LRPC – Low Relaxation Prestressed Concrete Strands for Road & Bridge Construction

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What is meant by Low Relaxation?

Stress relaxation means a gradual reduction in stress with time at constant strain.

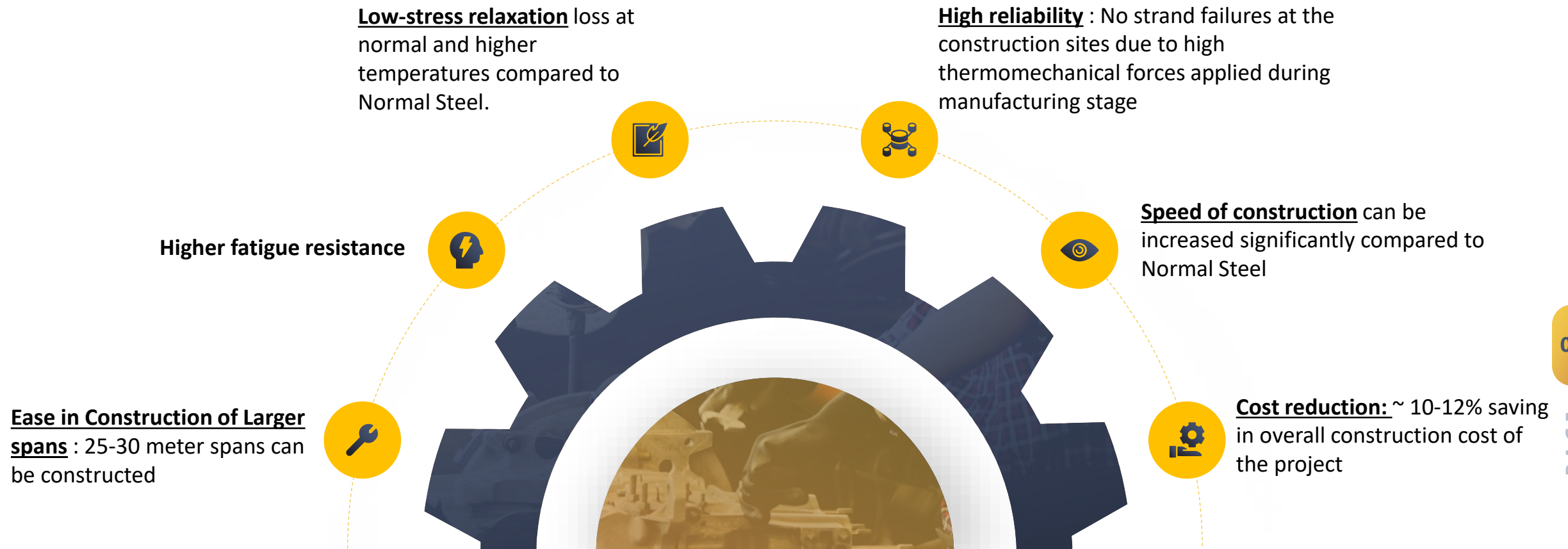It occurs in steel when it is in a strained condition for an extended period and is a property of steel itself.

Lower relaxation loss is better for the prestressed concrete structures which helps in designing the Prestressed concrete structure

In LRPC Strands, the relaxation loss is less than 2.5% after 1000 Hrs., as against 5% in Normal Relaxation Prestressed Concrete Strands (NRPC)

KEY PROPERTIES OF LRPC

Low-stress relaxation loss at normal and higher temperatures compared to Normal Steel.

High reliability : No strand failures at the construction sites due to high thermomechanical forces applied during manufacturing stage

Higher fatigue resistance

Speed of construction can be increased significantly compared to Normal Steel

Ease in Construction of Larger spans : 25-30 meter spans can be constructed

Cost reduction: ~ 10-12% saving in overall construction cost of the project

LRPC Strands for Roads and Bridges

Precast Concrete Components

Precast concrete elements such as Bridge Decks, Beams & Slabs used LRPC strands for prestressing which increases the member's load carrying capacity and reduces the overall thickness of concrete section.

Post-Tensioning

LRPC strands are used to reinforce concrete post casting when the concrete has gained some strength. Majorly used in long span bridges.

Prestressed Concrete Piles

LRPC strands are used to prestress the concrete in the piles, which increases their load-carrying capacity and resistance to bending and compression

Slabs and Roadways

In the construction of heavy-duty slabs and roadways, LRPC can be used to prestress the concrete, making it more durable and able to withstand heavy traffic without cracking or deformation.

Benefits of using LRPC Strands for Road and Bridge Construction
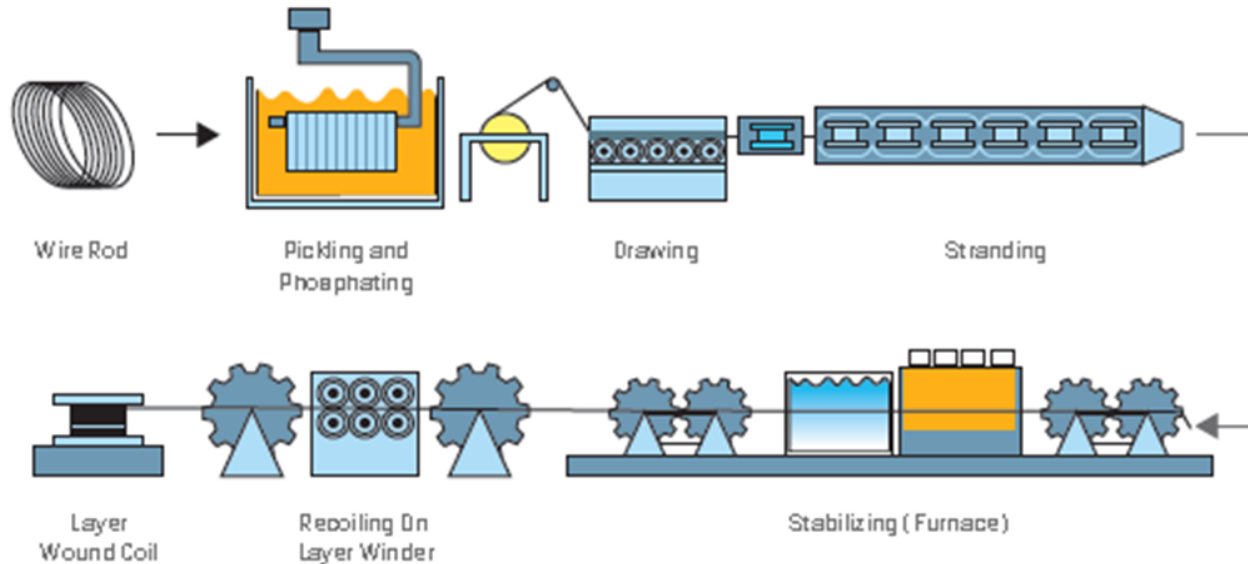
IMPROVED DURABILITY

INCREASED LOAD CARRYING CAPACITY

LRPC

BENEFITS

REDUCED MAINTENANCE COST

LRPC STRANDS : Manufacturing Process

Wire Rod → Pickling and Phosphating → Drawing → Stranding

Layer Wound Coil → Recoiling On Layer Winder → Stabilizing (Furnace)

MANUFACTURING LINE FEATURES

Advanced and automatic pickling line, multi-block wire drawing and stranding

Latest version of SCADA for process control at various stages

➢ Very advanced steel refining process & latest mill by PRIME METAL –USA for high quality Wire Rods

➢ Automatic pickling and phosphating line by DRT- Italy

➢ Latest straight through wire drawing machines by Mario Frigerio - Italy

➢ Top notch stranding and stabilizing, highly reliable SCADA to control the "Tension and temperature" to ensure the strands are 100% treated

➢ Inline oiling and automatic packing machine by Mario Frigerio for better shelf life of the coils

THANK YOU