



Vinted

## FALCON's Response to Vinted for Supply of Loop Cross Belt Sorter

August 7, 2025

Offer F25-00243 Rev 0

Doc. No. - Sales/FR/PT/007/RO



**Kind Attention –**

**Mr. Laurent Iem**

**Offer Ref: F25-00243-00;**

**Date: 07-08-2025**

**Subject – Techno-Commercial Offer for Cross Belt Sorter project**

Dear Laurent,

Thank you very much for your invitation of July 11<sup>th</sup>, to offer for the **sorter project in France and Spain**. Based on the meeting of July 17<sup>th</sup> and the suggestions provided by your technical, operational and project teams over the past weeks, we have developed the detailed design for the sorter systems. Please find herewith our offer.

As you will note, we have done an in-depth data analysis and evaluated various solution options best suited for your requirements. Along with the information received, we have put together a **detailed technical proposal** laid out in various sections and sequenced to enable you to get a full insight in our proposed solution and to re-enforce our commitment to being your partner in this strategic initiative.

The core of the sortation system includes the well-known **Falcon horizontal electrical cross belt** (dual belt on one carrier).

In subsequent sections, we have highlighted the capabilities and experiences of Falcon Autotech with sections on our Intra-logistics Automation Technologies and references.

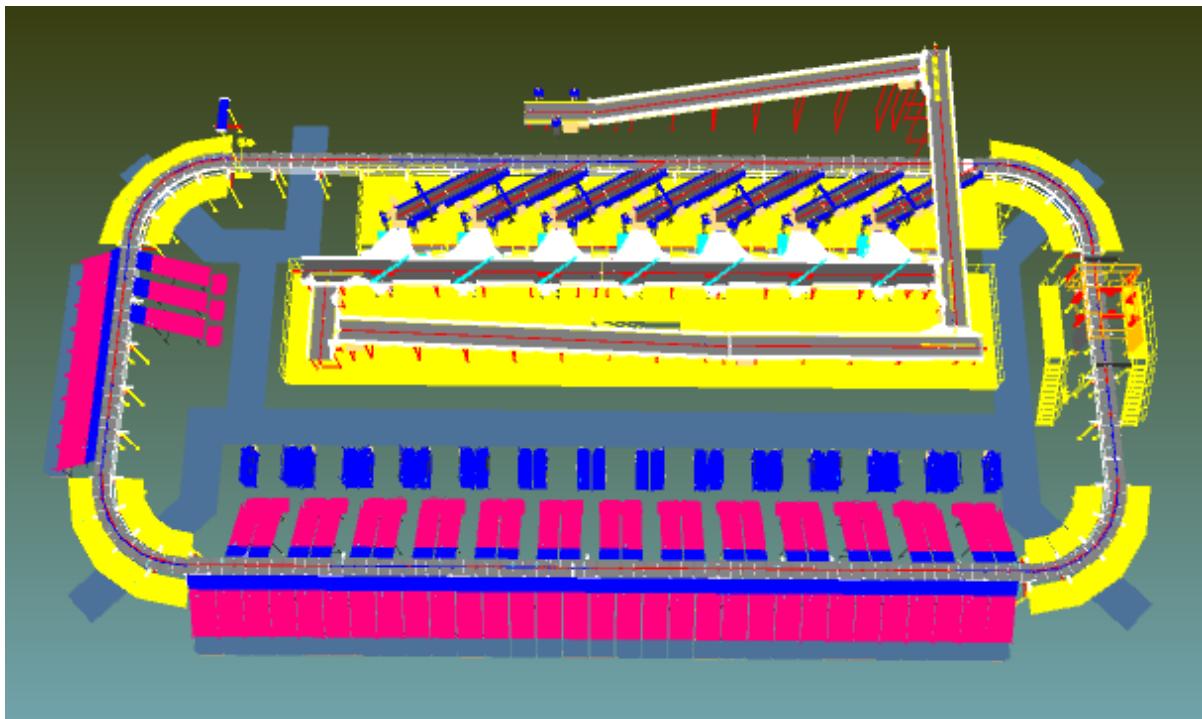
A provisional project planning is enclosed with the offer. Since for this size of system the installation and commissioning time is longer than the time given in the RFQ, we require an earlier start date on-site to allow for the requested start of activity / GoLive.

By cooperating with Falcon, Vinted has a global partner with local support.

To conclude, I would like to add my personal commitment on behalf of Falcon Autotech. As we move through the RFP process, please do not hesitate to contact me and my team. We will be pleased to assist you with any further information or clarifications that you might have and look forward to our management call to finalise.

**Best Regards on behalf of the team,**

**Johan Hoelen (General Manager Europe)**

**Response to RFP for Cross Belt Sorter**

Proposal Reference – F25-00243 –00

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## 1. Glossary

| S. No. | Term         | Description                       |
|--------|--------------|-----------------------------------|
| 1      | RFP          | Request For Proposal              |
| 2      | PPH          | Shipments Per Hour                |
| 3      | ICR          | Intelligent Character Recognition |
| 4      | MEZZ         | Mezzanine                         |
| 5      | FWD          | Friction Wheel Drive              |
| 6      | ECDS         | Empty Carrier Detection System    |
| 7      | AC           | Alternating Current               |
| 8      | DC           | Direct Current                    |
| 9      | PLC          | Programmable Logic Controller     |
| 10     | IT           | Information Technology            |
| 11     | BOQ          | Bill Of Quantity                  |
| 12     | I/O          | Input/ Output                     |
| 13     | PDP          | Power Distribution Panel          |
| 14     | PC           | Personal Computer                 |
| 15     | UPS          | Uninterrupted Power Supply        |
| 16     | CBS          | Cross Belt Sorter                 |
| 17     | MDR          | Motor Driven Roller               |
| 18     | VDS          | Volume Distribution System        |
| 19     | NL Shipments | Non-Large Shipments               |
| 20     | SL Shipments | Semi-Large Shipments              |
| 21     | IPP          | Individual Productivity Potential |
| 22     | DAP          | Design Approval Phase             |
| 23     | NO(S)        | Piece(s)                          |
| 24     | CPH          | Carrier Per Hour                  |
| 25     | BPH          | Belts Per Hour                    |
| 26     | NC           | Non Conveyable                    |

## 2. Executive Summary

Falcon is pleased to confirm its great interest in responding to this RFQ. Our team has been working closely with the relevant stakeholders, with a clear commitment to listening and understanding your needs and ensuring this project's success.

As prime contractor, Falcon ensures its full commitment to successfully completing this project. Following the same objective for the system, we are happy to offer a compliant solution meeting all technical and operational requirements, high-performance, optimized, tailor-made, fast and secure planning, and a competitive price. For full transparency, a compliancy list forms part of our offer.

Our solution is based on the following key characteristics:

- **One Sorter, based on Falcon's own, well-known loop cross-belt technology**
- **7 Sets of Induct with Manual Loading**
- **1 Sets of Infeed with Volume Distribution System (VDS)**
- **40 Pcs Pallet Chute**
- **26 Pcs PTL Chutes for 312 Bags**
- **312 Pcs Put to Light with Rack for Bags**
- **3 Pcs Rejection Chute**
- **7 Pcs of VDS Chute**
- **7 Pcs of NC Chute**

**A tailor-made and simple layout, specifically designed to VINTED** The proposed layout, is the result of the technical requirements in the RFP document and our discussions with the relevant stakeholders during the feedback round.

- Simple operational conditions due to one double decker horizontal cross belt sorter.
- Easy maintenance: optimized number of conveyors and concentrated inducts area.

### 1. Falcon's reliable and fully CE compliant Parcel sortation systems

These systems are globally being used by most innovative brands such as Vinted, Aramex, Amazon, Asendia, Fastway, Delhivery and many more. The main and critical components of the FALCON Autotech sorter building blocks, like wheels, motors, belts, bearings, Bus Bars, Communication platforms, PLC's etc., are sourced from some of the best suppliers in the world, such as SEW, Siemens, SICK, Faigle, Vahle and Forbo. This strategic baseline of sourcing policy allows Falcon's customers to be fully confident in the systems' robustness and reliability.

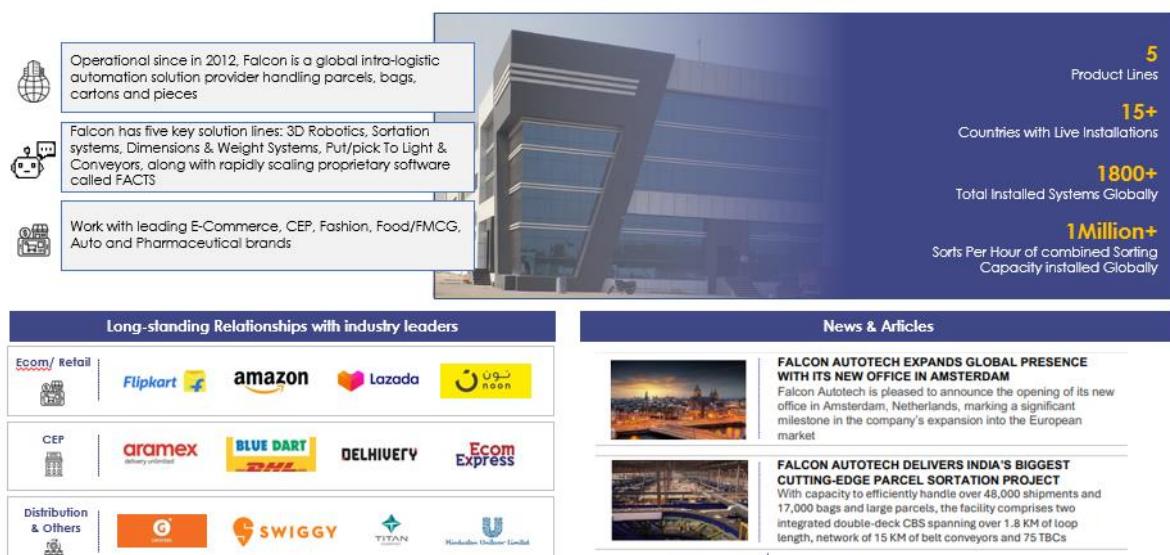
### 2. Commitment to quality systems

Demonstrating Falcon's clear commitment to the VINTED Group's satisfaction, the parcel sortation system, parts and services will be under warranty for 12 months from installation.

### 3. Company Profile

Falcon Autotech (Falcon) is a global intralogistics automation solutions company. With over 10 years of experience, Falcon has worked with some of the most innovative brands in E-Commerce, CEP, Fashion, Food/FMCG, Auto and Pharmaceutical Industries. With our proprietary software and robust hardware integration capabilities, Falcon designs, manufactures, supplies, implements, and maintains world-class warehouse automation systems globally. Falcon's strong research and development team and the continuous focus on innovation reflect our strong solution line around Sortation, Robotics, Conveying, Vision Systems and IOT. Falcon has done over 1,800 installations across 15 countries on four continents.

## FALCON 2.0



Falcon Autotech is currently among the top 15 intralogistics automation companies, our vision is to become top 10 intralogistics automation company in our focused product lines.

### Our Vision

To be amongst the Top 10 global intra-logistics automation companies in our focused product lines

The team started out in 2004 solving special purpose automation problems for clients and later established Falcon Autotech in 2012 with strong focus on building standard technology stack spanning across Hardware, Firmware and Software to tackle bigger Supply Chain problems around warehouse automation and material handling. Over the decade, Falcon has made rapid strides and has carved out a niche in some of the world's most cutting-edge technologies: Sortation, Robotics, Conveying, Vision Systems and IOT.

## Our Journey

*Redefining Intralogistics Automation since 2012*



As a leading player in the intra-logistics automation space, Falcon continuously strives to improve the operational efficiencies and accuracies for its clients through its domain knowledge and experience in addition to its wide range of products and solutions. In order to be able to live up to the high expectations set forth by our clients, the team at Falcon realizes the importance of taking up selective applications in focused Industries and deliver world class projects in return.

## Industry Process Solutions

*Delivering a multitude of game changing process automation solutions to our customers*

### CROSS DOCKING

- Automated Truck Loading Systems
- High Speed Parcel And Case Sorters
- Conveyor Systems

### GOODS RECEIVING AND BUFFERING

- Automated Truck Unloading Systems
- Automated Goods Reconciler (Count/ Scan/ Weight)
- Sortation Systems For Cross Dock
- High Speed Sortation Systems For SKU Consolidation

### SHIPPING AND DISPATCH

- High Speed Parcel And Case Sorters
- Put To Light Sortation Systems
- Inline Weighing And Dimension Scanning Systems
- Automated Truck Loading Systems



### PUT AWAY

- Automated Put Away Conveyors For Crates/ Cases
- Put To Light Storage Systems
- Automated Storage And Retrieval System

### PICKING AND CONSOLIDATION

- Picked Crate/Case Take Out Conveyors
- Cluster Pick: Multi Order Picking Carts
- Batch Pick For Put To Light Wall
- Batch/Wave Pick For Automated Sorter
- Pick To Light Wall

## Product and Solutions

With 100% focused on Parcels, Eaches, Totes, Bags, Cartons



- SORTATION SOLUTIONS**
- Cross Belt Sorter
  - Linear Arm Sorter
  - Swivel Divert Sorter
  - Tilt Tray Sorter
  - Popup Sorter
  - Sweep Sorter
  - Pusher Sorter



- PICK/PUT TO LIGHT SYSTEMS**
- PTL Module
  - Racks
  - Conveyors
  - Hand Scanners
  - Printers
  - Peripheral Displays



- DIMENSIONS & WEIGHT SCANNING SYSTEMS**
- Cubizon Series
    - R, R-Eco, R-Thru, R-Cross
    - Dynamic Profilers
      - Mini (600MM)
      - Jumbo (1200MM)



- CONVEYOR SOLUTIONS**
- Belt Conveyors
  - Roller Conveyors
  - Modular Conveyors
  - Special Application Solutions



- ROBOTICS**
- NEO
  - Robopick

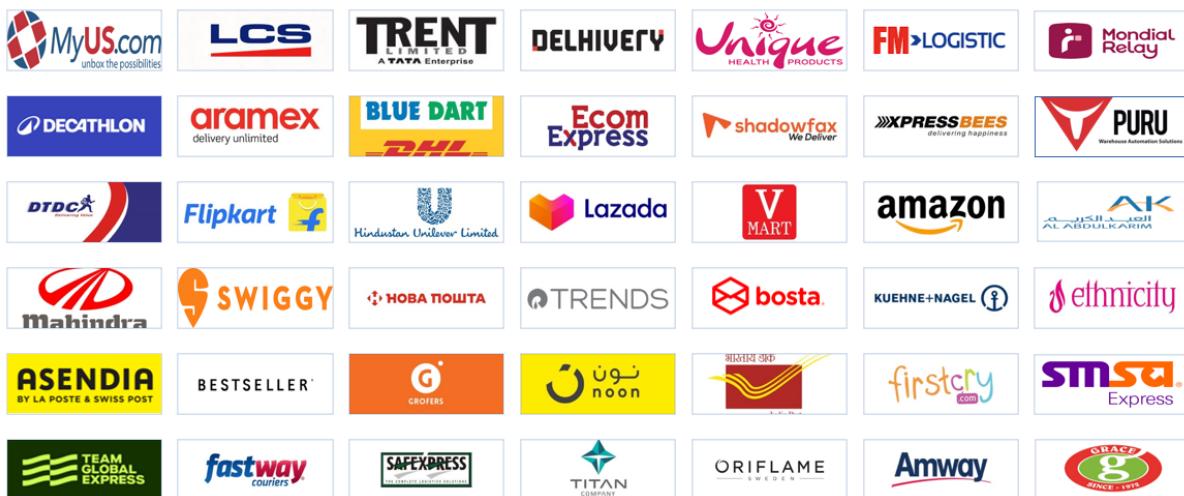
Powered by  
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Falcon Autotech has successfully delivered warehouse automation solutions based on smart and innovative combinations of above product lines for effective materials handling, sortation and movement. The process is controlled in real-time by our in house WCS applications. These solutions considerably cut the need for manual operations, improve working conditions and ensure the highest accuracy of the entire process up to final delivery to the recipient.

Over the last 10 years, Falcon has worked with some of the most innovative brands worldwide and has established long standing partnerships. These brands are testimony of our strong focus on delivering superior customer satisfaction and offering end-to-end intralogistics solutions.

## Select Key Clients

Some of world's most innovative brands trust us with their intra-logistics warehouse automation requirements



With over 1,800 installations, today Falcon's systems are used all over the globe. Falcon has highly motivated team of 600+ employees supported by over 15 global partners who help us design, manufacture, deliver and maintain automation solutions globally.

## Global Market Presence



#### 4. Falcon's Experience and Achievements in Sortation Space Globally

- Ranked among **Top 10 Sortation System Suppliers** globally.
- Currently possess one of **the World's largest portfolios in Sortation Technologies**: 7 In-house technologies.
- Total installed capacity of **10 million Shipments per day** worldwide.
- Only company to be able to offer a **Fully Integrated AMS**.

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## FALCON AUTOTECH

**Falcon Autotech expands its wings by opening its office in The Netherlands, Europe**

April 15, 2024 03:32 ET | Source: [Falcon Autotech Private Ltd](#)

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NEW DELHI, India and AMSTERDAM, April 15, 2024 (GLOBE NEWSWIRE) -- Falcon



Autotech (Falcon), a leading global intralogistics automation solutions provider, opens its



### **Breaking Barriers and Optimizing Efficiency – Journey of Delivering India's Largest Sortation System**

"It was a bold decision. If it didn't work, our company would have shut down," says Naman Jain, founder and CEO of warehouse automation startup Falcon Autotech, referring to a big gamble he had taken more than a decade ago. The year was 2013, Jain and his team were negotiating a deal with a major e-commerce logistics company that had just placed an updated order for a sorter with a capacity of 6,000 parcels per hour. That was 4x the specification earlier agreed upon.

"All the founders came together, and we took a calculated risk," recalls Jain. At the time, Falcon did not have the technology to develop such sorters, and hence, the said client refused to pay any money upfront and offered to pay the machine's price in monthly installments. However, there was a caveat: if it failed even once, Falcon would simply take the machine back and refund the entire amount. Falcon's 'calculated risk' paid off. The machine worked flawlessly and was handed over to the parcel company after 36 months. "We are now doing projects worth INR100 crore. That was unthinkable 10 years back," says Jain.

Falcon Autotech has covered a lot of ground since that big bet. Last month, it installed India's largest sortation equipment at



### **Economic Times Features Falcon Autotech**

**Naman Jain**  
Chief Executive Officer

**From sorters to conveyors & robot based systems, here's the top tech warehouses are investing in**

India's warehousing industry has travelled a long distance from "godowns" to modern storage facilities called Grade A warehouses.

Warehouse automation is a gradual process. India started off late, but that may actually help it bypass some of the mid-age technologies and adopt the latest ones. While several players are still warming up to automation, which are the



### Falcon Announces Successful Go-Live of Automated Parcel Sortation Solution at DTDC's Chennai Facility

New Delhi, India – 2<sup>nd</sup> Aug 2023: Falcon Autotech, a leading supplier of intralogistics automation solutions, has been selected by DTDC Express Ltd, one of India's leading integrated express logistics company, to automate its parcel sorting operations at its super hub of 1,75,000 sq ft in Chennai, Tamil Nadu. Using its cross belt sorter technology, Falcon has designed DTDC's parcel sorting system, which can handle 6,000 parcels per hour, operate in a 24 X 7 environment, and can be expanded to cater to future growth.

The new linear cross-belt solution leverages cutting-edge technology to automate key sorting processes in DTDC's warehouse, including parcel profiling and sorting. This solution is designed to optimize the space requirements for sorting operations, increase efficiency, and reduce operational costs.

"We are thrilled to see our warehouse automation solution go live with DTDC, this solution is a testament to our commitment to providing innovative intra-logistics solutions that meet the evolving needs of our customers," said Falcon's CEO Naman Jain.



### Transforming Indian Retail: The Impact of ASRS on Warehousing Operations

In recent years, the Indian retail industry has experienced unprecedented growth, propelling the nation to become the fifth-largest global retail destination. The industry, marked by its resilience and adaptability, went through significant transformations during the pandemic. While online shopping saw a remarkable surge, the reopening of physical stores ushered in a resurgence of the multi-sensory shopping experience. As a testament to this growth, shopping malls now encompass an astonishing 23.25 million square feet of retail space. However, the evolving consumer preferences have placed substantial pressure on businesses, necessitating the seamless integration of e-commerce and in-store experiences, which, in turn, has led to complex logistics challenges. The traditional warehousing systems struggled to cope with the demand for faster processing and the requirement for expanded storage capacities.

Historically, retailers had heavily relied on manual labor for their warehousing operations. However, the dynamism of today's retail market demands a shift towards automation. Enter Automated Storage and Retrieval Systems (ASRS), a technological

## 5. Reference Projects

Falcon has a strong legacy in **Warehousing Automation** solutions and references-

1. Expertise in Shipment Sortation, Piece Picking and Handling, Case Picking and Handling.
2. Lifecycle services (maintenance, spares supply chain, support).
3. Full **in-house** expertise (Hardware/Software).
4. Turn-key **tailored** solutions.

The references list presented below focuses on Sortation Solution –

### 5.1 Project 1- (CEP Client, India)

The System is equipped with two fully automated and interconnected Sub-systems. Sub-System 1 is designed for handling large B2B boxes and E-commerce shipment bags while the Sub-System 2 is designed to handle Small E-commerce packages.

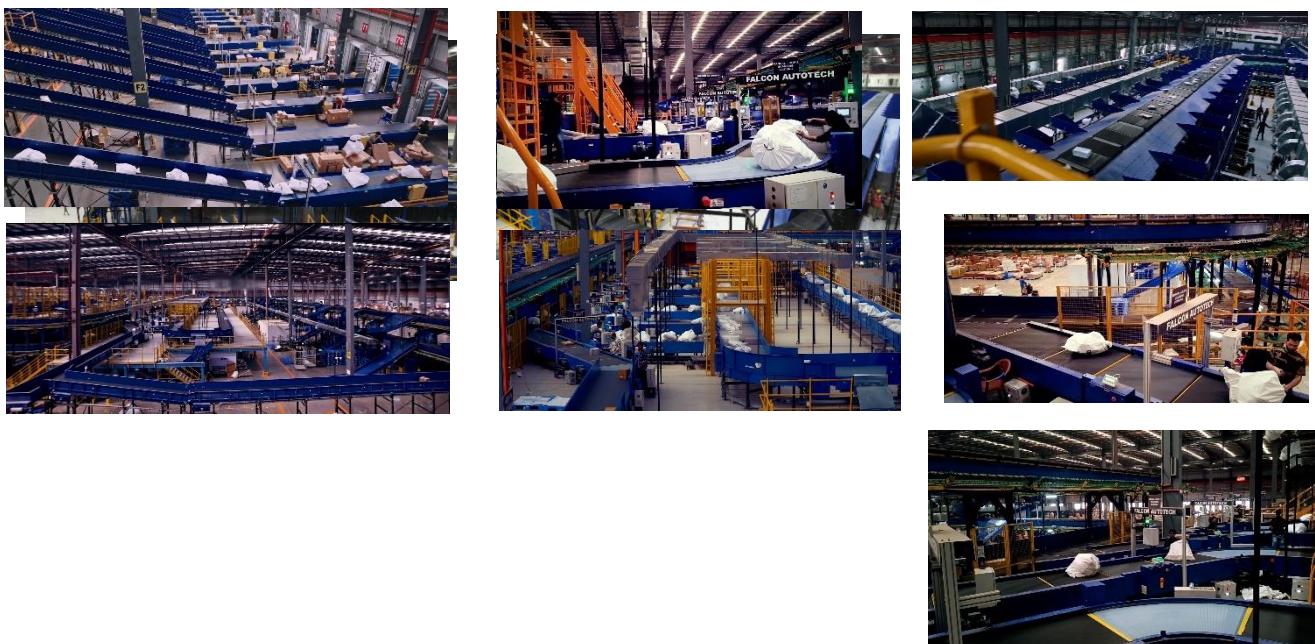
#### Solution Specifications –

- 48,000 PPH (Double Deck CBS- Shipment Sorter)
- 17,000 PPH (Double Deck CBS- Bag Sorter)
- Building Size: 700,000 Sq. Ft

#### Key Technology Modules –

- 2 Sets of Double Decker CBS Sorters
- Mezzanine Structures
- Automated Singulators
- Fully Automatic Inductions
- Semi-Automatic Inductions
- Telescopic belt conveyors
- PVC Belt Conveyors
- Modular Belt Conveyors
- Spiral Chutes with Braking rollers
- 5-Sided Scanning Tunnels
- High speed weighing conveyors
- Direct Bagging Chutes
- Put to Light Chutes
- Volume Distribution systems
- High Availability Server Systems
- WCS

#### Site Pictures –



## 5.2 Project 2- (Client – E-Commerce, India)

### Use Case – Destination Sorting of Packed Shipments.

In 2019, Client was looking for a potential automation partner for design and development of a new automated sortation system for B2C shipments. The system should be able to provide maximum uptime with reduced dependency on skilled manpower, and space optimization.

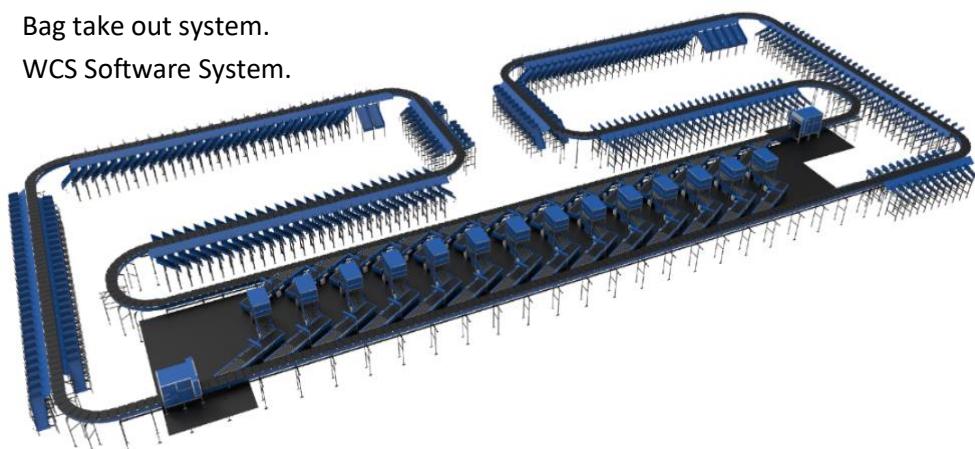
The customer chose Falcon Autotech based on its unique design which could cater to all their pain points, capability of seamless integration with WMS and life cycle support services.

#### Solution Specifications –

- Throughput: 27,600 PPH
- End Destinations: 410 Direct Outputs
- Building Size: 200,000 Sq Ft

#### Key Technology Modules –

- Bulk Infeed Conveyors.
- ARB based Volume Distribution System
- Integrated Presort System.
- Irregular Ejection System.
- Automatic Induct Lines.
- Automatic Barcode Scanner with Image Capture.
- Automatic Weight & Volume Measurement System.
- Linear Cross Belt Sorter.
- Smart Sliding Chutes for Direct bagging and Cage Sorting.
- Bag take out system.
- WCS Software System.



### 5.3 Project 3- (Client – E-Commerce, India)

Use Case – Destination Sorting of Packed Shipments.

The customer chose Falcon Autotech based on its unique design, capability of seamless integration with WMS and life cycle support services.

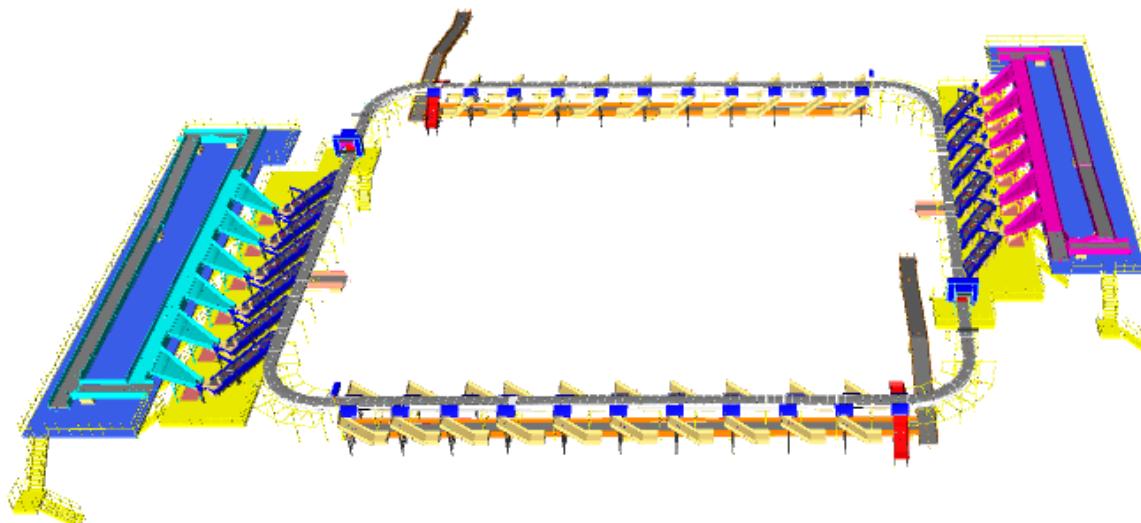
**Solution Specifications –**

- Throughput: 24,000 PPH
- End Destinations: 40 Collection Type Chutes

**Key Technology Modules –**

- Bulk Infeed Conveyors.
- ARB based Volume Distribution System.
- Irregular Ejection System.
- Automatic Induct Lines.
- Automatic Barcode Scanner with Image Capture.
- Automatic Weight & Volume Measurement System.
- Linear Cross Belt Sorter.
- Smart Collection type chutes
- Bag take out system.
- WCS Software System.

**Layout and Site Pictures -**



#### 5.4 Project 4- (Client – E-Commerce, India)

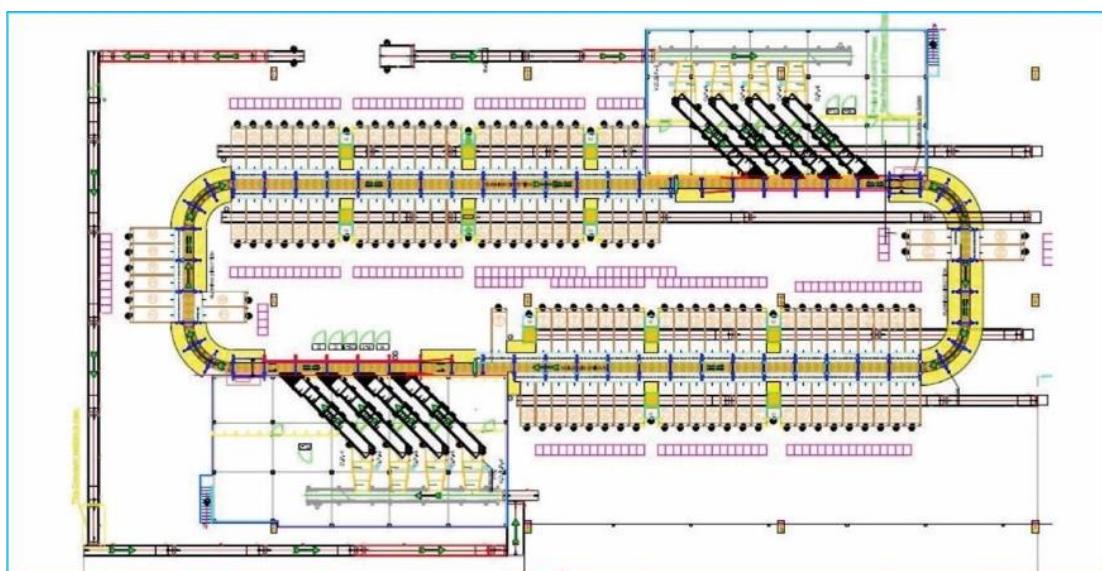
Use Case - Destination Sorting of Packed Shipments

##### Solution Specifications –

- Throughput: 24,000 PPH
- End Destinations: 110
- Building Size: 200,000 Sq. Ft

**Key Technology Modules** - Linear Cross Belt Sorter with a cell size of 900 x 500 mm

##### Layout and Site Pictures -



### 5.5 Project 5- (CEP Client, UK)

This Solution is designed to handle a volume of 7200 shipments per hour. The system is equipped with three infeed conveyors integrated with an automatic label applicator before shipments enter the sortation system. The shipments are sorted using Falcon's Linear Cross Belt Sorter equipped with automatic barcode scanning, dimensioning, weighing and image capture capabilities. The sorter is installed on the mezzanine floor and sorts directly to 58 end destinations.

#### Solution Specifications –

- Throughput: 7200 PPH
- End Destinations: 58 Pcs

#### Key Technology Modules –

- Powered Belt Conveyors.
- Automatic Induct Lines.
- Automatic Barcode Scanner with Image Capture.
- Automatic Weight & Volume Measurement System.
- Linear Cross Belt Sorter.
- WCS Software System.

#### Site Picture –



### 5.6 Project 6- (CEP Client, Sydney)

Solution is designed for handling a throughput of 16,000 shipments per hour with the help of Falcon's Linear Cross Belt Sorter. The system consists of 2 feeding zones with a total of 10 feedlines. Sorter design enables the van drivers to directly drop the shipments at the dock doors. It has a total of 369 end destinations that are achieved with a combination of direct drops and PTLs. System is integrated with 5 side automatic barcode scanning, weight and volume measurement and automatic detection of oversize and overweight shipments

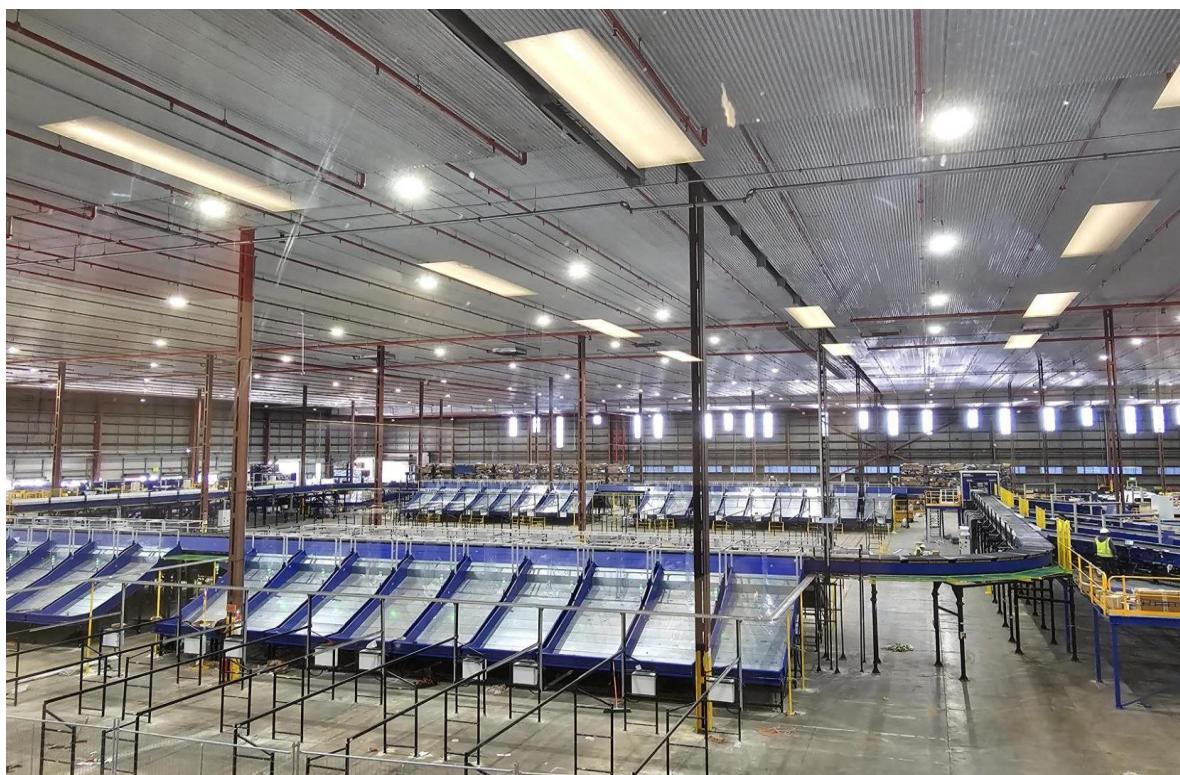
#### **Solution Specifications –**

- Throughput: 16000 PPH
- End Destinations: 369 Pcs

#### **Key Technology Modules –**

- Powered Belt Conveyors.
- 2 Induct zone.
- 5 side Automatic Barcode Scanner.
- Automatic Weight & Volume Measurement System.
- Automatic detection of oversize shipment.
- Linear Cross Belt Sorter.
- WCS Software System.

#### **Site Picture –**



### 5.7 Project 7- (CEP Client, Spain)

Solution is designed for handling a throughput of 2x10,000 shipments per hour with the help of Falcon's Linear Cross Belt Sorter. The system consists of 2 sorter systems each with 1 feeding zones with a total of 1+3 feedlines. The sorter design enables infeed from cages and pallets onto the system inclusive a van line for the van drivers to directly drop the shipments at the dock doors. It has a total of 90 end. System is integrated with weighing in the inducts and 5 side automatic barcode scanning and volume measurement on the sorter. To increase efficiency, the system has automatic detection of oversize and overweight shipments.

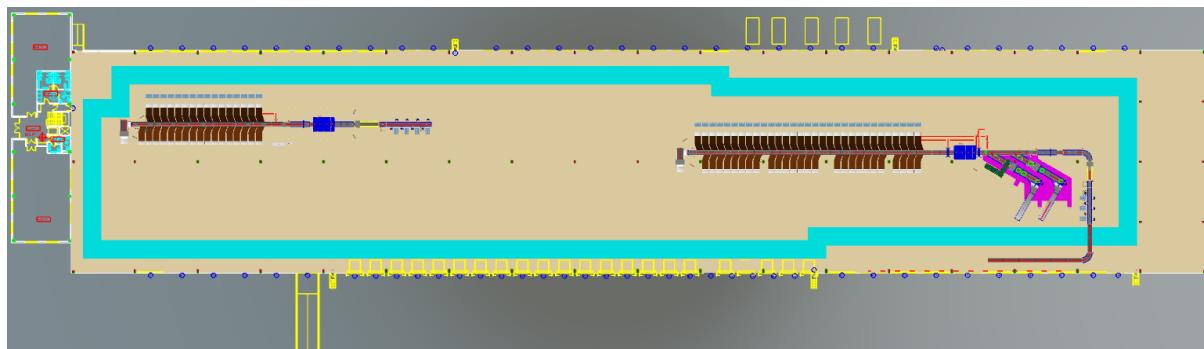
#### **Solution Specifications –**

- Throughput: 2x 10,000 PPH
- End Destinations: 33 + 57 Pcs

#### **Key Technology Modules –**

- Powered Belt Conveyors.
- 2 Induct zones.
- 5 side Automatic Barcode Scanner.
- Automatic Weight & Volume Measurement System.
- Automatic detection of oversize shipment.
- Linear Cross Belt Sorter.
- WCS Software System.

#### **Lay-out –**



## 6. Handled Shipment Spectrum

As per the shipment spectrum data provided in the RFP documents, Falcon has studied and analysed the shipment spectrum in detail.

Falcon proposes to use its “Loop Cross Belt Sorter technology” for this solution

### 6.1 Shipment size loadable on the Sorter

Falcon's Loop Cross belt sorter has a capability to handle the below mentioned shipment sizes and weight.

| Specification      | Unit | Value |
|--------------------|------|-------|
| <b>Max Length</b>  | mm   | 800   |
| <b>Max Width</b>   | mm   | 600   |
| <b>Max Height</b>  | mm   | 500   |
| <b>Max Weight</b>  | Kg   | 20    |
| <b>Min length</b>  | mm   | 100   |
| <b>Min Width</b>   | mm   | 100   |
| <b>Min Height</b>  | mm   | 10    |
| <b>Min Weight</b>  | gm   | 50    |
| <b>Avg. Length</b> | mm   | 400   |
| <b>Avg. Width</b>  | mm   | 300   |
| <b>Avg. Height</b> | mm   | 300   |
| <b>Avg. Weight</b> | kg   | 5     |

**Note:** Height measurable on Dimension System is ≥20 mm.

### 6.2 Shipments to be loaded on Sorter shall have the following characteristics:

1. Centre of Gravity of item must not move during conveyance or sorting.
2. Item must not have magnetic content, otherwise behavior of shipment cannot be guaranteed.
3. Liquid or fragile material, to avoid breaking, spillage or leakage, such as wine bottles, metal cans of paint are designated as non-conveyable items.
4. Shipments shall be perfectly and safely packaged: protrusion or open surfaces are not allowed.
5. Plastic ropes shall be perfectly adherent to the surface of the package.
6. All items with the risk of being damaged during the transport on an automatic sorting system or damaging the sorting system. They must be robust enough to avoid disintegration of container material and loose of contents in the sorting process.
7. Item packaging shall have enough grip to be handled on the belts during the acceleration and referencing phases.
8. Items shall not have slippery surfaces and must be able to withstand acceleration of the items on the belt during the start-stop phases (accelerations up to 0.5 g shall be assured without any sliding or tumbling of the items on the belt conveyor).
9. The shipments must have at least one flat and regular surface providing enough stability during conveyance.
10. All shapes are permitted except spherical, cylindrical, or alike unstable items & shapes.
11. All usual packaging materials are permitted (including paper, carton, plastics, plastic foil, rope, tape, textile, and wood)

### 6.3 Shipment not loadable on the sorter

All products that are not within the range as described here, are considered non-conveyable products, and must be taken out of the main sorter flow by the operators.

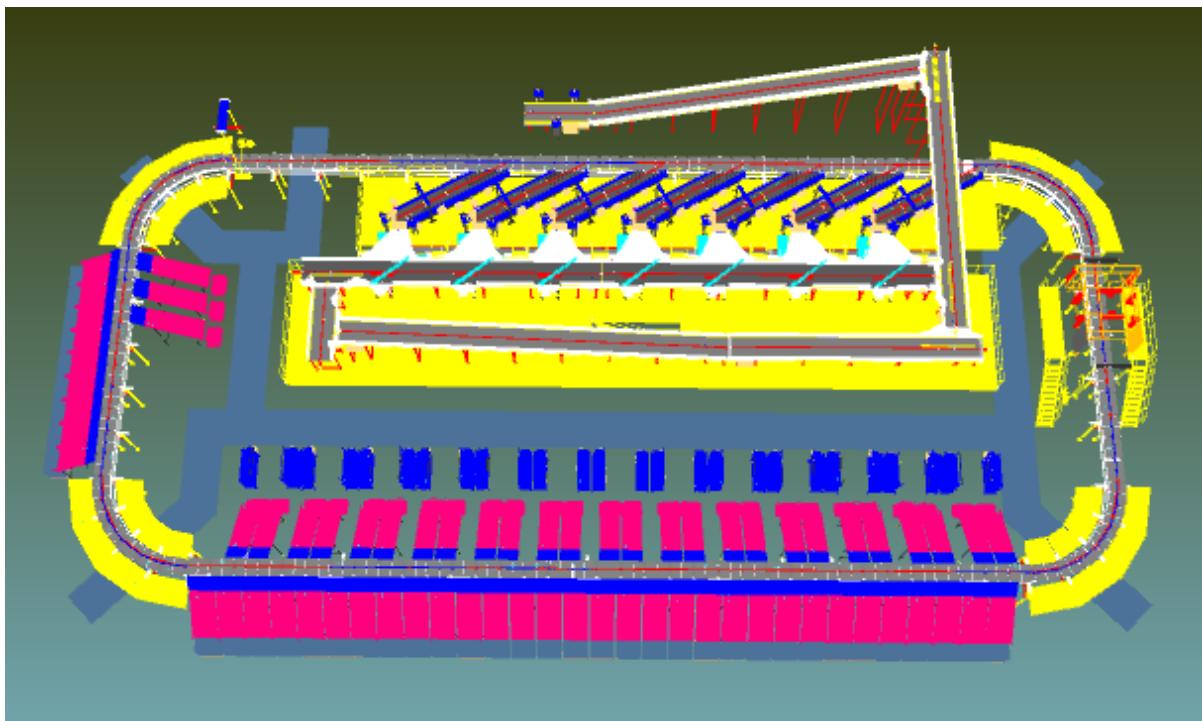
1. Unstable items with a risk to roll or tumble on the sorting system, such as spherical or cylindrical items.
2. Items that have a spherical or cylindrical shape.
3. Items that are packed in material that can damage the conveyors or the sorter.
4. Items that have sharp points (e.g., Nails) or sharp edges, that can damage the conveyors or the sorter.
5. Fragile shipments with contents not sufficiently secured.
6. Items that have been classified as dangerous are designated.
7. Wet items are designated.
8. Items with anti-slip treatment.
9. Items with protruding parts.
10. Items with sharp edges.
11. Inadequately packed items that could be damaged during automatic transportation.
12. Electrostatically loaded items.
13. Loose parts on loads and load carriers, such as adhesive tape, stickers, slips of paper, straps, wrap foil etc. are designated as non-conveyable items.

## 7. Proposed System Description

### 7.1 Objective

The purpose of this proposal is to present the design, manufacturing, installation, commissioning, testing, and acceptance testing of the Loop CBS for sorting shipment & boxes as per VINTED Requirement

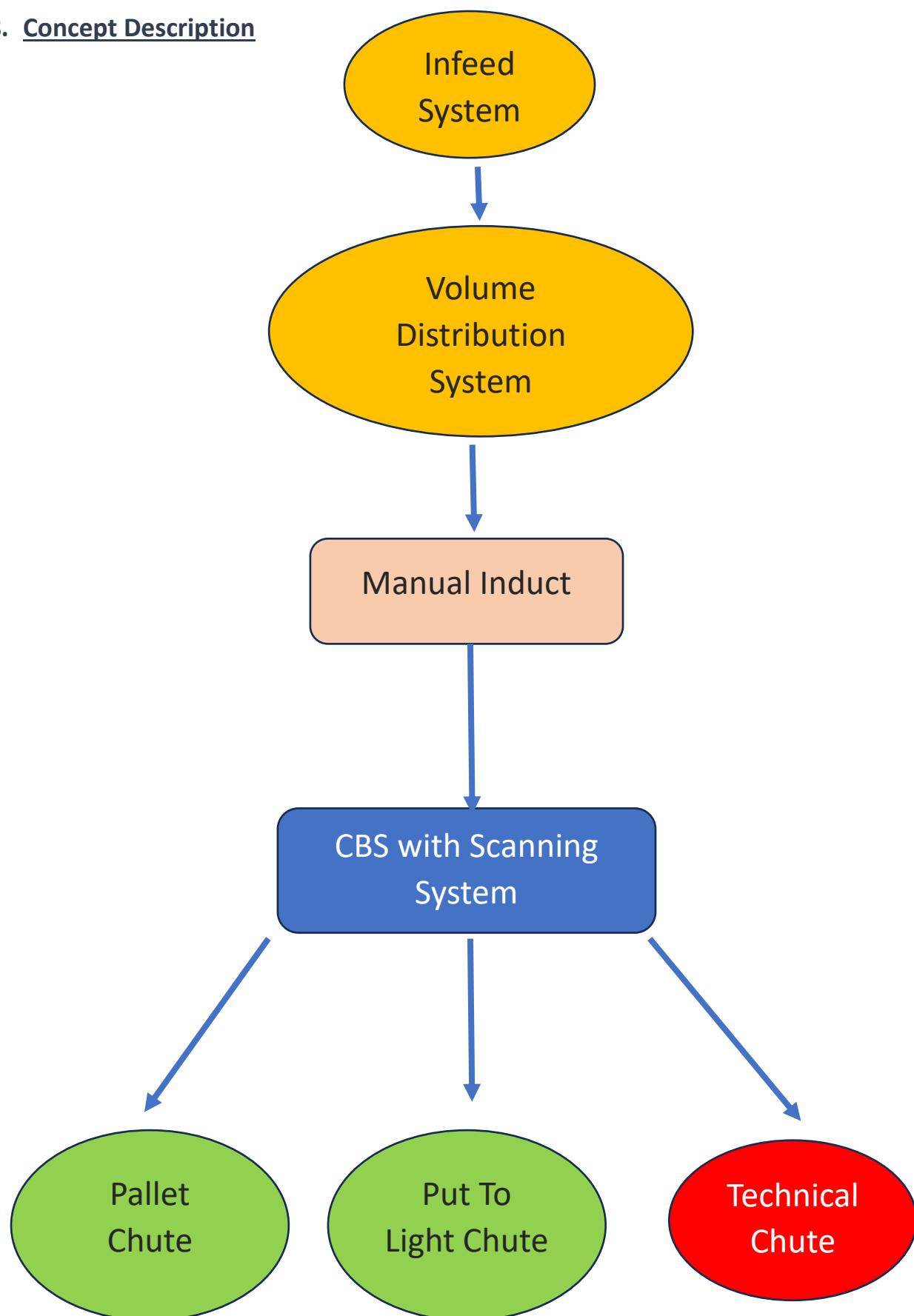
### 7.2 Summary of the System



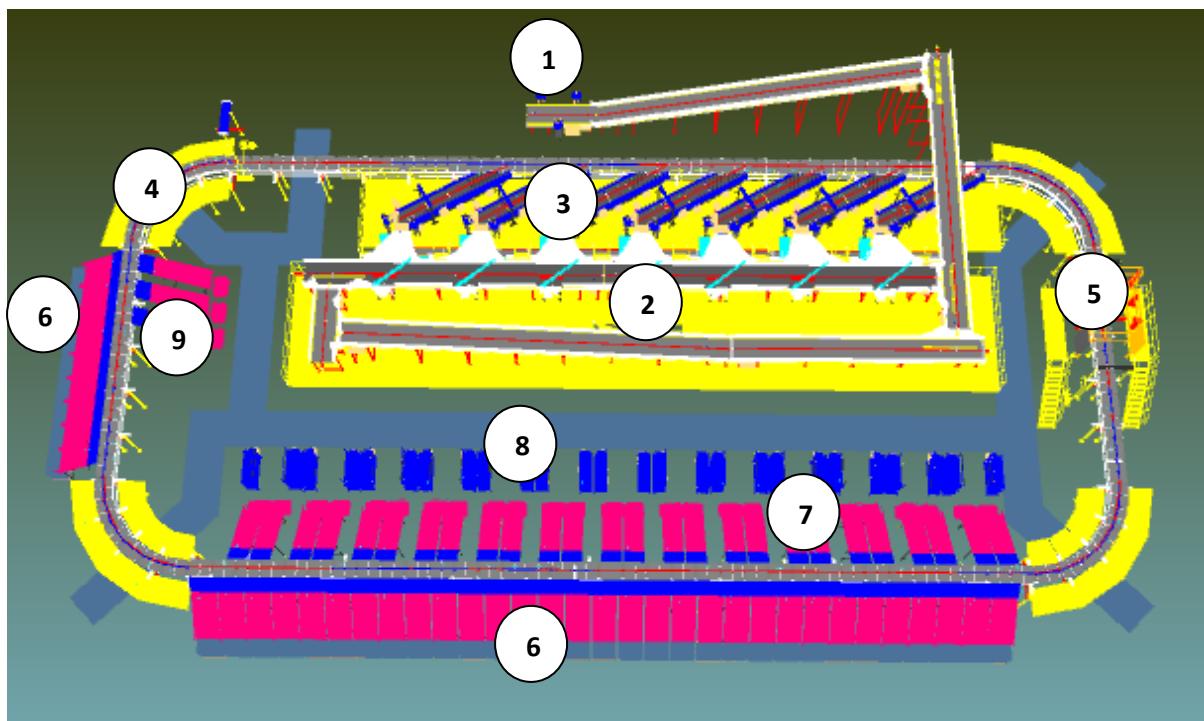
#### Process flow:

1. **Infeed System:** - Shipments are placed in bulk manner on the infeed conveyor lines. These shipments are then transported upward via an inclined conveyor to VDS Conveyor .
2. **Volume Distribution System:** Shipments from the VDS Conveyor will be evenly distributed to the VDS chute located near the induct line, using a VDS Arm that operates on electrical arm actuation technology
3. **Manual Induct:** The operator will collect the parcel from the VDS chute and place it on the loading conveyor of the manual induct, ensuring that the barcode is not facing the bottom side
4. **Loop CBS:** - Once shipments enter the Loop CBS, the Cross-Belt Sorter efficiently sorts them into the appropriate output chutes using VINTED's sorting logic.
5. **Scanning & Dimensioning System.** In the proposed solution 5 Side scanning and Dimensioning system are planned on the Cross Belt Sorter system.
6. **Chutes:** - The shipments are discharged into below type of chutes:
  - a. Pallet Chute: For Sorting the shipment in to pallets to other hubs
  - b. Put to Light Chute: For sorting the shipment in to the bin from where the operator will do secondary sorting in the bags for last mile delivery
  - c. Rejection/Technical Chute

## 8. Concept Description



## 9. Layout Overview



### Legend

- 1. Infeed System
- 2. Volume Distribution System (VDS)
- 3. Manual Induct
- 4. Cross Belt Sorter
- 5. Scanning & Dimensioning System
- 6. Pallet Chute
- 7. PTL Chute
- 8. PTL Racks
- 9. Technical/Rejection Chute

## 10. Proposed System Capacity Calculations

The following table shows the throughput calculation for the sortation system designed based on VINTED RFP requirements.

| Specifications   | Value        | Unit       |
|--|--------------|------------|
| Max Product Size (LxWxH)                               | 800*600*500  | mm         |
| Min Product Size (LxWxH)                               | 100*100*10   | mm         |
| Max Product Weight                                     | 20           | Kg         |
| Min Product Weight                                     | 100          | gm         |
| Sorter Speed   | 2.4          | m/s        |
| Sorter Carrier Pitch                                   | 1.175        | m          |
| Carriers/Hour/Deck                                     | 7353         | CPH        |
| Belts/Hour/Deck  | 14706        | BPH        |
| <b>Sorter Designed Capacity (A)</b>                    | <b>14706</b> | <b>PPH</b> |
| Induct Designed TPH for Average Parcel                 | 2000         | PPH        |
| No of Induct per Deck                                  | 7            | Nos        |
| <b>Total Induction Capacity Designed (B)</b>           | <b>14000</b> | <b>PPH</b> |
| <b>Designed TPH of the system (Lower of A &amp; B)</b> | <b>14000</b> | <b>PPH</b> |
| Deration Factor* of the System                         | 10%          | %          |
| <b>Operational Capacity</b>                            | <b>12600</b> | <b>PPH</b> |

**Note :**

- *Above calculation is on average parcel size i.e. 400\*300\*300 mm and deration factor is totally dependent on the operators productivity, chute full warning , recirculation, continuous feeding etc.*
- *Falcon will demonstrate the above TPH as per its Standard SOP.*

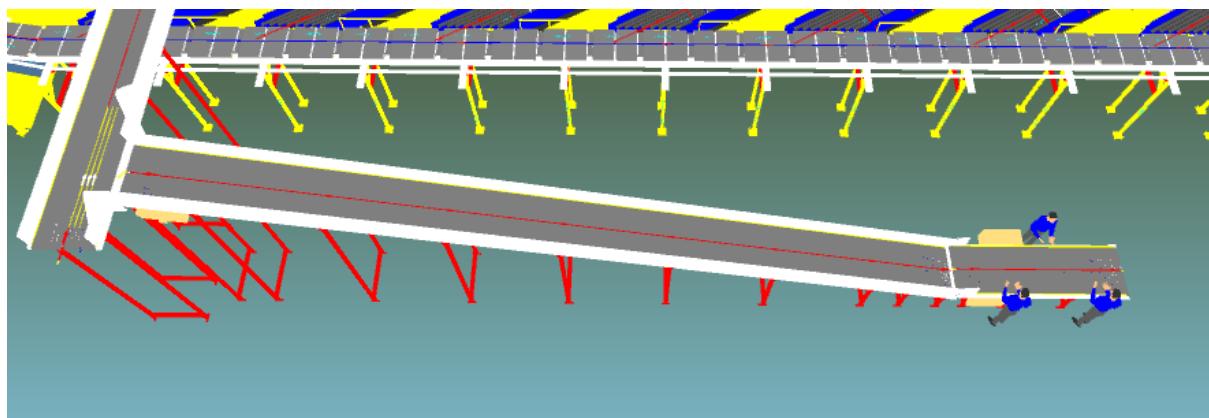
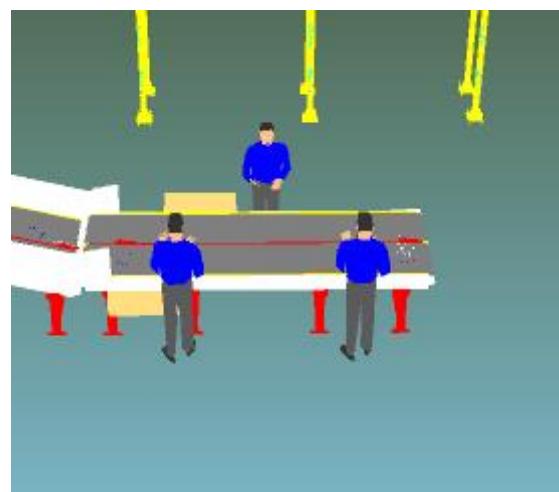
## 11. System description

### 11.1 Infeed System

#### 11.1.1 Manual Infeed System

The proposed solution includes 1 manual infeed points. Operators will place parcels on the infeed conveyors in a bulk manner, with a capacity of minimum 15,000 parcels per hour.

All infeed points are designed to allow shipment feeding from both sides of the conveyor, while also ensuring unobstructed pallet movement to maintain a continuous supply near the operator.



**Manual Infeed Point**

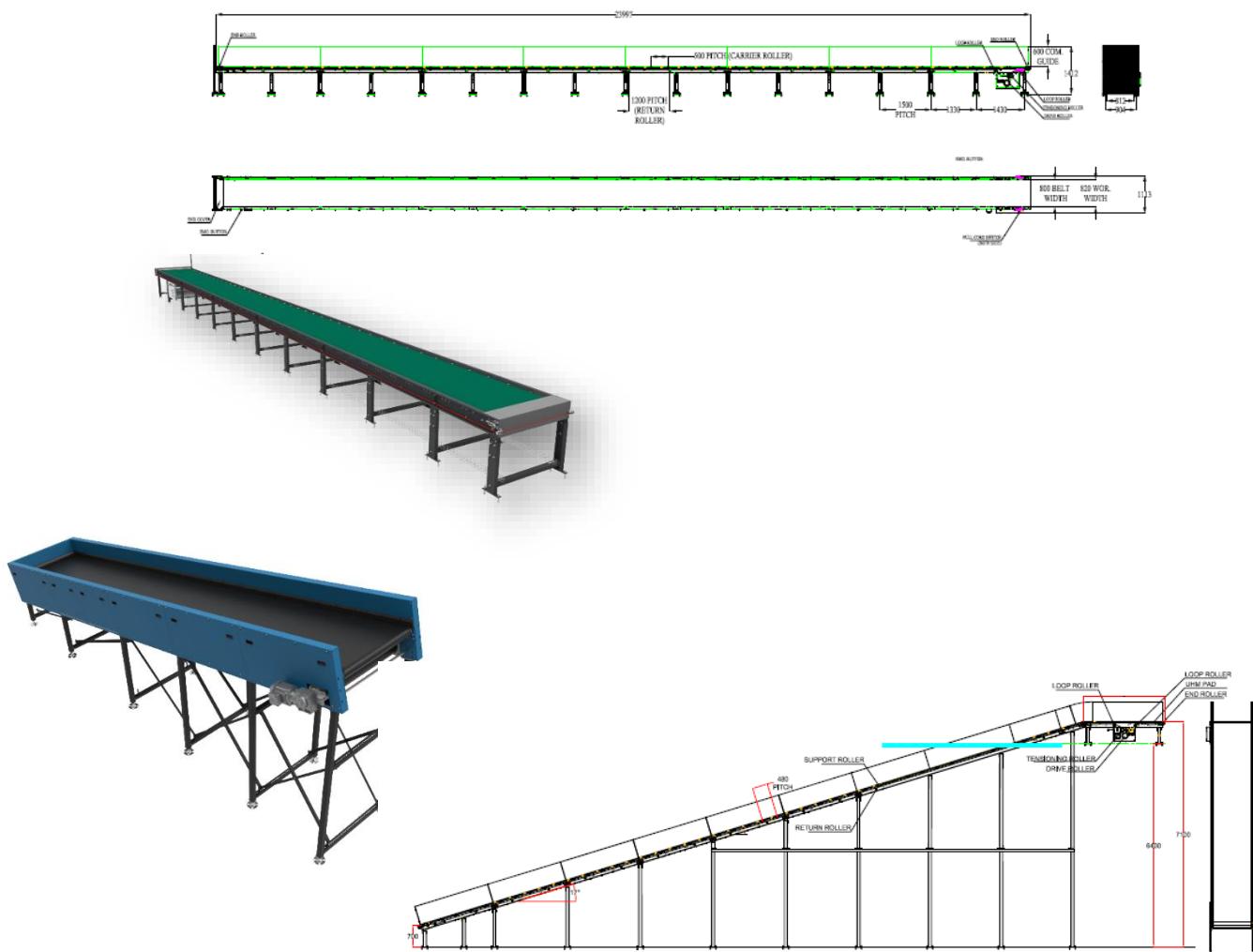
### 11.1.1.1 Straight & Inclined PVC Conveyor

Falcon's Belt Conveyors are modular & robust in design, used for smooth conveying of products over Straight, inclined and declined paths. MS profile is used to build conveyor frame.

The conveyors are supplied with the necessary supports and bolts to fix them to the supporting plane, as well as with the junction elements allowing easy and jam-free passage from one conveyor to the other.

Some Silent Features of Falcon's Belt conveyor:

- Low Noise
- Maximum uptime.
- Minimal maintenance
- High safety standards.
- Fastest ROI.



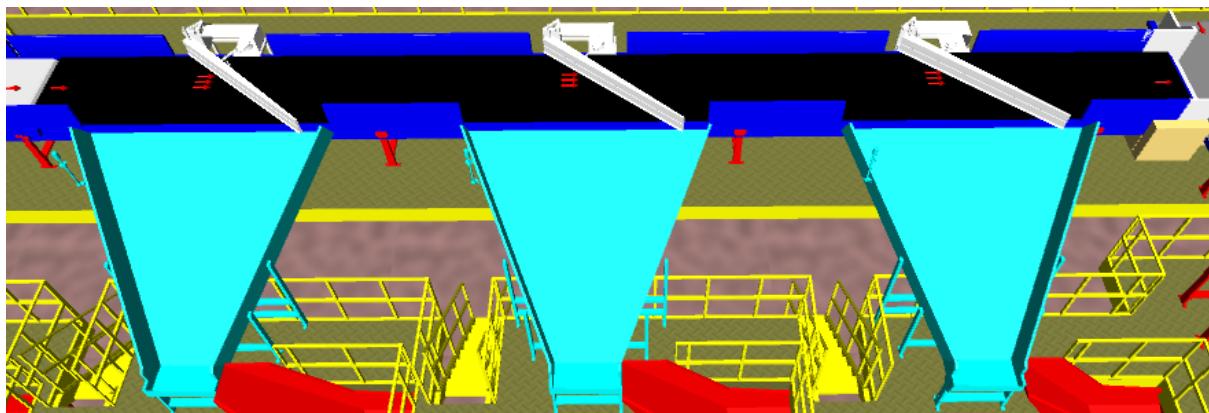
| Specification                                    | UOM         | Remark   |
|--|-------------|--|
| Manufacturer Name                                | Name        | Falcon Autotech  |
| Material of Roller                               | Type        | MS Rollers with Zinc Plating   |
| MOC of Belt                                      | Type        | PVC  |
| Belt Thickness                                   | mm          | 3  |
| Belt Finish                                      | Type        | Matt Finish  |
| Belt width                                       | mm          | 1200   |
| Belt Joint Type                                  | Type        | Vulcanized, Endless Belts  |
| Belt Make/Model No.                              | Make        | FORBO/DERCO  |
| Chassis  | mm          | MS, 3mm Thick, Powder Coated-75 Microns  |
| Idler Roller Pitch on running side (Top)         | mm          | 480  |
| Idler Roller Specs                               | Spec        | Dia.50.8, shaft-12 mm, bearing-6301  |
| End Rollers                                      | Spec        | Dia 81.2 x 2.85 Thick, 30mm Shaft Dia, & Bearing Size-UCFH206D1, MOC-EN9, Zinc Plated -25 microns                    |
| Drive Rollers                                    | Spec        | OUTER Dia 178 PIPE Dia 168x5 Thick, 40mm Shaft Dia, & Bearing Size-UCF208D1, MOC(SHAFT)-EN9, NEOPRENE RUBBER COATING |
| Motor Shaft                                      | MOC         | EN9 Shaft material   |
| Conveyor Under guarding                          | Spec        | MOC-MS, 0.8 to 1mm thickness, Steel Stiffeners at every 600mm to avoid the sagging due to self-weight                |
| <b>Load capacity per unit length of Conveyor</b> | <b>kg/m</b> | <b>40</b>  |
| Type of Guides                                   | Type        | Steel guides at 50mm/400mm height basis the position of conveyor on both sides from Conveyor Belt Surface.           |
| Drive Power Rating                               | kW          | Motor Rating depends on Length of the Conveyor   |
| Type of Motor                                    | Type        | AC Geared Motor  |
| Ingress Protection                               | Type        | IP 55  |
| Type of Drive System                             | Type        | Direct Shaft Mounted Motor/ Flange Mounted   |
| Type of Drive                                    | Type        | Chain drive/Torque Arm type  |
| Gear Motor                                       | make        | SEW/Nord/Lenze   |
| Drive  | make        | Lenze/Siemens/Omron/Allen Bradley/Simillar   |
| Insulation Class                                 | Type        | Yes  |
| Conveyor Speed                                   | m/s         | Variable speed to meet TPH requirements  |
| Type of Mounts                                   | Type        | Fixed Heights Legs with Grouting Provisions  |

## 11.2 Volume Distribution System (VDS)

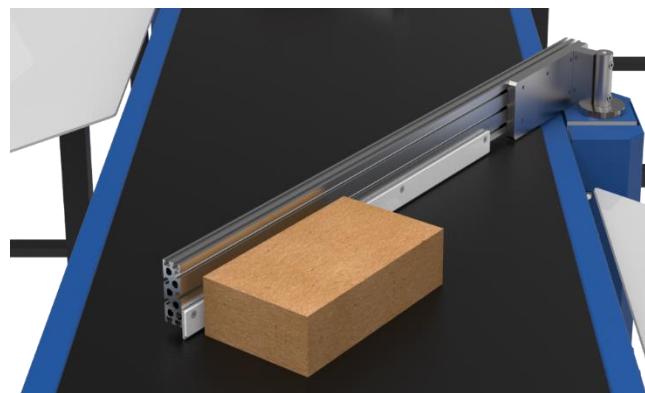
In the proposed system, VDS is planned to distribute the bulk load into the VDS Chute. Below technologies are planned for distributing the bulk load to the induct stations:

- Bulk Distribution by Electric Arm

### 11.2.1 Bulk Distribution by Electric Arm



In the proposed solution, the VDS is equipped with an Electric Arm on the modular belt to a total of 7 Inducts. Linear Side Arm Diverter System of Falcon Autotech is an extremely cost-effective Sortation system designed for low to medium Volume Centres. Linear side arm diverter's simple and modular design gives it advantage of low cost, space saving, and modularity of increasing sorting points in future. This is one of the earliest diverter systems of Falcon Autotech.



| Specification    | 3.0 ARM XL               |
|------------------|--------------------------|
| Property         | Value                    |
| Actuation method | Electric induction motor |
| Belt type        | Flat top modular         |
| Arm length (mm)  | 2400                     |

### 11.2.2 VDS Chute

A VDS chute is a type of chute used for the smooth descent of materials or objects from an elevated position to a lower level (at an operator level). It utilizes base metal to guide and support the flow of items along the chute & collect the shipments within its area.

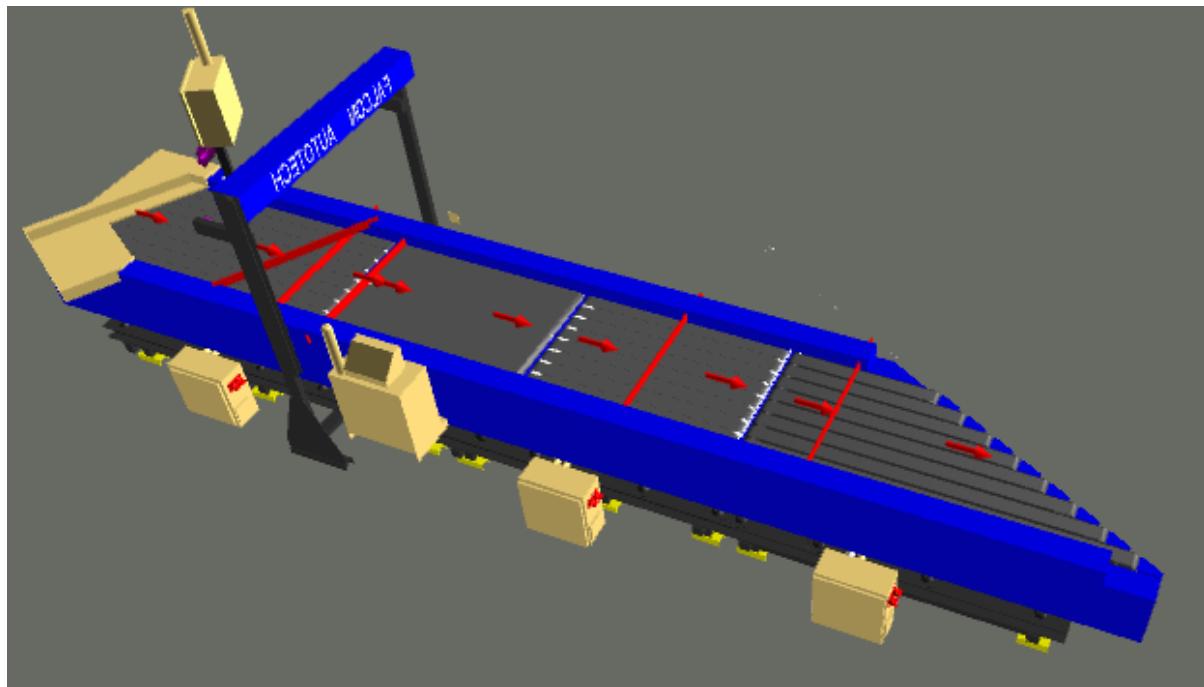
Each VDS Chute is equipped with below accessories:

- Tower light: 1 No
- Chute Full Sensors: 2 Nos



### 11.3 Manual Induct

In the proposed solution, 7 Set of manuals induct are planned. Each induct is designed to handle an Individual Parcel Processing (IPP) rate of 2,000 parcels per hour. Sensors are placed on the Induct Lines to determine the exact position and dimensions (Length and Width) of the Shipment on the conveyor and prepare the Cross-Belt Cell for receiving the shipment with high precision.

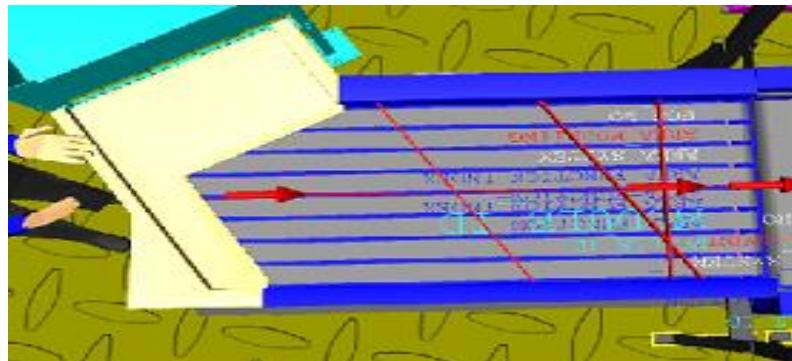


1. Each Manual induct consists of below modules:

- Loading Conveyor – 1 Pc
  - Weighing Conveyor – 1 Pc
  - Buffer Conveyor – 1 Pc
  - Angle Merge Conveyor –1 Pc
2. Sensors are placed on the Induct Lines to determine the exact position and dimensions (Length and Width) of the Parcel on the conveyor and prepare the Cross-Belt Cell for receiving the parcel with high precision.
  3. Over the induct, parcels are evenly spaced and smoothly transferred to the main Loop.

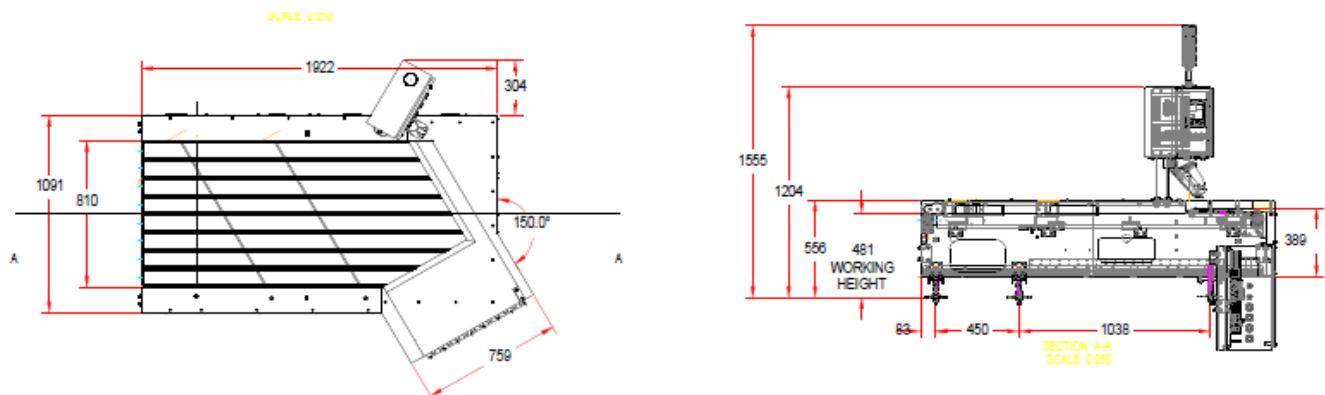
### 11.3.1 Loading Conveyor

Operator will pick the parcels from the VDS Chute and put them on Loading Conveyor aligning the parcels with the wooden guide.



### 11.3.2 Weighing Conveyor

A weighing conveyor, also known as a weigh belt conveyor, is a type of conveyor system specifically

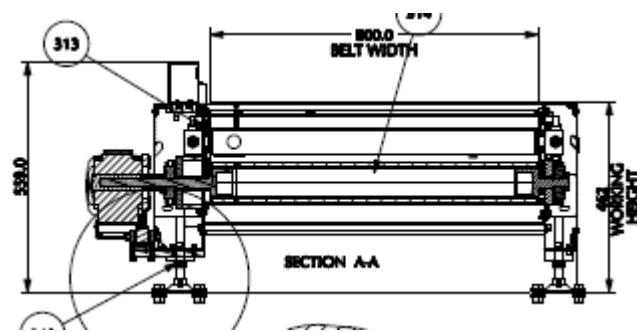


designed to measure the weight of materials as

they move along the conveyor belt. It combines the functions of conveying and weighing into a single integrated process.

Weighing Conveyors equipped with high precision Load Cells to capture the weight of Parcels. The weighing is Legal for Trade

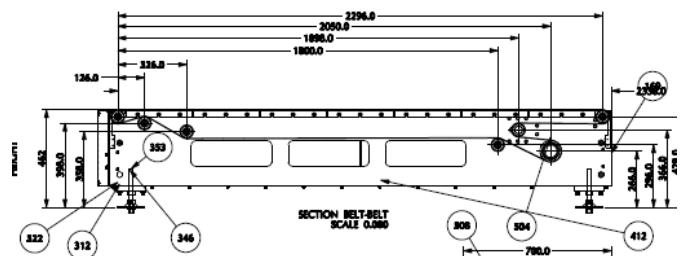
**Make - Bizerba/ Mettler Toledo /Equivalent**



#### 11.3.3 Buffer Conveyors

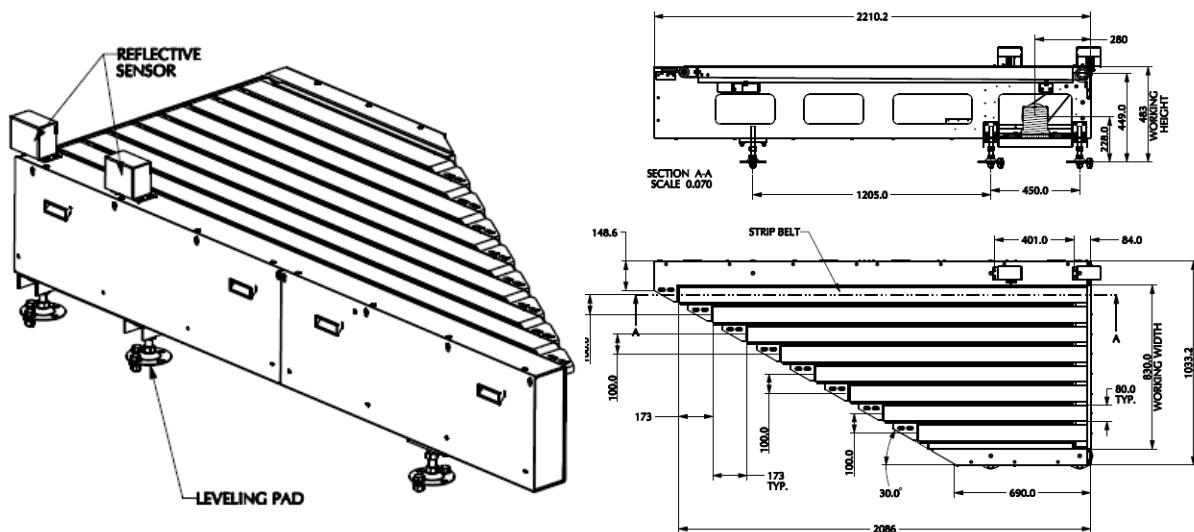
A buffer conveyor, also known as a buffering conveyor or accumulation conveyor, is a type of conveyor system used to temporarily store or hold items in a controlled manner. Its primary purpose is to manage the flow of items between different stages of a production or handling process when there is a mismatch in the speeds or capacities of the upstream and downstream equipment.

This Conveyors required to maintain the Throughput of Line.



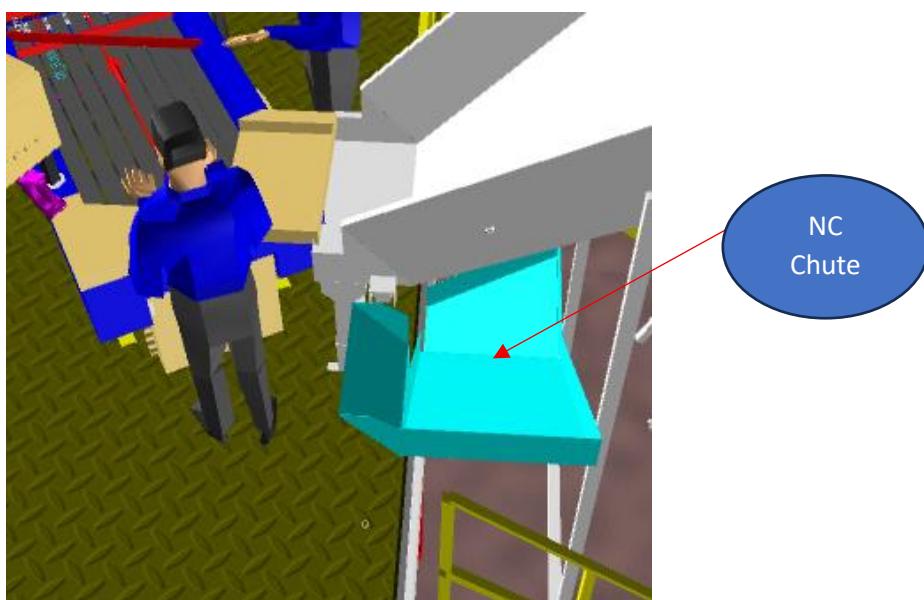
#### 11.3.4 Angle Merge Conveyor

This is 30° triangular Dual Belt high-speed conveyor used for inducting parcel/boxes directly on to the sorter. The Belts are Strip Belts for smooth parcel movement.

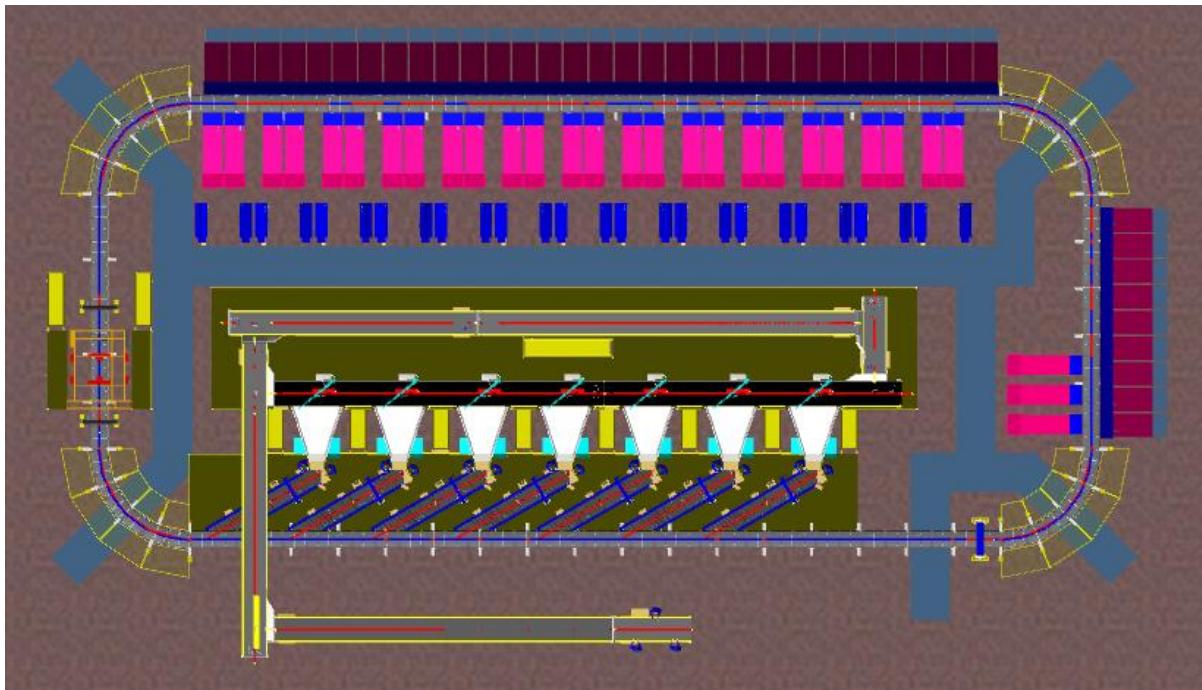


#### 11.4 Non-Conveyable Chute

Each induct is equipped with a Non-Conveyable (NC) chute. In case a non-conveyable shipment—such as an oversized, overweight, or irregular item—is detected on the feed line, the operator must drop it into the NC chute



### 11.5 Loop Cross Belt Sorter



1. The proposed Loop CBS Sorter will be installed on Ground level. The Lower Deck Sorter runs at 3300 mm from Ground level.
2. We have provided solutions with Loop CBS Dual Belt Carriers with 1175 mm pitch and Belt Size of 495 x 800mm.
3. As Shipments pass through the Barcode Scanning Tunnel on the loop sorter, their barcodes are scanned, and chutes are assigned. Once the shipment reaches the respective chute, the carrier carrying the shipment for the chute will actuate and drop the shipment in the assigned chute.

### 11.6 5 Side-Automatic Barcode Scanning & Dimensioning System

Five-Sided Barcode Scanner present on Cross Belt Sorter to scan 1D codes and 2D codes. The Scanner is also capable of Archiving Shipment Images in Real time onto a Vinted server.



| Specification     | UOM    | Remark                    |
|-------------------|--------|---------------------------|
| Manufacturer Name | Name   | SICK/Cognex               |
| Barcode Type      | Type   | 1D&2D                     |
| Module Size       | Mils   | >=10 for 1D & >=25 for 2D |
| Number of Codes   | Pcs    | 1                         |
| Location          | Side   | 5 Sides excluding Bottom  |
| Orientation       | Type   | Omnidirectional           |
| Color of bars     | Color  | Black                     |
| Under Foil        | yes/no | No                        |
| Read Rate         |        | As per OEM Recommendation |

| Description                          | Units     |
|--------------------------------------|-----------|
| Min parcel Height Measurable         | 20 mm     |
| Dimensional accuracy on standard box | +/- 10 mm |

## 11.7 Pallet Chute

In the proposed solution, the 40 Pcs of direct to pallet chutes are considered for collecting all the shipments need to go other hubs. Pallets will be in client scope.



Each chute is equipped with below component:

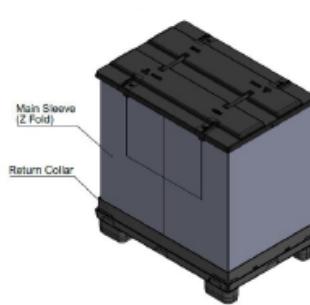
**Pallet Full Sensor: 1 Pc**

**Three Colours Beacon Light: 1 Pc**

### Pallets

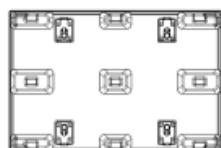
#### Dimensions:

- Length: 1.197 mm
- Width: 797 mm
- Height: 1.184,5 mm



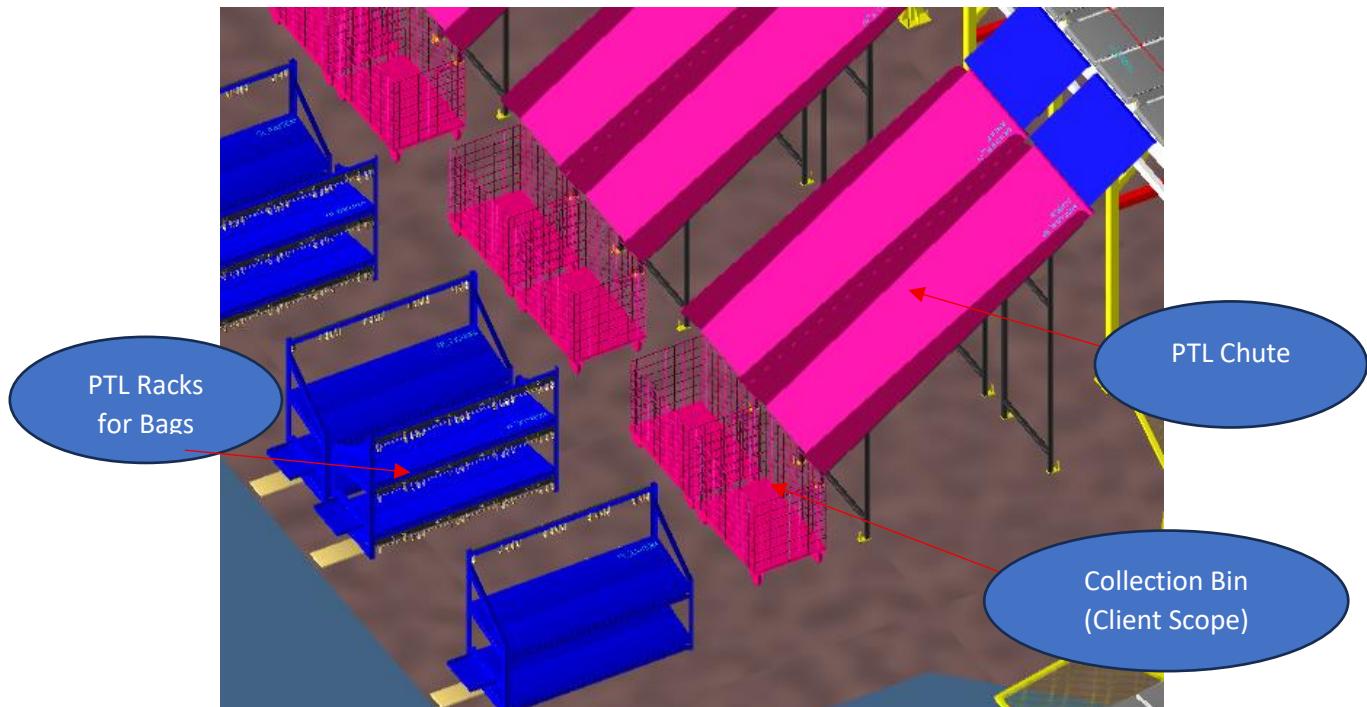
#### Weight:

- Full: 100 kg.



### 11.8 Put to Light Chute

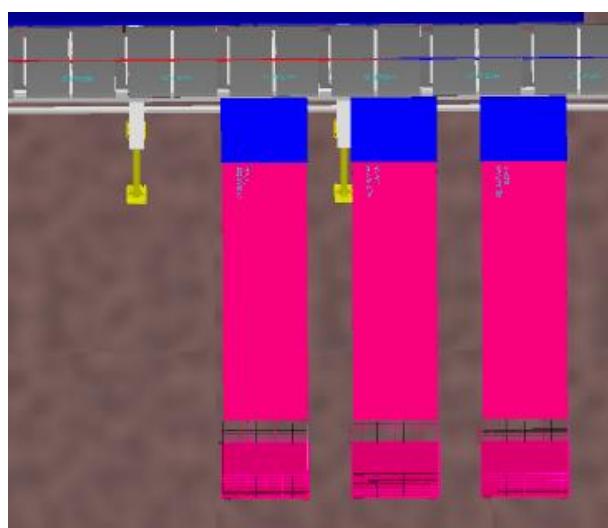
In the proposed solution, 26 PTL (Put-to-Light) chutes are planned to handle parcels that will be collected in bags for last-mile delivery. Shipments will be initially sorted into bins, after which operators will perform secondary sorting into last-mile delivery bags using the PTL system.



Each chute is equipped with 1 Pc Bin full sensor and 1 Pc Beacon Light.

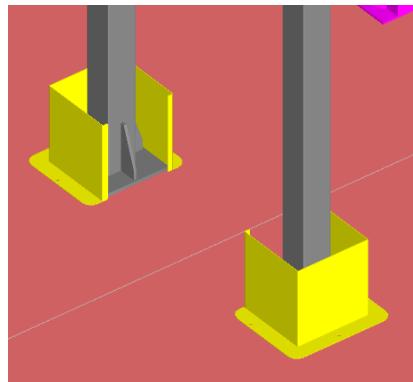
### 11.9 Technical/Rejection Chute

In the proposed solution, 3 Pcs technical/rejection chute are planned to handle rejected shipments



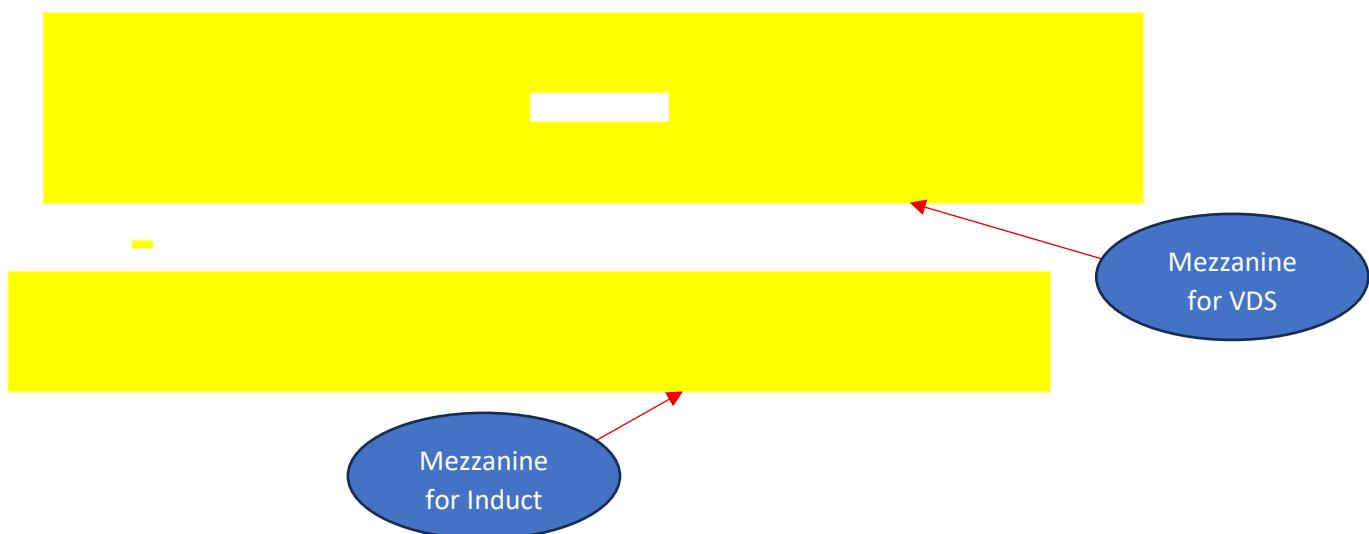
### 11.10 Protection on Ground (Leg Guard & Crash Barrier)

Leg guards are protective components designed to shield the legs from the external material or component. Material for leg guards is considered as MS. We have considered Falcon standard leg guards for all legs 44 Nos coming near to pathway only.



**Note:** Any additional Leg guard requirement i.e. change in design, increase in qty should be catered through Change Management process.

### 11.11 Mezzanine Platform

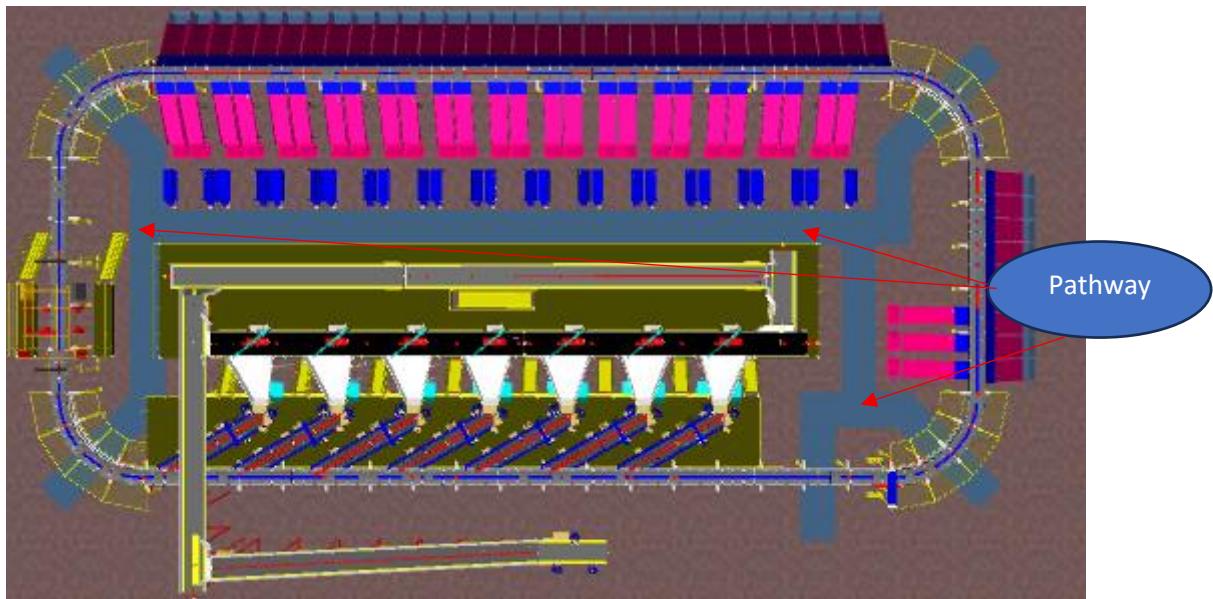


- Total Mezzanine Area: 350 Sq. Metres
- Type of Mezzanine: Grating Type
- No of Stairs: 14 Nos



### 11.12 Allocated Pathways for Operator & Vehicle Movement

The allocated pathways are indicated in the 3D drawing provided. Underneath a top view of the pathways.



### 11.13 System Colour

Falcon will supply the system with the below colour code

| S. No. | Product  | Colour details                          | RAL Shade |
|--------|--|---|-----------|
| 1      | Cable tray                                       | Metallic Silver Grey<br>Falcon          | 9006      |
| 2      | Safety part                                      | Falcon Lemon Yellow<br>Glossy Structure | 1021      |
| 3      | Leg structure                                    | Falcon Black Matt                       | 9005      |
| 4      | Conveyor / Feedline / Sorter chassis /<br>Chutes | Falcon Blue Structure                   | 5002      |

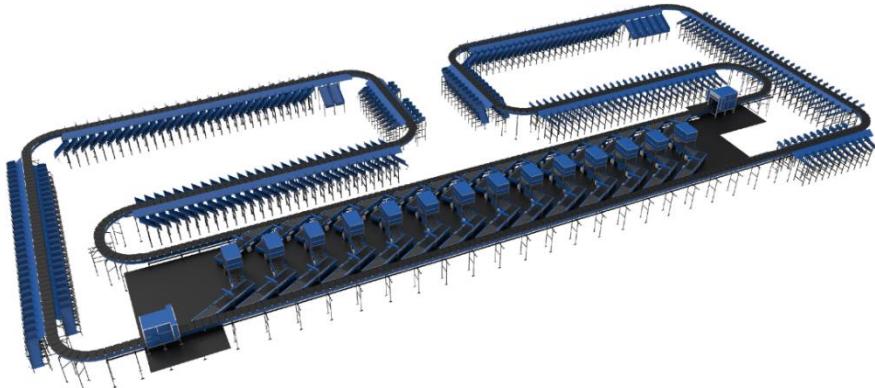
**Note: Any change in colour code should be discussed at the time of ordering.**

## **12. Description of Components of Equipment**

### **12.1 Cross Belt Sorter - CBS**

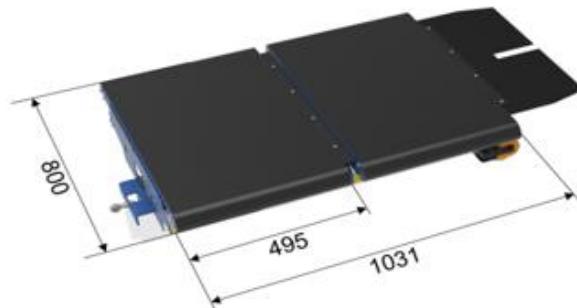
Cross Belt Sorter is capable of sorting extremely high volume of versatile products in a gentle manner.

Falcon's Cross belt sorter is powered by high efficiency linear motors and is based on 100% non-touch actuation technology leading throughput capabilities with extremely low noise levels. Falcon's Cross belt sorter is modular in design. It can be easily extendable as per future requirements



### **12.2 CBS Carrier**

Falcon's CBS offers one of the highest Belt widths to Carrier Pitch Ratio in the market today. This additional belt width makes the system capable of handling larger product sizes without compromising on throughput. This also means reduced "dead area" between Carrier belts which drastically reduces the amount of "inbetweeners" and non-sortable shipment recirculation.



### **12.3 Servo Roller**

High Powered DC Drive Servo Roller are used to actuate the carrier belts, thereby eliminating the need for complicated drive transfer mechanism, and simplifying the system installation and maintenance.



#### **12.4 Chassis**

Falcon Autotech's Cross Belt Carrier Chassis is made up of lightweight Aluminum which makes them light yet sturdy. This reduced weight leads to substantial "Power Savings" over a considerable period of usage.



#### **12.5 Non-contact based linear motor drive**

No Contact based Linear Induction Motors that can be configured at variable speeds depending upon the operational requirements giving you the maximum flexibility when needed.



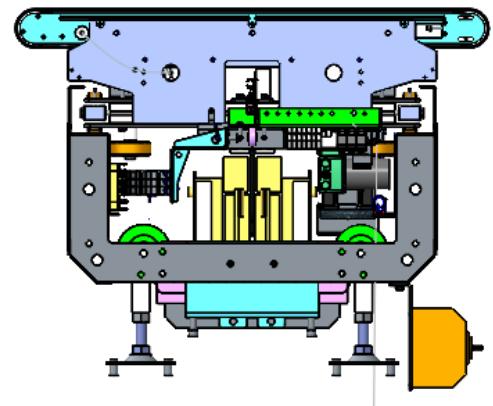
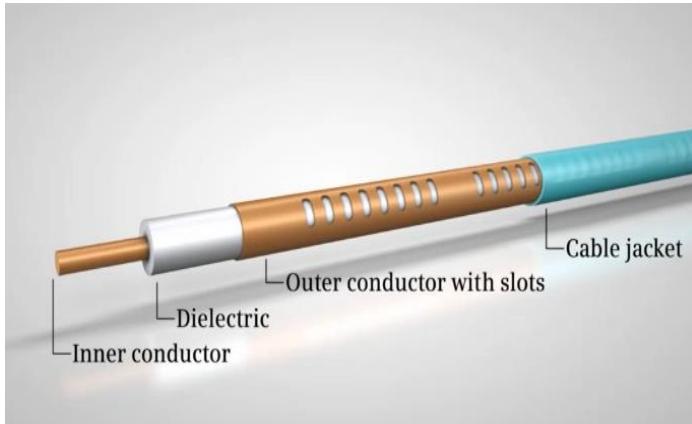
#### **12.6 Power Transmission**

Power transmission to Carriers over sliding contacts that require low maintenance and offer high levels of reliability.



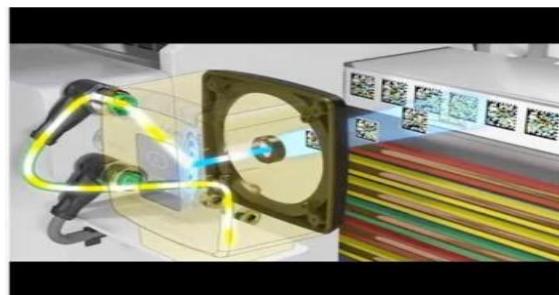
## 12.7 Data Transmission

The R-Coax cable is used for data distribution in the sorter. This is a leaky wave cable, that runs throughout the sorter length transmitting the data. There is one antenna present in the super master carriage, which keeps on receiving the signal from this cable while on the move, wirelessly.



## 12.8 Carriers positioning System.

Positioning system determines the exact location of each carrier in the Linear at any given point in time. There is a plastic tape strip of barcodes (QR Codes) that is running along the sorter Linear, which is continuously scanned by scanners placed on a Carrier (Master Carrier)



### 13. Technical specifications of CBS

| Items  | Make / Number / Execution |
|--|---------------------------|
| <b>Sorter Carrier Type</b>                   | Loop CBS                  |
| <b>Sorter Speed in m/s</b>                   | 2.4 m/s                   |
| <b>Sorter Length</b>                         | ~136 m                    |
| <b>Sorter Actuation Technology</b>           | Electric                  |
| <b>Height of Sorter</b>                      | ~3300 mm                  |
| <b>Carrier Design</b>                        |                           |
| <b>Carrier Motor Make</b>                    | Falcon                    |
| <b>Carrier Pitch - mm</b>                    | 1175                      |
| <b>No. of Carriers for Lower Deck Sorter</b> | 117 Pcs.                  |
| <b>Drives</b>                                |                           |
| <b>Motor/Drive type</b>                      | LIM                       |
| <b>Power and Data Transmission</b>           |                           |
| <b>Power Transmission</b>                    | Over Continuous Bus Bar   |
| <b>Area Requirement (L x B)</b>              | Refer Layout              |

## 14. Proposed System BOM Details

### 14.1 Mechanical equipment

| Pos. | Qty. | Description  | Value   |
|------|------|--|---|
| 1    | 1    | <b>Conveyor &amp; VDS Package</b> <ul style="list-style-type: none"> <li>• Powered Belt Conveyors</li> <li>• Modular Conveyor</li> <li>• VDS Arm</li> </ul>  | ~101 metres (8 Modules)<br>~32 metres (2 Modules)<br>7 Pcs      |
| 2    | 7    | <b>Manual Induct Feedlines</b><br>Consists of <ul style="list-style-type: none"> <li>• Loading Conveyor</li> <li>• Weighing Conveyor</li> <li>• Buffer Conveyor</li> <li>• Angle Merge</li> </ul>  | 1 Set<br>1 Set<br>1 Set<br>1 Set                                |
| 3    | 1    | <b>1 Loop Cross Belt Sorter</b> <ul style="list-style-type: none"> <li>• Sorter Height</li> <li>• Sorter Length</li> <li>• 5 Side Scanning System</li> <li>• Dimensioning System</li> </ul>  | 3300mm<br>~137 m<br>1 Pc<br>1 Pc                                |
| 4    | 1    | <b>Chute Package</b> <ul style="list-style-type: none"> <li>• Pallet Chute</li> <li>• PTL Chute</li> <li>• Technical Chute</li> <li>• VDS Chute</li> <li>• NC Chute</li> <li>• Bin Full Sensor</li> <li>• Tower lamp/Beacon Light</li> </ul> | 40 Pcs<br>26 Pcs<br>3 Pcs<br>7 Pcs<br>7 Pcs<br>83 Pcs<br>76 Pcs |
| 5    | 1    | <b>PTL Package</b> <ul style="list-style-type: none"> <li>• PTL Light</li> <li>• PTL Racks</li> <li>• Hand Scanner</li> </ul>  | 312 Pcs<br>312 Pcs<br>26 Pcs                                    |
| 6    | 1    | <b>Mezzanine Package</b> <ul style="list-style-type: none"> <li>• Mezzanine Platform</li> <li>• Stairs for Operator</li> </ul>   | 350 sq. meters<br>11 Set  |

### 14.2 Electrical Equipment

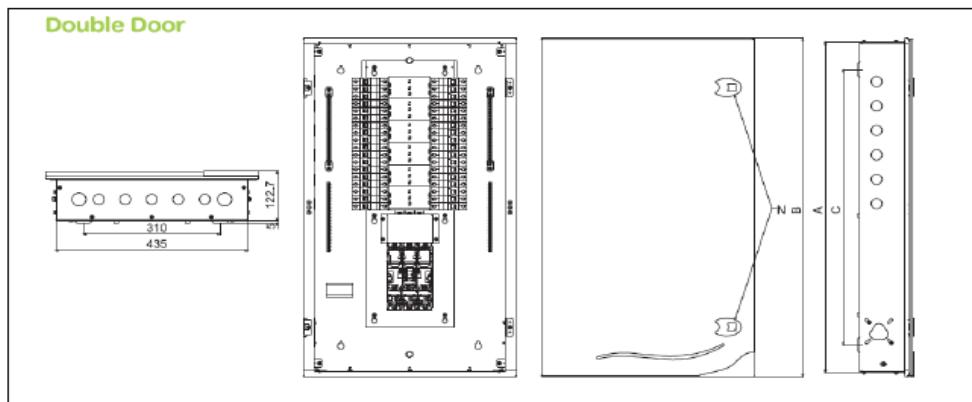
| Electricals |   |  |
|-------------|---|--|
| 1           | 1 | <b>Consists of</b> <p>Main Power Distribution panel<br/> Main Control Panel<br/> Feedline Control Panels<br/> Sorter Drive Panels<br/> Network Switches<br/> Field Cabling</p> <p>Included</p> |

## 15. Electrical System

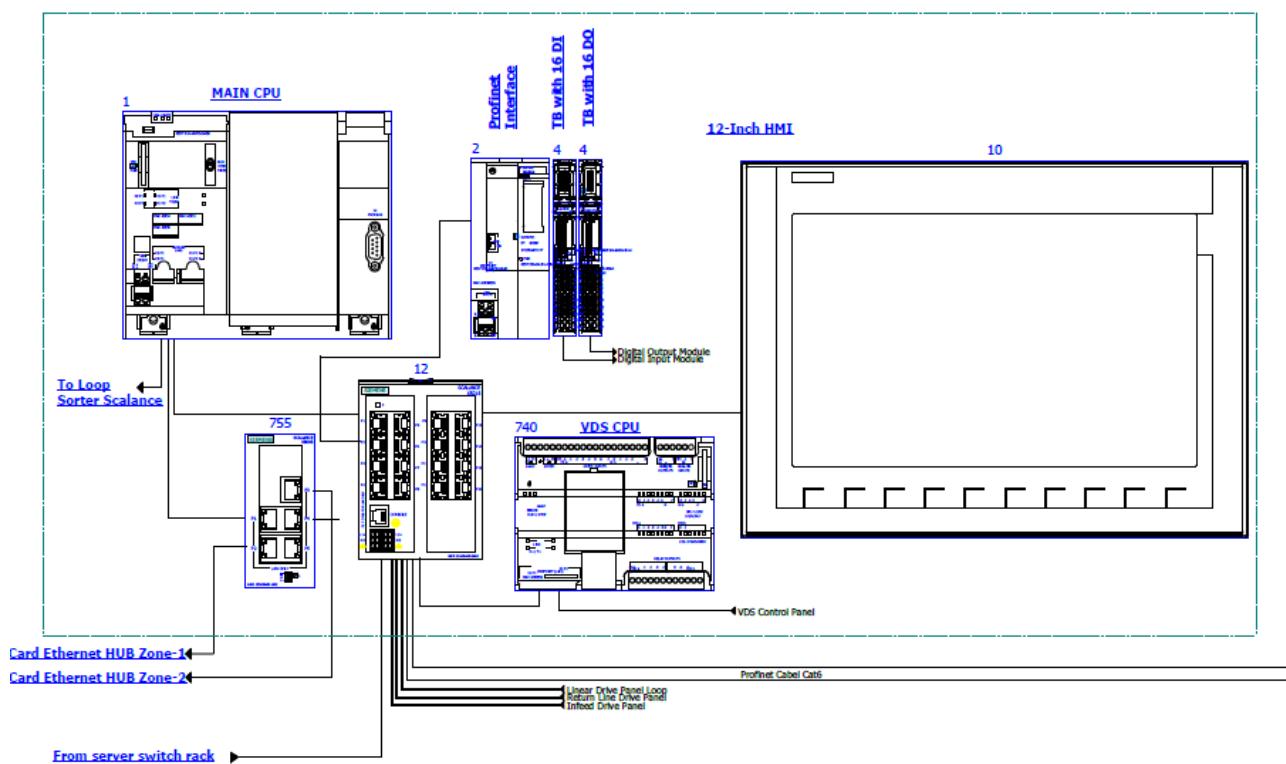
Main power supply will supply Falcon's PDP (Power Distribution Panels) electrical cabinets. PDP cabinets supply the entire system via secondary cabinets:

- Main Control Cabinet
- Induct Control Panels
- Remote Cabinets for Sorter I/O
- Scanner Control cabinets

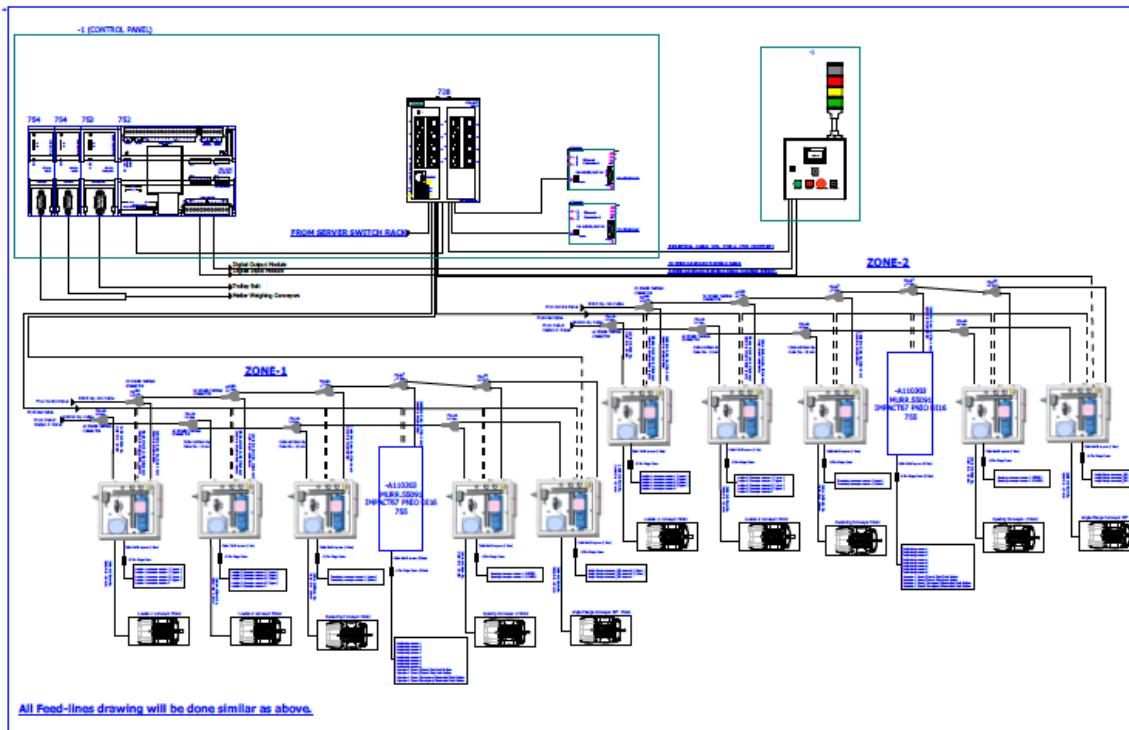
### 15.1 Reference Picture of Power Distribution Panel



### 15.2 Main Control Panel (Reference Only)



### 15.3 Induct Stations Control Panel (Reference Only)



#### Engines

Three-phase alternating current motors (Induction) will be used through a frequency converter. The engines will be coupled with a converter to improve consumption and reduce the carbon footprint.

All motors will have appropriate IP ratings

#### Sensors

The sensors will be supplied, standardized by type, with connector, with a cable length suitable for easy extraction, suitably protected from possible impacts.

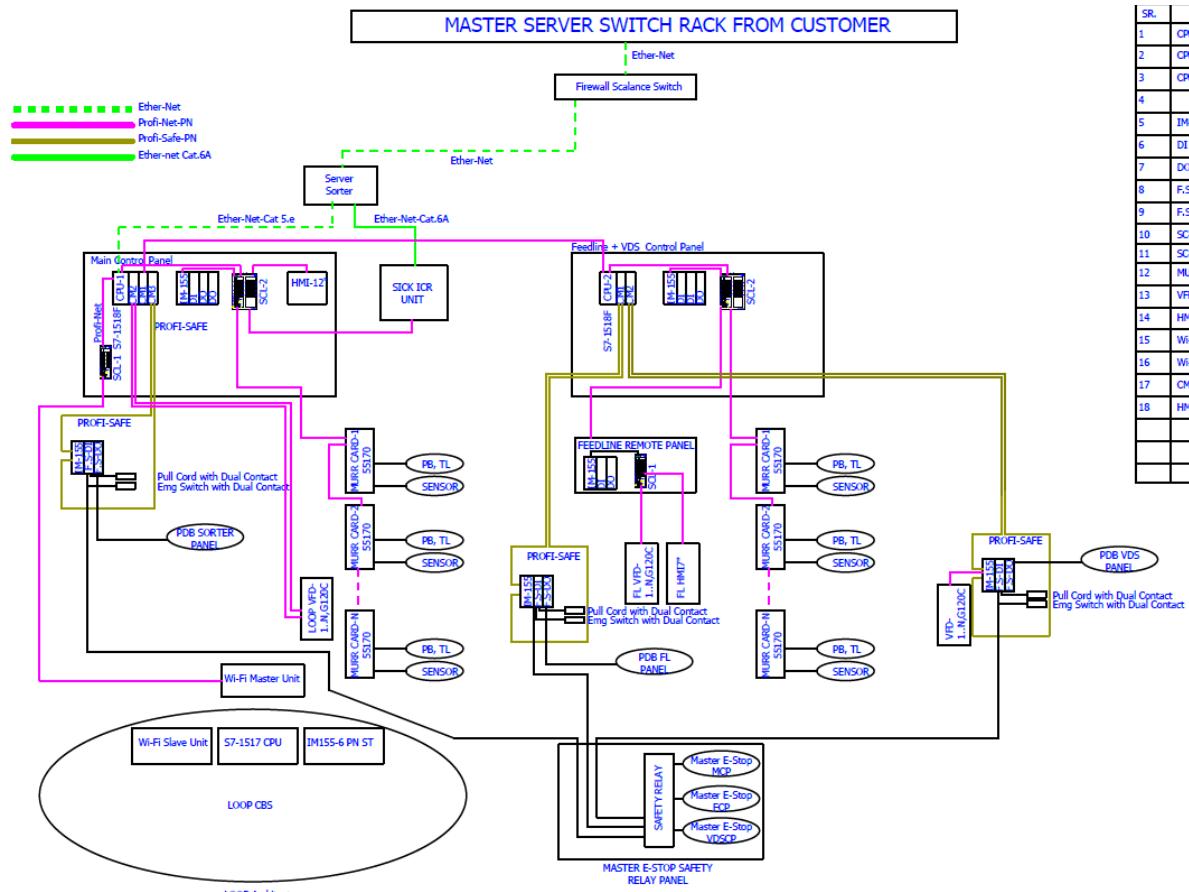
#### Control command

The proposed solution is based on SIEMENS Programmable Logic Controller technology (PLC) platform. The entire system will be logically divided into Zones (Sorter/ Feed Line/ Linear), each managed by a PLC. The planned primary communication protocol is going to be ProfiNet.

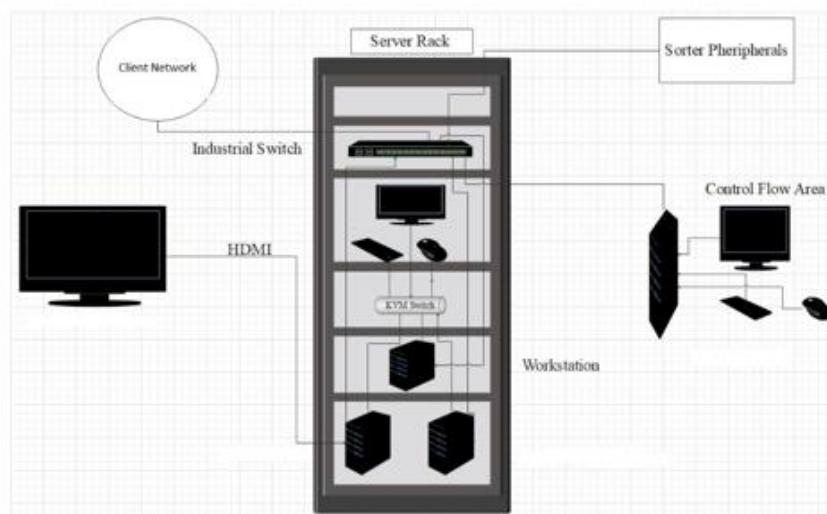
#### Conveyor interface

The frequency converter of each conveyor allows the acquisition of the signals of the sensors/actuators/GIOs associated with it (e.g. conveyor end detection photocells, blockage detection photocells). Each frequency converter will be connected in series by means of the ProfiNet field bus

## 15.4 Controls Architecture (Reference Only)



## 15.5 IT Architecture (Reference Only)

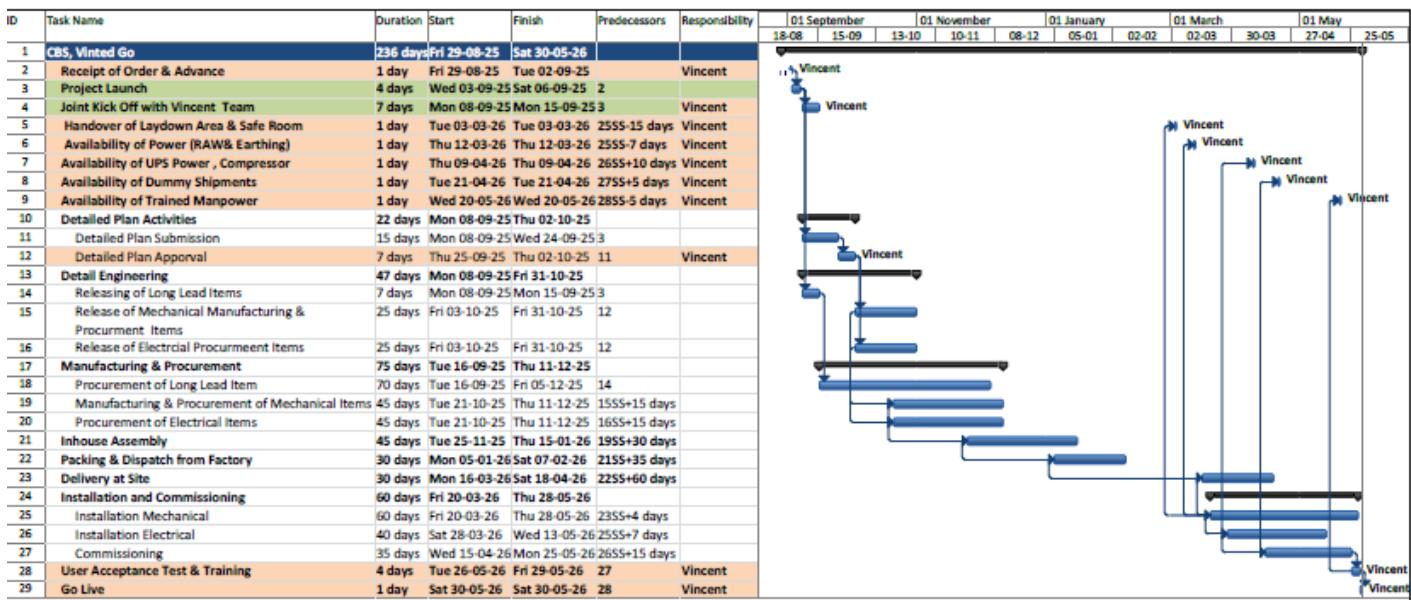


## 16. Key Components Make

| Items                      | Make  |
|----------------------------|---|
| Belts                      | Forbo/ Derco  |
| Rollers                    | Falcon  |
| Cross Belt Carriers        | Falcon  |
| LIM                        | Falcon  |
| Feed Line Motors           | Induction Motors – SEW/ Lenze/ Similar                                      |
| Scanners                   | SICK/Cognex   |
| Encoders                   | SICK  |
| Sensors                    | Sick/Leuze/ P&F   |
| PLC                        | Omron/Siemens   |
| Control Panels             | Rittal/ BCH   |
| VFDs                       | Siemens/Lenze/ AB/ Omron/Siemens  |
| Cables                     | LAPP/ Equivalent  |
| Switch Gear                | Schneider/Equivalent  |
| Bearings                   | NTN/SKF (Excluding Bearing of Rollers. Bearings will be FAPL /OEM standard) |
| Power Transmission Systems | Vahle   |
| HMIs                       | Omron/Siemens   |

## 17. Program Organisation

### 17.1 Program/ Project Schedule



\* Above plan is tentative and provisional , actual will be shared post order confirmation. .

### 17.2 Program Management

For this program, proposed approach covers the following aspects:

1. Creation and monitoring of the project plan.
2. Communication with VINTED
3. Weekly/Fortnightly Meeting VINTED to share the Project Status.
4. Scheduling resource management.
5. Management of risks and opportunities.
6. Management of the requirements.
7. Management of the list of anomalies or reservations.

## **18. VINTED's Responsibility**

### **18.1 VINTED Responsibilities During the Assembly and Commissioning Phase**

- Provision of the site complex and office area facilities.
- Free provision, during the installation phase, of the power supply necessary for the installation activities (estimated at 20 kW).
- Provision, during the commissioning phase, of the power supply necessary for the operation of the shipmentsorting system free of charge at the date of FALCON need.
- Provision of the IT system functionality in accordance with the specification at the date of FALCON need.
- The customer is responsible for a safe working environment and makes arrangements for the working area(s) to be protected against direct weather influences.
- The customer provides adequate lighting, heating, and ventilation to create a normal working environment.
- The cost of temporary storage that may be required (other than in the immediate vicinity of the installationsite) is not included in the scope of delivery of this quotation. This also applies to temporary storage that may be required because materials are ready for delivery (in accordance with the schedule) but cannot be delivered due to hold-ups on the customer's side.

### **18.2 Responsibilities of VINTED During the Tests**

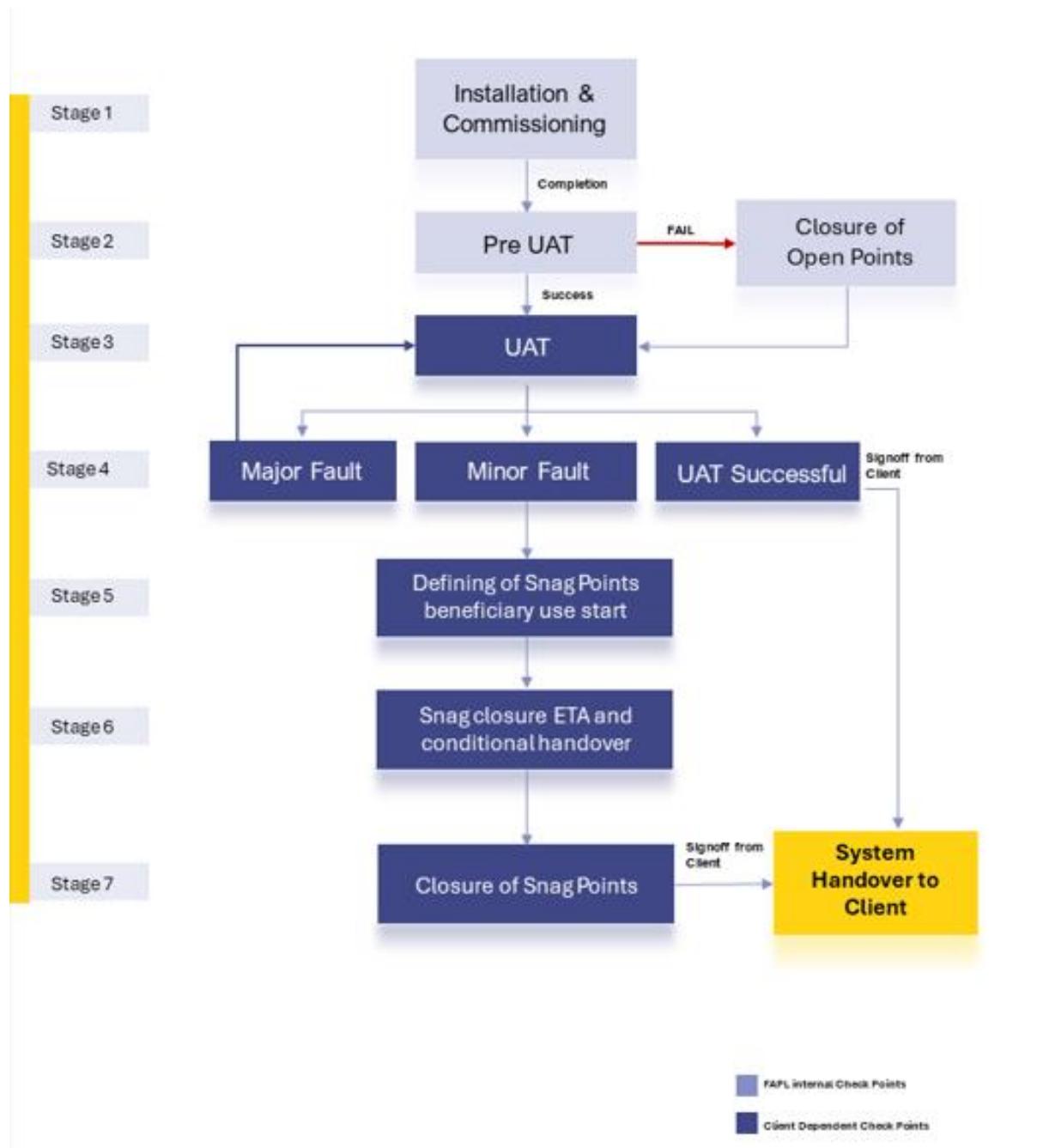
- Provision of the test loads and barcode labels required for the tests.
- Provision of personnel required for test activities (loading and unloading operations).
- Provision of the necessary information to sort the shipments correctly.
- Verify with FALCON the quality and conformity of the test loads (labels, cartons).
- Will need to provide the necessary staff to collect information on the tests and to verify and confirm testresults with FALCON.

### **18.3 VINTED Responsibilities During the Training**

- Provision of a list of participants for each available training course 3 days before the start of the course.
- Provision of a classroom equipped with a whiteboard, video projector, projection screen, and enough spacefor desks or tables and chairs for the trainer and trained staff.
- Check the prerequisites of the people who have to follow the training, e.g. the qualifications of the technicalstaff.
- The invitation of staff to attend the training courses will be at the expense of VINTED.

## 19. System Handover to VINTED

The system handover will be following the shown below workflow. Each of the stages are defined in the document below.



**Installation and Commissioning** – Completion of all the activities to get the system up and running.

**Pre-UAT** – Pre-UAT (User Acceptance Testing) involves a series of preparatory steps and tests conducted before the formal UAT phase begins. This stage ensures that the system is ready for end-user testing and meets the necessary requirements and standards. Below are some key checks of Pre UAT:

- **Physical Verification:** Ensure all functional and non-functional requirements are clearly defined and understood. Verify that all the necessary specifications for the sorting system are documented.
- **Integration Testing:** Conduct integration tests to ensure all components (conveyors, scanners, sorters, control systems, etc.) work together seamlessly. Validate the interfaces between the sorting system and other warehouse management systems (WMS) and databases.
- **Performance Testing:** Test the system's performance with some dummy product to ensure it can handle the expected volume of parcels or items. This test also done to identify and rectify any performance bottlenecks or inefficiencies.
- **Functional Testing:** Execute test cases to verify that the system performs all required functions correctly. Include scenarios for different types of products, error handling, and edge cases.

By thoroughly conducting pre-UAT activities, Falcon team will ensure that the system is stable, efficient, and ready for the formal UAT phase, where end-users can validate its functionality and performance in a real-world scenario.

### **UAT (User Acceptance Test)**

User Acceptance Testing (UAT) for a Cross Belt Sorter System is the final phase in the implementation process where the end users test the system to ensure it meets their requirements and works as expected in a real-world scenario

Falcon will provide the UAT Schedule (for 4 Weeks) to Client prior to the commencement of any tests. The UAT Schedule will include the following:

- Test prerequisites.
- Daily plan/schedule
- Personnel responsibilities
- Dashboard data and test loads required.
- Specific test procedures
- Expected test results.

### **User Acceptance Test Parameters**

Below are the parameters/test to be done at site during the UAT :

- Sorter Throughput Test
- Sorter Accuracy Test
- Barcode Reading Test

*\*SOP for all test will be shared during DAP stage. In case client require sample SOP for review , same will be shared during contract finalisation stage also.*

***Note: In conducting this evaluation/UAT, Falcon team adhere to its Standard Operating Procedure***

### Minor & Major Faults

Any faults encountered during Testing will be categorized by Falcon as either Minor or Major faults as defined below.

- **Minor Faults** are defined as those affecting a limited area or single component that has no impact on the test. Minor Faults will be added to the System Snag point list and will not inhibit the continuation of testing.
- **Major Faults** are defined as those having impact that result in the inability to demonstrate the subject functionality. Major Faults may require re-starting of the test.

### System Snag Point

Once the UAT completed, all the minor faults will be considered as snag points. Falcon team will publish Snag Point List information to the client.

System Snag Point list information will include the following:

1. Issue.
2. Date identified.
3. Area and/or unit.
4. Category (mechanical, electrical, or software).
5. Remedy responsibility (responsible person[s] or organization[s]).
6. Target completion date.
7. Snag point completion verification and signoff.

Once the snag point list information's shared with client, client can start the beneficiary use of system and also Client needs to sign off on Start of System Warranty and conditional handover.

### Practice for Snag Point Sign Off:

1. Falcon personnel will maintain and distribute the System Sang List throughout UAT.
2. As each issue is corrected, Client will verify the resolution and provide sign-off for that issue on the System Snag Point List.

### System Handover Letter

After successful completion of Acceptance Testing or closure of all snags, Falcon will furnish Client a letter, which will address the following:

- The subject System has been installed and accepted by Client.
- The final payment amount that is required and the designated due date.

## 20.Training to VINTED Team

During the UAT period the Falcon team will provide the following training to the Vinted team:

- Maintenance Training
- Operational Training
- IT Software/Dashboard Training

A total of 2 working days has been allocated for all the above training sessions. Detailed planning and schedule can be discussed during the implementation phase.

*Any additional training days beyond this will be chargeable.*

## 21.Warranty Inspection

In the warranty inspection of 1 Year Falcon has considered below services

- 1 No Preventive Maintenance per Month
- 1 No Breakdown Visit per Month

**Preventive Maintenance:** A preventive maintenance package refers to planned maintenance activities and services designed to prevent equipment, machinery, or systems from breaking down or deteriorating over time. Preventive maintenance aims to identify and address potential issues before they lead to costly breakdowns or disruptions in operations.

Falcon offers a preventive maintenance package with 12 planned maintenance visits in a year.

In every visit 1 Mechanical and 1 Electrical Engineer will visit the site to carry out the maintenance activities. Any additional visit would be charged extra.

**Breakdown Visit:** Breakdown Visit, also known as corrective maintenance, is a type of maintenance activity that focuses on addressing and repairing equipment or system failures, defects, or malfunctions when they occur. Unlike preventive maintenance, which aims to prevent breakdowns through scheduled inspections and maintenance tasks, curative maintenance is reactive and comes into play when a problem has already arisen.

Falcon offers 12 visits of Engineers in a year with Curative maintenance package. Engineer will visit the site within on agreed response time of decision (excluding on Sunday and Public Holidays) to go to the site.

Any additional visit would be charged extra.

## **22. Hotline Support**

The hotline service access is available Monday to Saturday (excluding Sunday & Public Holidays).

The hotline must be used for urgent issues. During the call, the VINTED personnel will have to provide information and details to the Falcon qualified engineer to start to find a solution for the urgent request. The list of information may vary depending on the type of request. Nevertheless, basic information will be necessary. The list of information required shall be provided before the start of the service. This list shall evolve according to the needs during service execution. This should be part of high-level discussion between the VINTED personnel and Falcon.

If the fault raised by the VINTED personnel is not rectified within 1 hour, VINTED and Falcon can decide to activate curative maintenance/breakdown visit.

## **23. Recommended Spare Package**

As part of the recommended spare package, Falcon will supply the necessary spares to be kept at the site to minimize downtime in the event of a breakdown.

For items under warranty, Falcon will bear the cost of restocking.

For non-warranty items (such as consumables, wear parts, or inventory expansion), the replenishment cost will be borne by Vinted.

The responsibility and cost of returning any faulty items to Falcon will lie with Vinted.

List of Spare will be shared with client post detail designing of the system

## 24.Commercial Terms

### 24.1 Price Sheet

| For France Site                   |  |             |     |            |   |                  |
|-----------------------------------|--|-------------|-----|------------|---|------------------|
| S. No                             | Component                                  | Qty per set | Set | UOM        |   | Price            |
| 1                                 | CBS, Induct & Scanning Package             | 1           | 1   | Set        | € | 719,620          |
| 2                                 | Conveyor Package                           | 1           | 1   | Set        | € | 122,042          |
| 3                                 | Put to Light Package                       | 1           | 1   | Set        | € | 46,768           |
| 4                                 | Chute Package                              | 1           | 1   | Set        | € | 79,074           |
| 5                                 | Mezzanine Package                          | 1           | 1   | Set        | € | 239,562          |
| 6                                 | Software & Safety Packages                 | 1           | 1   | Set        | € | 13,605           |
| 7                                 | Installation & Commissioning               | 1           | 1   | Set        | € | 565,080          |
| 8                                 | Packaging & Documentation                  | 1           | 1   | Set        | € | 60,724           |
| 9                                 | Project Management and Engineering Charges | 1           | 1   | Set        | € | 46,162           |
| <b>Total Package for 1 Sorter</b> |  |             |     |            | € | <b>1,892,636</b> |
| 10                                | Freight up to French Port (Tentative)      | 25          | 1   | Containers | € | 134,409          |
| 11                                | Critical Spare Package by Falcon           | 1           | 1   | Set        | € | 78,489           |
| 12                                | Hotline Support inclusive Standby Fees     | 1           | 1   | Set        | € | 45,000           |
| 13                                | Warranty Inspection                        | 1           | 1   | Set        | € | 45,600           |

| For Spain Site                    |  |             |     |            |   |                  |
|-----------------------------------|--|-------------|-----|------------|---|------------------|
| S. No                             | Component                                  | Qty per set | Set | UOM        |   | Price            |
| 1                                 | CBS, Induct & Scanning Package             | 1           | 1   | Set        | € | 719,620          |
| 2                                 | Conveyor Package                           | 1           | 1   | Set        | € | 122,042          |
| 3                                 | Put to Light Package                       | 1           | 1   | Set        | € | 46,768           |
| 4                                 | Chute Package                              | 1           | 1   | Set        | € | 79,074           |
| 5                                 | Mezzanine Package                          | 1           | 1   | Set        | € | 239,562          |
| 6                                 | Software & Safety Packages                 | 1           | 1   | Set        | € | 13,605           |
| 7                                 | Installation & Commissioning               | 1           | 1   | Set        | € | 479,002          |
| 8                                 | Packaging & Documentation                  | 1           | 1   | Set        | € | 60,724           |
| 9                                 | Project Management and Engineering Charges | 1           | 1   | Set        | € | 44,010           |
| <b>Total Package for 1 Sorter</b> |  |             |     |            | € | <b>1,804,405</b> |
| 10                                | Freight up to European Port (Tentative)    | 25          | 1   | Containers | € | 134,409          |
| 11                                | Critical Spare Package by Falcon           | 1           | 1   | Set        | € | 78,489           |
| 12                                | Hotline Support inclusive Standby Fees     | 1           | 1   | Set        | € | 45,000           |
| 13                                | Warranty Inspection                        | 1           | 1   | Set        | € | 45,600           |

#### 24.2 Pricing Terms:

- Freight: Up to European Port
- Local Freight: From Port to Site Excluded
- Scope as described in the offer – Included
- Taxes extra as applicable
- Custom Duty: Extra as applicable
- Laydown area in customer scope
- CE Declaration of Conformity: Included
- Price Validity: 60 Days

#### 24.3 Payment Terms

| Payment Percentage | Stage                      |
|--------------------|----------------------------|
| 20%                | Advance along with LOI/ PO |
| 20%                | After DAP Completion       |
| 40%                | Before Dispatch            |
| 10%                | Against Installation       |
| 10%                | Against Handover           |

*Note : All payment should be cleared with 15 days of invoice submission.*

## 25. Warranty Period

Falcon offers Comprehensive warranty for 1 year (Starts from the date of beneficiary use, max 30 days after readiness of commissioning).

The warranty covers the following support:

- 24 X 7 Telephonic, Email and Remote Service Support. **(as per optional Package i.e. Hotline Support)**
- 12 Pcs Preventive & 12 Pcs Breakdown Visits per Year **(as per optional Package i.e. Warranty Inspection)**
- Regular Software updates and Bug Fixes.
- Supply of Mechanical and Electrical components in case of failure (excluding damages as mentioned in the Exclusion Clause)

The warranty does not apply to the replacement or repair of:

- Normal wear and tears.
- Consumables (for example: Carbon Brush, Wheels, Bearing, Current Collector, Timing Belt etc. Detailed list of consumables will be shared after the DAP approval)
- Faulty articles continued:
  - Failure to comply with the manufacturer's recommendations (logistics documentation, Technical Information Note, retrofit document) and the rules of the trade.
  - Negligence or abnormal use of equipment.
  - Anomalies produced by an environment of use, storage or transport that does not comply with the specifications or recommendations of Falcon: packaging, temperature, hygrometry, sector, insulation, etc.
  - A defect due to a cause external to the supplies and services of Falcon.
- Equipment other than that is supplied by Falcon.
- Items that can be repaired exclusively by Falcon that have been repaired or attempted repairs other than those carried out by Falcon.
- Items that fail due to normal wear and tear of one or more of its components or whose tamper-evident seals (varnish, strip, etc.) have been broken or whose serial numbers have been removed or modified.
- Items damaged during transport to Falcon due to the use of unsuitable packaging.

***Note: Transportation cost for sending faulty items to Falcon Factory from the site will be in VINTEX Scope and new items from Falcon factory to site will be in scope of Falcon.***

## **26. Exclusions**

The scope of supply includes all parts which are defined in the Supplier's quotation.

All other parts which are not defined in the Supplier's quotation do not belong to the Supplier's scope of supply and are excluded. The following parts are also excluded:

- Construction Power
- Server System and its standard software
- Cabling from Server Room to Falcon Control Panel
- Mezzanine & Staircase not mentioned in BOM
- Maintenance Platform / Lift required for maintenance activity
- Collection Bins / roller cages / pallets
- Safety Fencing not shown in layout
- Workstations
- Building infrastructure; building structure, doors, fire exits, levelling devices, building extinguisher and fire alarm system, building heating and lighting system.
- Electrical power supply and wiring to the main control cabinets.
- UPS for Controls and Drives
- Network Cabling up to the Main Server Rack
- Intermediate wiring to parts which are to be supplied by the Purchaser/others.
- Emergency/Uninterruptable power supply
- Fire-alarm and fire protection devices.
- Traffic and route markings
- Laydown Area
- Ram protection devices other than the leg guards/crash barriers specified in offer / price sheet
- Cat walks, bridges, maintenance aisles and platforms
- All kind of network incl. Local Area Network (LAN/WLAN), exceeding the scope described in Scope of Supply
- Any Kind of Civil work
- Any adjustment of the Supplier's scope of supply to local rules and regulations
- X-Ray machines
- Simulation and 3D animation of the sorter system
- Interface with other equipment not specified in this offer.
- Provision of facilities for the control room (furniture, air conditioning, heating, etc.).
- The supply and installation of fencing around the different corridors.
- Any item specifically indicated as not forming part of the subject matter of the Seller's supply in the offer documentation.

## 27. Appendices

Appendix 1: Solution Layout (Navis File)

Appendix 2 : Provisional Project Plan

Appendix 3: Link to video of a cross belt sortation system at Delhivery

<https://www.youtube.com/watch?v=QbxP7vecKsA&t=59s>

\* To view the lay-out, you can download a free Autodesk Navis viewer here: <https://www.autodesk.com/eu/products/navisworks/3d-viewers>