

# MODERN TECHNIQUES FOR RAILWAYS

Mixed Traffic | Heavy Haul | Urban Transport Semi High Speed | High Speed





## Vision

To be a growth oriented and leading manufacturer and supplier of Rail track fastening items, other components for Railways; Mixed Traffic, Heavy Haul, Semi High Speed, High Speed and Urban Transport applications and various types of rubber and plastic engineered items, tailor made products meeting customer's requirements with their utmost satisfaction, with a firm commitment of caring for quality and environment.





# Mission

Our mission is to increase the current capacities, to achieve economies of scale and to establish ourselves as a high quality product manufacturer & supplier through continual improvement in the performance meeting customer requirements with their expectations and creation of excellent customer relationship and also strive for developing value added options by development of new products.

## **Company History**

The Company **Star Track Fasteners Private Limited** was incorporated on August 1992 having divers interest running from highly engineering products to Indian Railways; Mixed Traffic, Heavy Haul, Semi High Speed, High Speed and Urban Transport.

Star Track Fasteners Private Limited is one of the reputed company for Manufacture and supply of all types of Rail Pads, Rail Fastening Systems & its Components, Rubberized Panel for L-Xing, Thermoplastic Pads, Washers, Glass Filled Nylon & HVN Liners, PE Dowels, Elastomeric Bridge Bearings, Electronic Rail Greasing Device (Track Based Lubricators), Anti Vibration Mounts, Impact Idler Rollers, Various type of Metal to Rubber Bonded Components and Supply of Buffer Stops, Mass Spring System, Base Plate Pad, Under Sleeper Pads & Under Ballast Mats, Ground Stability Panels, and Road Speed Breakers etc.

The Company has started commercial production in 1995. The firm is an ISO:9001:2015 certified company for its Quality Management System. The firm has state of the art machinery, latest production techniques and testing facilities to deliver quality products to the customers. The firm has highly qualified and experienced staff to undertake jobs on different compositions and to get desired result even with micro precision dimension and properties. Quality of our products is well accepted in the market.

For each and every product we have separate Quality Assurance Plan which is being adhered strictly. All raw materials are procured directly from the reputed manufacturers /distributors only. FIFO system is maintained effectively in our stores.

## **Quality Assurance**

All the raw materials & inputs received in our company are duly tested / inspected before releasing it for production. Each and every product is made under strict supervision for quality control and effective process control. Every batch is subjected to required tests as given in QAP. Random destructive tests are done on finished products to have first hand assessment of the quality of the product.

All products are manufactured by state of the art machineries. A group of qualified engineers & technical staff are available to manufacture quality products and for continuous improvement in the Quality Management System.







### Track End Closure Device (Buffer Stops)

#### **Job Description - Sliding Buffer Stops:**

Through the mass of the train and the velocity generated kinetic energy will go into effect via the inerface of the train (side buffer and / or central coupler and / or anticlimbers) into the buffer stop frame. During the movement of the friction buffer stop on the running rails, the friction elements translate the kinetic energy into heat. The length of the sliding distance depends on the quantity of the inserting friction elements.



**Friction Element Buffer Stop** 

#### Jobs and Advantages of Buffer Stops:

- » To secure passengers in the train.
- » To secure persons behind the track end.
- » To secure objects at & behind the end of the track.
- » To limit damages to the trains.
- » To avoid derailment of the trains.
- » To show the end of the track.



Friction Element Buffer Stop Combined with Two Energy Absorbing Cylinders

» Buffer stops are designed to make it more resistant to corrosion to perform trouble free in high humidity, monsoon seasons and aggresive industrial atmospheres.





Friction cum Hydraulic Buffer Stops

» The company have a test rig where the function of the friction elements, the most important factor to guarantee the performance of the Buffer stops are constantly being tested.





# USP (Under Sleeper Pads) and UBM (Under Ballast Mats)



Sub-ballast mats

Elasticity in the Track superstructure (USP and UBM)



<u>Under Sleeper Pads (USPs)</u> Under Sleeper pads (USP) are installed on the bottom surface of the concrete sleepers to introduce the defined vertical elasticity in the track superstructure. Sleeper pads with defined elastic properties significantly reduce the stress on the ballast stones and help in increasing tamping intervals and improving the overall life of the track.

### Benefits of using USP:

- » The contact area between sleeper and ballast will increase to about 15-30%. The Increased contact area greatly reduces the stresses on the ballast and hence the ballast deterioration is avoided.
- » Increase in the tamping interval of up to 3 times approx. and deep screening intervals, saving on maintenance cost, ballast cost and ballast recoupment cost.
- » Under Sleeper Pads can be fitted on the concrete sleepers at the time of sleeper manufacturing itself in the sleeper manufacturing plant or they can also be fixed to the already casted sleeper with the help of a glue.

<u>Under Ballast Mats (UBMs)</u> are installed below the ballast over the formation. UBMs due to its elastic properties distribute the wheel loads on a bigger number of sleepers, thus significantly reducing the stresses on the ballast and formation. Especially when the formation is very stiff (like concrete bridges, ballast troughs etc.)

#### **Benefits of using UBM:**

- » Ballast mats significantly reducing the stresses on the ballast. Reduced stresses on the ballast prevents ballast deterioration and helps in maintaining the high track quality for a very long period.
- » UBM distributes the load to a larger area on the subsoil resulting in significant reduction of pressure on the subsoil.
- » Due to the better track quality with the use of UBM, overall operational hindrance cost is also reduced.
- » Reduced ballast deterioration.
- » Optimized track stiffness reducing the dynamic forces acting in the transition zones.
- » Prevention of rail corrugation.
- » Reduction in the maintenance cost.



# **Fastener Solutions**

The Direct Fixation Bonded Track Fastening system with two/four anchors is explicitly designed to provide transit and commuter rail systems with a greater range of options as concerns single or dual vertical stiffness as well as lateral and vertical stiffness as well as lateral one plus a "fail-safe" track fastener design.

It consists of two metal components, the Top Plate and the Frame, bonded together with elastomer. Progress Rail Services departed from the "sandwich" design in favour of the "containment" because of its demonstrated versatility and innate "fail-safe" characteristic.



### Important advantages includes :

- » Fully bonded Assembly i.e. less number of parts.
- » Reduction of ground & structure borne vibration.
- » Ductile iron body for strength, endurance and corrosion resistance.
- » Improved ride quality.
- » Reduced impact forces on supporting structure.
- » Remarkable trouble free in service history.
- » Ensuring long term sustained performance.
- » Little or no maintenance over the 35 year design life.
- » Most suitable for third rail application Superior electrical isolation of the running rail.
- » Retrofits existing non-bonded fasteners in track and uses the existing anchor bolts.
- » No Stray current problem in the track / turnouts.
- » Proper performance of signalling.
- » Progress Rail Fasteners are proven in DC/ Third Rail applications.
- » Adjustable low stiffness in the range 5-15 kN/mm.
- » No wear-causing relative movements between components.





### **Fastener Solutions**

### **336 FASTENING SYSTEM**

Star Track Fasteners offers "336 Fastening System" for ballast less track, conforming to technical requirements of performance criteria issued by Ministry of Railways. 336 Fasteners are designed to hold the two rails of the track strongly to the supporting structure in upright position by resisting the vertical, lateral and longitudinal forces and vibrations. It has a proven track record for its satisfactory performance & durability worldwide. The design service life of the system is 30 years in general however the components such as rubber pad, rail clip etc. are designed for 300 GMT or 15 years whichever is less.

### **Advantages:**

- » Cost effective as the majority of the components are Indigenous.
- » Durable & cost effective.
- » Easy in construction for in situ / precast reinforced plinth or slab.
- » Reduction of ground/structure borne noise.
- » Optimum electrical insulation to take care of return current of traction system.
- » Suitable for Broad Gauge-1676mm & Standard Gauge-1435mm.
- » Working temperature range -10 to + 70 degree Celsius.
- » Quick & easy installation and replacement with special tools.
- » Capable for vertical & lateral adjustments during installation & service life.





# **Electronic Rail Greasing Device (Track based lubricator)**

The ERGD-016 model is an electronic rail greasing device (Track based lubricator), which is used for lubricating grease on a railway track to reduce the coefficient of friction, which is produced by the contact of train wheel and the rail track. The utility model is composed of a computerized transmission mechanism and a grease supply mechanism. It gives a well-directed lubrication which can be done quickly and reliably. With the installation of ERGD a very accurate placing and dosing of the grease can be obtained which leads on an important reduction to the wear and tear of wheel flange, check rails, switch blades and gauge face of the rails. Any sort of noise emission can be almost completely eliminated. Solar model is also available, where power supply is not available.







- Sensor Unit (Inductive Proximity Sensor with Sensor Control Unit)
- Programmable Control Unit (with grease reservoir, gear motor & pressure control valves, gauge & Programmed application controller)
- Lubricating strips (with high pressure & high quality hoses) The sensor station registers the approaching railway vehicle notifies to the control unit which immediately triggers the lubricating pump. The lubricant is placed precisely between the wheel flange and the guiding surface.

### **Advantages:**

- » Cost reduction through minimising wear & tear.
- » Minimisation of noise particularly in curves.
- » Individual adaptation of the system to the customer specific requirements.
- » Optimum lubrication with minimum quantity of grease bycomputerized control unit.
- » Free choice of lubricants.





### **'STAR' RUBBERISED PANEL FOR LEVEL CROSSING**



### ADVANTAGES OF 'STAR' RUBBERISED PANEL:-

- » Safe and Smooth surfaces to drive over.
- » The surface is designed for quiet run and to move water away plus help to grip.
- » Overall best level crossing experience.
- » 100% Rubber composition suitable for heaviest traffic loads, weather conditions or chemical conditions.
- » Best user experience, Good for Environment, Good traction, Low noise & No complaint.
- » Fit snugly against the rail sealing the track structure from water and debris.
- » Provides a smooth transition between the road surface and the crossing.
- » Ease of installation & Ease of removal for track maintenance and at end of life.
- » Inherently resistant to electrical current preventing false shunting of signals.
- » We offer one full panel of 1.20mtrs inside the running rail, which rest properly on PSC sleepers, provides uniform load distribution on sleepers, resultant less deflection and more life.





## **Rail Fastening Components**



### **Rail Pads:**

- » The Rail Pads are being used for placing beneath rails at rail seat of the sleepers.
- » It gives balance suspension during dynamic load on the rail track and works as a shock & vibration absorber due to its high elastic properties.
- » Under all circumstances Rail pads acts as a sacrificial element to protect the rail seat surface from the mechanical action by rail movements.
- » Bears high impact loads and protect to concrete sleepers & powdering of the ballasts.
- » Its high resilience properties maintains durability and toe load by e-clip.

#### **Intermediate Pads:**

- » The Intermediate Pads are being used for placing beneath fastening system on ballast less track to provide proper sitting arrangement of fastening system.
- » It gives proper balance during dynamic load on the rail track and works as a shock & vibration absorber.
- » Helps to maintain rail heights at different locations as per requirement.

#### GFN & HVN Insulating Liners, Nylon bush and washers:

- » Insulating liners are provided between e-clip and rail flange to avoid point contact of e-clip toe over the flange.
- » Insulating liners are used in track circuited areas for proper insulation.
- » HVN Liners are unbreakable hence used worldwide mainly for improvement in durability and insulation purposes.





# **"STAR" ROAD SPEED BREAKERS**



Road speed breakers are mainly used to prevent speeding at places which are prone to accident.

- » Prevents overspeeding thus minimizing accident to an extent.
- » Gives a chance for pedestrians to cross the road.
- » High quality, Durable and No bumping sounds.
- » Usefull in School and Residential Zone.
- » Reduces the risk of fatalities, or injuries on the road.

# **"STAR" IMPACT IDLERS (RUBBERISED)**



Impact idlers are designed for loading areas of the belt, where belt damage is common due to the falling material and consistent impacts. Impact rollers absorb impact forces helping prevent damage to the conveyor belt, idler frame and surrounding structure from occurring.

- » Prevents pre-mature wear and damages of the belts.
- » Reduces roller failure.
- » Rubbers tyres absorbe impact forces and minimize damages.
- » Reduces dust accumulation.
- » High Quality, Durable and Excellent Abrasion Resistance.







### (AN ISO:9001 CERTIFIED COMPANY)

Regd. Office: 412A, B.D. Chambers, D.B. Gupta Road, Karol Bagh, New Delhi - 110005, INDIA Tel : +91-11-23832173 | Fax : +91-11-23965653 | Website : www.startrack.in, www.startrackindia.in Works: 40 K.M. Stone, G.T. Road, Bahalgarh, (Village-Asawarpur), Sonepat, Haryana, India - 131021 Tel : +91-93154-61522 | E-mail : works@startrack.in



