TERASPIN

Precision components for spinning machines

QUALITY
RELIABILITY
INNOVATION

TeraSpin, a business unit of A.T.E. Group, manufactures precision components for spinning machines at its state-of-the-art eco-friendly manufacturing facility at Sari, near Ahmedabad, India. TeraSpin's product range includes **complete drafting systems (weighting arm, top roller and cradle) for roving frames and ring frames and spindles for ring frames.** TeraSpin also provides customised **upgrades for roving frames and ring frames drafting.**

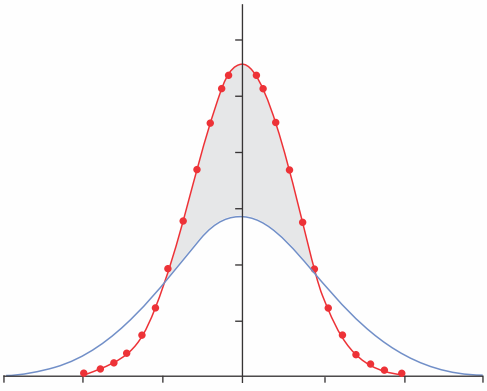
TeraSpin was formed with A.T.E.'s takeover of the textile machinery components business of SKF India in 2012. TeraSpin products are thus built on the strong foundation of SKF knowledge and expertise.

Thereafter, through constant R&D at TeraSpin, these products are continuously improved upon to ensure high performance and durability and many new products are also developed.

With a clear mandate of **'zero defect', 'zero rejection', 'excellence in quality', 'safety' and 'eco-friendly operations',** TeraSpin has deployed a series of quality initiatives, such as **ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007.** Thus, we ensure product quality at every stage of the production process. All products are manufactured with a high degree of automation that helps achieve consistent quality and traceability on a mass scale.

At TeraSpin we manufacture all products as close to their nominal specification limits as possible as shown in the peaked bell curve of the normal distribution.

TeraSpin's products are used by **OEMs** as well as for upgrades and replacement by **spinning mills in 23 countries** across the globe - China, Germany, India, Bangladesh, Indonesia, Japan, Korea, Spain, Turkey, Vietnam, Canada, Mexico, Argentina, Italy, Egypt, Iran, Uzbekistan, Thailand, Taiwan, Nigeria, Kenya, UAE & Nepal.



Normal distribution curve for products manufactured within the tolerance limit.

A peaked bell curve for TeraSpin products show a much higher proportion manufactured close to the exact dimensions.

# Weighting arms for short staple and worsted ring frames

## Features

- **Reliable loading through leveraged force of helical coil springs**
- **Choice of load selection on each top roller**
- **Partial load release**

## Benefits

- **Consistent quality of yarn**
- **No height gauge setting required after cot buffing within the specified range of the cot diameters**
- **No pressure loss or pressure variations**
- **Suitable for a wide variety of fibres and yarn counts**
- **Virtually maintenance-free**
- **Long service life**

TeraSpin weighting arms for ring frames are characterised by their **robust design and corrosion resistant finish.** These weighting arms are built to **last the lifetime of the ring frames.** The loading springs used on TeraSpin weighting arms are pre-calibrated for specified loads and also last the product's lifetime. Each **weighting arm exerts the same load on top rollers** irrespective of how long it is in use or at what position in the machine it is fastened.

| For short staple ring frames | |
|---|---|
| PK 2025-1251331 | For short cradle |
| PK 2035-1251784 | For medium & long cradle |
| PK 2025-22R | With higher front top roller load suitable for short cradle |
| PK 2035-22R | With higher front top roller load suitable for medium & long cradle |

| For worsted ring frames | |
|---|---|
| PK 1601-01 YB | Yellow passivation with black knob |
| PK 1601-01 SB | Silver passivation with black knob |

# Weighting arms for roving frames

PK 1500-604 30 SB

PK 1500-604 30 SR

PK 1600-40 SB

PK 1500-0962602 SB

PK 1500-0962602 SR

PK 1500-1940 30 SB

PK 1500-1938 30 SB

PK 1500-1938 30 SR

PK 1500-1940 30 SR

TeraSpin weighting arms for roving frames are characterised by their **robust design and corrosion resistant finish.** These weighting arms are built to **last the lifetime of the roving frames.** The loading springs used on TeraSpin weighting arms are pre-calibrated for specified loads and also last as long as the roving frames weighting arms. Each **weighting arm exerts the same load on top rollers** irrespective of how long it is in use or at what position in the machine it is fastened.

| **3-roller drafting –** for top roller dia. 30/25/30 and 35/33/35 mm | |
|---|---|
| PK 1500-604 30 SB | Silver passivation with black knob |
| PK 1500-604 30 SR | Silver passivation with red knob |

| **3-roller drafting –** for top roller dia. 35/25/35 mm | |
|---|---|
| PK 1500-0962602 SB | Silver passivation with black knob |
| PK 1500-0962602 SR | Silver passivation with red knob |

| **4-roller drafting –** with cradle at 3rd roller position | |
|---|---|
| PK 1500-1938 30 SB | Silver passivation with black knob |
| PK 1500-1938 30 SR | Silver passivation with red knob |

| **4-roller drafting –** with cradle at 2nd roller position | |
|---|---|
| PK 1500-1940 30 SB | Silver passivation with black knob |
| PK 1500-1940 30 SR | Silver passivation with red knob |
| PK 1600-40 SB | Silver passivation with black knob |

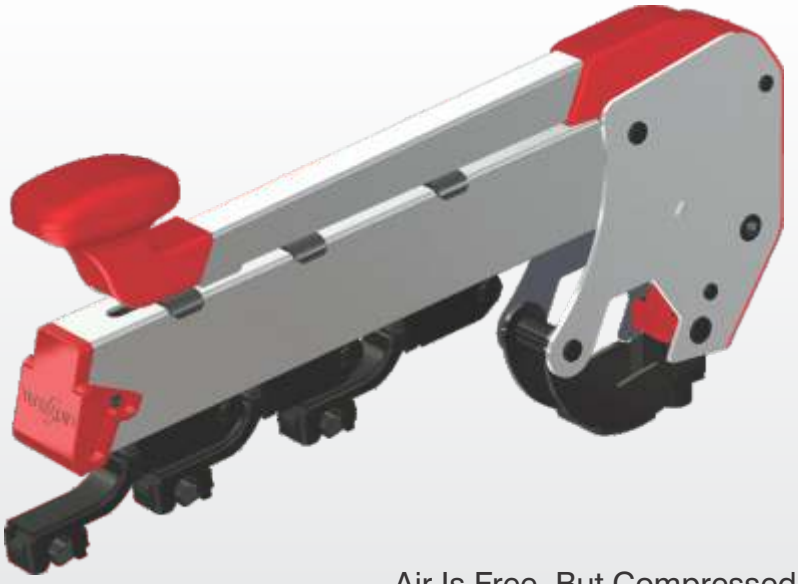
## Features

- **Reliable loading through leveraged force of helical coil springs**
- **Available in 3-roller and 4-roller drafting configurations**
- **Choice of load selection on each top roller**
- **New ergonomic design of knob**

## Benefits

- **Consistent quality of yarn**
- **No height gauge setting required after cot buffing within the specified range of the cot diameters**
- **No pressure loss or pressure variations**
- **Suitable for a wide variety of fibres and roving hanks**
- **Virtually maintenance-free**
- **Long service life**

# Flexi weighting arms



Air Is Free, But Compressed Air Is Not!

### Features

- **Fits on the existing hexagonal tube of a pneumatic drafting system**
- **Accommodates the existing top rollers**
- **Easy height (pressure) setting**
- **Consistent reliable loading through helical springs**
- **Options of 5 different loads on each top roller**
- **Easily replaceable weighting elements**
- **Adjustable front roller offset**

### Benefits

- **Minimal investment and better payback**
- **Consistent loads delivering consistent yarn quality**
- **Ease of installation and retention of existing components**
- **Ease in maintenance – no pressure checking/ losses due to compressor and change of cot diameters**
- **Flexibility to handle wide variety of fibres/yarn counts to suit today's fashion industry demand**
- **Attractive price:performance ratio**
- **Longer reliable service life**
- **Contributes to your initiative of sustainable solutions in the textile industry**

Spinning mills use pneumatic weighting arms and/or mechanical (spring loaded) weighting arms on their ring frames. **Spring loaded mechanical weighting arms are usually preferred as they are maintenance free and also more reliable** in handling most textile fibres. As **spring loaded weighting arms** do not use compressed air, they **do not consume energy.** Hence, these weighting arms offer a **more sustainable solution** compared to pneumatic weighting arms. The yarn quality is also better and more consistent over a period of time.

Ring frames originally equipped with pneumatic weighting arms may be switched over to mechanical weighting arms that can handle all fibres with ease and better operating performance. With no compressors, hoses, etc., mechanical weighting arms save a sizeable recurring operations and maintenance cost! However, the one-time cost of such conversions was a major deterrent for spinning mills to make a decision switch over.

TeraSpin's Flexi weighting arms address these challenges. The PK S 3200 series Flexi weighting arm for short staple ring frames offers maximum flexibility and can be retrofitted onto the existing arrangement of a mill's ring frames with existing drafting components. This enables the most economical changeover from pneumatic drafting systems to the more reliable and flexible mechanical drafting.

| Variants | |
|---|---|
| PK S 3220 | For short cradle, existing top rollers |
| PK S 3225 | For medium/long cradle, existing top rollers |
| PK S 3224 | For short cradle, suitable for H-Fang Compact |
| PK S 3226 | For short cradle, suitable for LMW Spinpact |

# Spindles

TeraSpin is one of the few manufacturers of complete spindles that make **spindles and inserts which enable ring frames to attain speeds up to 25,000 rpm (mechanical).**

TeraSpin spindles are specially designed for **smooth running at high spindle speeds.** Optimisation of various design parameters, a high level of manufacturing precision, and high-quality German components reduce the vibration and noise level of the spindle.

Spindles are available with different design combinations:

- Aluminium plug type
- For manual doffing ring frames
- For auto-doffing ring frames
  - with TeraSpin Smart Yarn Catchers
  - with knurling and cutters
- Suitable for
  - 4-spindle tape drives
  - tangential belt drives
- Equipped with
  - self-locking inserts or external locking hooks
  - spring type buttons or centrifugal type buttons

| | |
|---|---|
| HF 100 | For spindle speeds of up to 25,000* rpm (mechanical) |
| HF 1 | For spindle speeds of up to 22,000* rpm (mechanical) |
| HF 21 | For spindle speeds of up to 20,000* rpm (mechanical) |
| HF 21C | For spindle speeds of up to 18,000* rpm (mechanical) |

**when used under the right conditions*

**Premium ES spindles**

Energy is a major cost in spinning that eats away the profits of spinning mills. Hence **energy saving, without compromising productivity and quality, is a top priority for spinning mills.**

TeraSpin Premium ES spindles are the best solution to reduce spinning energy cost. These spindles, which are available with HF1/HF100 spindle bearing units with 18 mm wharve diameter are designed to reduce energy consumption significantly. The well proven, strong, and sturdy design of HF1/HF100 spindle bearing units make the spindles suitable for both manual and auto doffing machines.

**Features**

- **Wharve diameter: up to 18 mm***
- **High level of manufacturing precision for all spindle components**
- **Only two-point contact (at footstep and neck bearing)**
- **Compact neck bearing manufactured with higher precision**
- **Optimised damping of spindle vibrations with improved design and German components**
- **Well proven conical footstep design manufactured with high precision**
- **Spring support for axial load**

**Benefits**

- **Low vibrations**
- **Low noise level**
- **Long life**
- **Significantly lower energy consumption***

**in Premium ES spindles only*

# Smart Yarn Catcher SYC-F & SYC-C

## Features

- **Automatic opening & closing of clamping faces with change in spindle speed**
- **Firm grip of yarn between upper & lower clamping faces, which align precisely with each other due to unique mechanism**
- **Special cutter for reliable yarn cutting**

| | SYC-F | SYC-C |
|---|---|---|
| Clamping faces open at | 12,500 rpm | 6,500 rpm |
| Clamping faces close at | 6,500 rpm | 2,500 rpm |
| Application | Ring frames for fine count | Ring frames for coarse count |

## Benefits

- **Minimum yarn used (1-1.5 turns) for clamping**
- **No accumulation of residual yarn – the flat annular clamping faces enable the clamped yarn to move out of device easily by centrifugal forces**
- **No cleaning of residual yarn – saves approx. 1.5 man-hours per ring frames of 1,200 spindles**
- **Reduced start-up breaks**
- **Improved ring frames productivity**

Accumulation of residual yarn on ring frames spindles at the end of every doff has been a perennial problem for the spinning industry. The accumulated residual yarn is not only a waste of material, but also needs to be manually cleaned, which involves many man-hours and affects the productivity of the ring frames.

**No more accumulation of residual yarn – with the TeraSpin Smart Yarn Catcher (SYC), available in two variants – SYC-F and SYC-C.**

Continuous innovation is TeraSpin's hallmark. TeraSpin has developed a SYC that is self-cleaning. The residual yarn left behind after every doff is expelled by centrifugal forces – putting an end to a major pain area in the operation of ring frames.

**No more residual yarn accumulation with SYC**

- **No residual yarn accumulation** → No cleaning
- **Labour hours saved** → As it eliminates manual cleaning effort
- **Better machine utilisation** → Maximise uptime. Boost productivity

# Cradles

**Cradles discharge an important function:** keeping the apron in position over the rotating apron top roller so that **fibres are effectively guided in the main draft zone**. TeraSpin cradles are made with metal or Fibre Reinforced Plastic (FRP).

| Ring frames cradles | |
|---|---|
| OH 62-1275254 | Short polymer cradle, 70 mm gauge |
| OH 62-1275267 | Short polymer cradle, 75 mm gauge |
| OH 131-1275264 | Medium polymer cradle, 70 mm gauge |
| OH 121-000684 | Long metal cradle, 70 mm gauge |

| Worsted ring frames cradles | |
|---|---|
| OH 554-000075 | Metal cradle, 75 mm gauge |

| Roving frames cradles | |
|---|---|
| OH 514-1275261 | Short polymer cradle |
| OH 534-1275268 | Medium polymer cradle |
| OH 534-000110 | Medium metal cradle |
| OH 524-000110 | Long metal cradle |

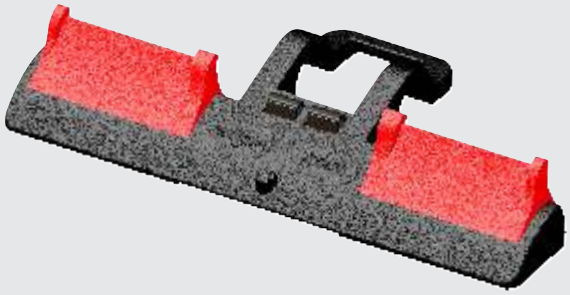
### Features of FRP cradles

- **Design ensures gentle nipping and effective fibre control**
- **Rigid and stable structure for use under mill conditions**
- **Lighter in weight**
- **Clean surface for smooth rotation of top aprons**
- **Can readily replace existing metal cradles**

### Benefits of FRP cradles

- **No chance of deformed cradles being used and hence, no danger of producing poor quality of roving/yarn**
- **Existing spacers can be used on these cradles**
- **Consistent roving/yarn quality**
- **Maintenance-free**
- **Long life**

# Smart cradles



### Features

- **Minimum contact area minimises friction during apron rotation**
- **Unique design ensures a fixed radius and hence a uniform distance between apron nip and front roller nip**
- **Accommodates variations in apron length & maintains uniform apron tension**

### Benefits

- **Reduced yarn imperfections**
- **Longer apron working life**
- **Easy apron removal and mounting during maintenance**

**Cradles discharge the important function** of keeping the apron in position over the rotating apron top roller so that **fibres are effectively guided in the main draft zone.** TeraSpin's new range of **Smart cradles exercise better control over fibres in the front zone and hence give better yarn quality.**

| Ring frames cradles | |
|---|---|
| OH S 168 | Short polymer cradle, 70 mm gauge |
| OH S 175 | Short polymer cradle, 75 mm gauge |

# Distance clips

These small, lightweight plastic elements in a drafting system can sometimes make **the difference between good and bad yarn.** TeraSpin ensures that the distance clips you buy are of exactly the same dimensions, thousands after thousands, in every order.

# Top rollers

Top rollers are a pair of anti-friction, double row ball bearings having a common axle. **Each top roller is manufactured such that the clearance between the hardened arbour and shell is perfectly matched with appropriately sized double row steel balls.** The top rollers made for ring frames and speed frames are injected with just the right amount of a special grease – TRG 5. The ends are fitted with a uniquely designed seal to prevent leaks while in operation.

### Ring frames top rollers

| | | |
|---|---|---|
| LP 302-000684 | LP 302-000075 | LP 302-000825 |
| LP S 3683 | LP S 3753 | LP S 3823 |
| LP 303-000684 | LP 303-000075 | LP 303-000825 |
| LP 302-000070 L | LP 302-000075 L | LP 302-000070 R |
| LP 302-000075 R | LP 302-000070 G | LP 302-000080 G |
| LP 302-000090 G | | |

### Worsted ring frames top rollers

| | |
|---|---|
| LP 314-000075 | LP 314-000825 |
| LP 316-000075 | LP 316-000825 |

### Roving frames top rollers

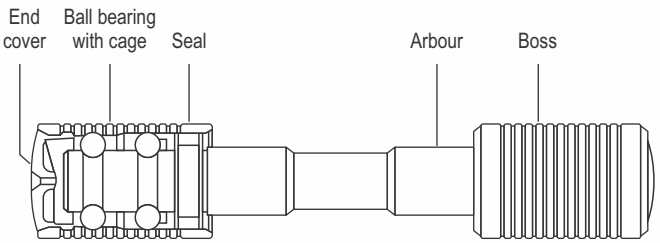
| | |
|---|---|
| LP 315-000110 | LP 317-000110 |

### Features

- **Sturdy double row ball bearings with low friction**
- **Through hardened components**
- **Proven and effective U-type sealing**
- **Controlled radial clearances**
- **Lubricated with long life grease – TRG 5**

### Benefits

- **Higher load carrying capacity**
- **Smoother rolling of top rollers resulting in better and consistent yarn quality**
- **Smoother rotation leading to longer service life**
- **No ingress of contamination**
- **Reduced maintenance – extended re-lubrication intervals due to TRG 5 grease**




*Double row ball bearings with specially designed end seals to prevent grease leakage during use*

# Upgradation kits

TeraSpin upgradation kits offer the **twin benefits of enhanced performance with low investment** – a viable option adopted by many spinning mills across the globe, since it improves productivity, quality, and energy efficiency.

## Drafting zone

Drafting upgradation is the preferred way of improving roving frames and ring frames performance. Outdated mechanical and/or old pneumatic weighting arms can be replaced by the more efficient TeraSpin spring loaded weighting systems. No compressed air is required.

## Spindle zone

Ring frames consume almost 60% of the power of the spinning process, out of which spindles and the spindle drive consume approx. 40%. A small saving here will directly reflect in the cost of the yarn. By optimising parameters like spindle wharve diameter, DUI, taper ratio, lift, etc., the power consumption can be considerably reduced.

**Benefits**

- **Increased spindle speed and productivity**
- **Reduced power consumption**
- **Improved and consistent quality of output**
- **Extended machine life**
- **Improved price:performance ratio**

# Grease TRG 5

TeraSpin special **grease TRG 5 is specially formulated** to meet the stringent working conditions of the spinning industry. TRG 5 keeps drafting top rollers running with **longer re-lubrication intervals.** Its lubricating properties address the issues of micro dust, fluff, humidity, and temperature in the spinning section. It is also suitable for bottom roller bearings.

**Features**

- **Barium based grease**
- **High load carrying capacity**
- **Good metal affinity**
- **Excellent water-resistant properties**
- **Wide range of working temperature (–30°C to +140°C)**

**Benefits**

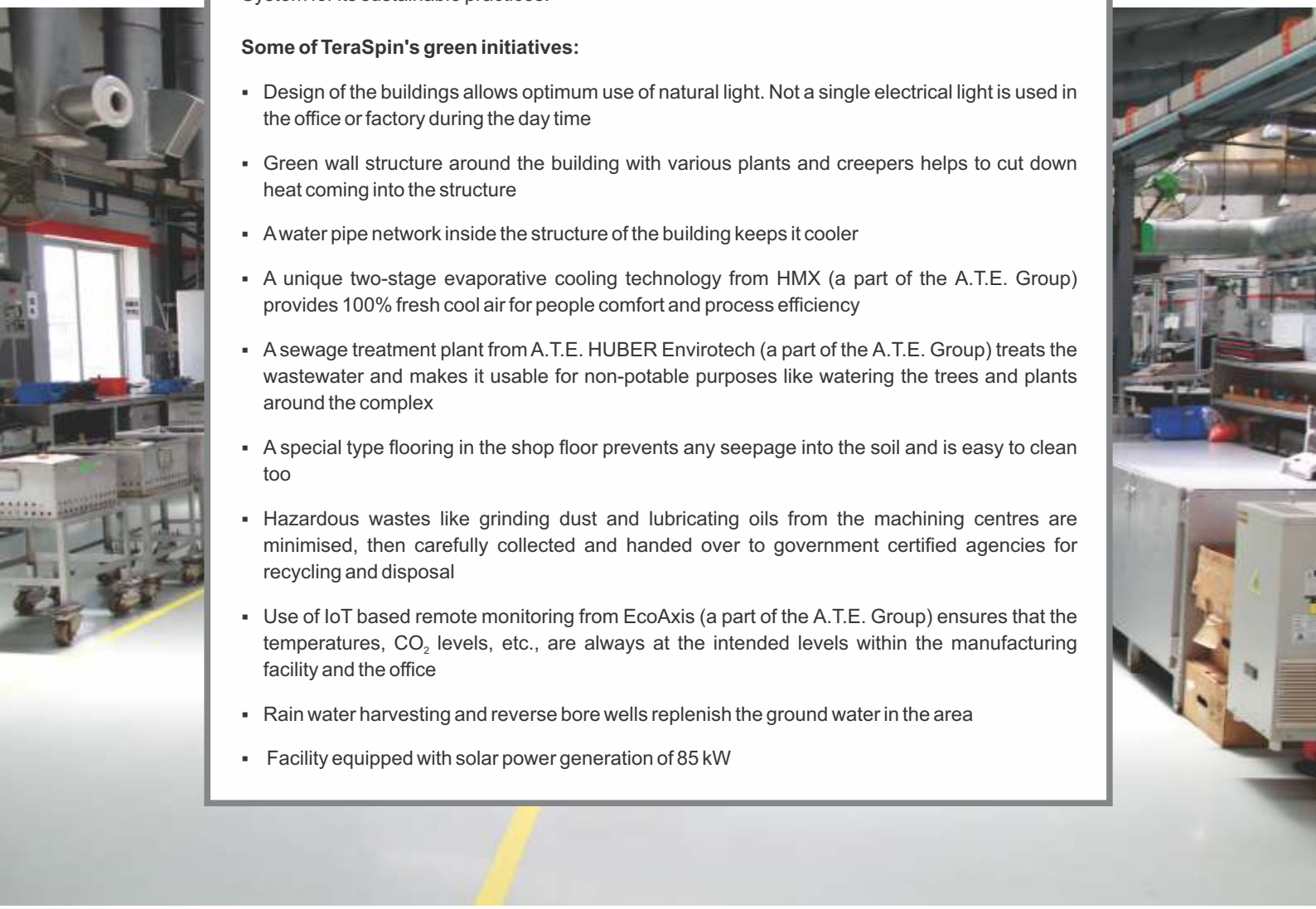
- **High load bearing capacity**
- **No ingress of foreign particles**
- **Long re-lubrication intervals reduce maintenance**
- **Smooth trouble-free operation under mill conditions**
- **Consistent quality output**

# Sustainability at TeraSpin

TeraSpin is not only the epitome of quality, but it also embodies A.T.E. Group's vision of sustainability. Hence, TeraSpin is certified under ISO 14001:2015 Environment Management System for its sustainable practices.

**Some of TeraSpin's green initiatives:**

- Design of the buildings allows optimum use of natural light. Not a single electrical light is used in the office or factory during the day time
- Green wall structure around the building with various plants and creepers helps to cut down heat coming into the structure
- A water pipe network inside the structure of the building keeps it cooler
- A unique two-stage evaporative cooling technology from HMX (a part of the A.T.E. Group) provides 100% fresh cool air for people comfort and process efficiency
- A sewage treatment plant from A.T.E. HUBER Envirotech (a part of the A.T.E. Group) treats the wastewater and makes it usable for non-potable purposes like watering the trees and plants around the complex
- A special type flooring in the shop floor prevents any seepage into the soil and is easy to clean too
- Hazardous wastes like grinding dust and lubricating oils from the machining centres are minimised, then carefully collected and handed over to government certified agencies for recycling and disposal
- Use of IoT based remote monitoring from EcoAxis (a part of the A.T.E. Group) ensures that the temperatures, $CO_2$ levels, etc., are always at the intended levels within the manufacturing facility and the office
- Rain water harvesting and reverse bore wells replenish the ground water in the area
- Facility equipped with solar power generation of 85 kW

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