reduce supplier risk, accelerate approvals and support dependable long-term manufacturing programmes for our OEM partners.



Our Promise to OEMs Lower risk, faster approvals, consistent quality & on-time delivery.

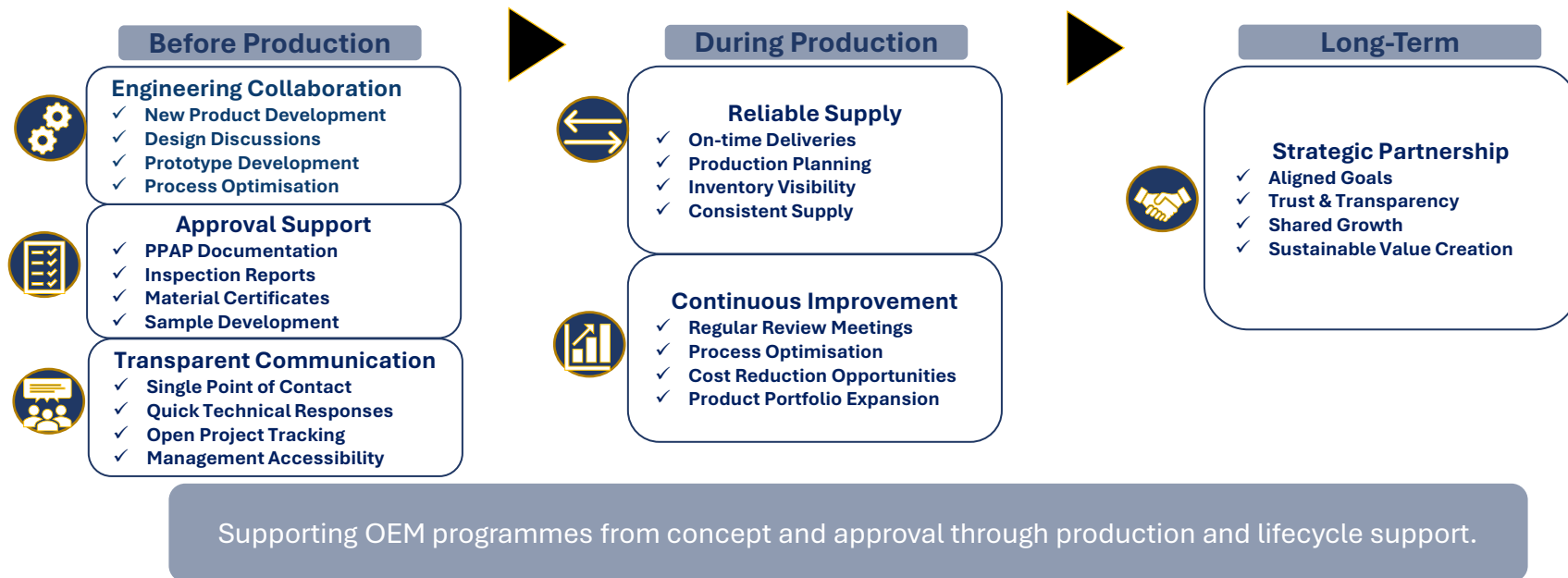


Confidence is engineered into every spring.

More Than a Supplier. A Manufacturing Partner.



From product development to long-term production, R5Z works as an extension of your engineering and manufacturing team.



Our success is measured by the long-term success of our OEM partners.



Let's Build the Future of Railway Manufacturing.



Powering Industries With Precision, Trust and Vision

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Let's Build the Future of Railway Manufacturing. Together.