

**FALCON  
AUTOTECH**



## FALCON's Response to Mark 3 International for Supply of SWEDI Sorter System – 2000 PPH

January 6, 2025



[www.falconautotech.com](http://www.falconautotech.com)

Kind Attention –

**Mr. Hussein Hassan**

**Mark 3 International Ltd.**

**Offer Ref: F24-00473-01**

**Date 06-01-2025**

**Subject – Techno-Commercial Offer of Swedi Sorter system**

Dear Hussein,

Thank you very much for requesting Falcon Autotech for a **sortation system** in your warehouse in **Colnbrook, UK**. Following a site visit as well as several meetings, we are pleased to submit our Techno-Commercial Offer in response to your requirement.

As you will note, we have studied your requirements in great depth and, along with the information collected during the workshops and calls with you, we have put together a detailed technical proposal laid out in various sections and sequenced to enable you to understand our proposed solution and to re-enforce our commitment to being your partner in this strategic initiative.

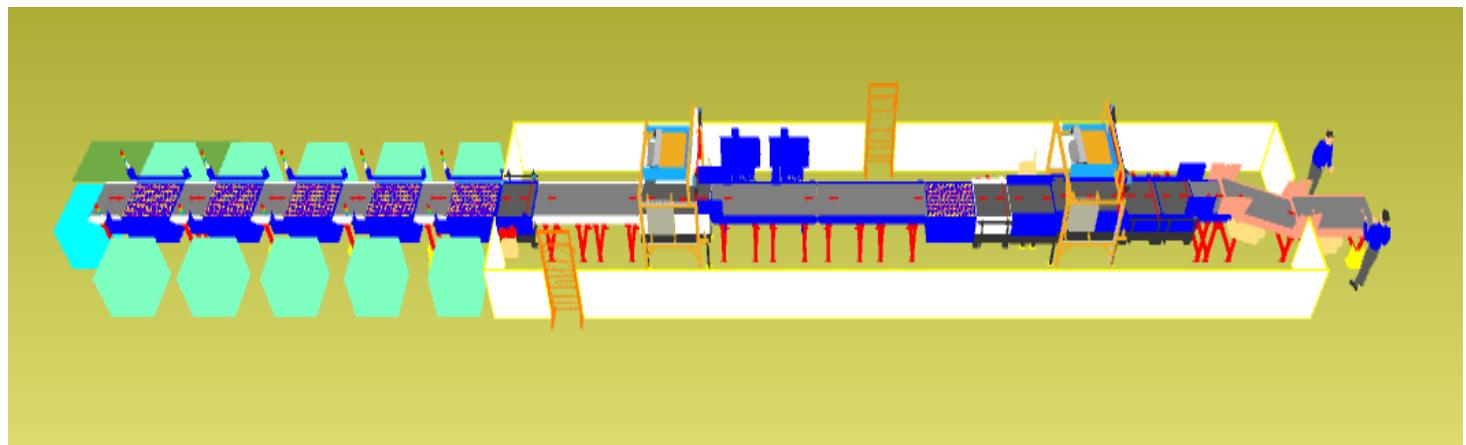
In subsequent sections, we have highlighted the capabilities and experiences of Falcon Autotech with sections on our Automation Technologies and references.

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.

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

**Johan Hoelen**

**General Manager Europe**

**Response to RFP for SWEDI Sorter\_ Mark3 International, UK**

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## 1. Glossary

S. No.	Term	Description
1	RFP	Request For Proposal
2	PPH	Parcels Per Hour
3	ICR	Intelligent Character Recognition
4	AC	Alternating Current
5	DC	Direct Current
6	PLC	Programmable Logic Controller
7	IT	Information Technology
8	BOQ	Bill Of Quantity
9	I/O	Input/ Output
10	PDP	Power Distribution Panel
11	PC	Personal Computer
12	UPS	Uninterrupted Power Supply
13	SWEDI	Swivel Wheel Diverter
14	Nos	Number / Pieces
15	DAP	Design Approval Process

## 2. Executive Summary

Falcon is pleased to confirm its great interest in responding to this Mark3 International Requirement of SWEDI Sorter. 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.

Following the same objective for the Iran 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.

Our solution is based on the following key characteristics:

- **The SWEDI sorter, based on a Swivel wheel technology, offers a designed throughput of 2,400 pph.**
- **A Loading conveyor system with provision of manual Shipment loading.**
- **10 Output Chute & 1 Rejection/Sort Fail Chute**

**A tailor-made and simple layout designed explicitly for Mark3 International.** The proposed layout is the result of the technical requirements in the RFP document and our discussions with the relevant stakeholders during our meeting.

### 1. Falcon's reliable Parcel sortation systems

These systems are globally being used by most innovative brands such as Amazon, Asendia, Fastway, Delhivery, Flipkart and many more. The primary and critical components of the FALCON Autotech sorter building blocks, like wheels, motors, belts, bearings, Bus Bars, Communication platforms, PLCs etc., are sourced from some of the best suppliers in the world, such as SEW, Siemens, Omron, 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 Mark3 International Group's satisfaction, the parcel sortation system, parts and services will be under warranty for 12 months from installation go-live.

### **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**

The dashboard features a large image of a modern industrial building. To the left, three boxes provide key information: 1. Operational since 2012, handling parcels, bags, cartons and pieces. 2. Five key solution lines: 3D Robotics, Sortation systems, Dimensions & Weight Systems, Put/pick To Light & Conveyors, along with rapidly scaling proprietary software called FACTS. 3. Work with leading E-Commerce, CEP, Fashion, Food/FMCG, Auto and Pharmaceutical brands. To the right, several statistics are displayed: 5 Product Lines, 15+ Countries with Live Installations, 1800+ Total Installed Systems Globally, 1 Million+ Sorts Per Hour, and 600+ Employees.

Long-standing Relationships with industry leaders		
E-commerce Retail	Flipkart	amazon
CEP	aramex	BLUE DART
Distribution & Others	Globe	SWIGGY

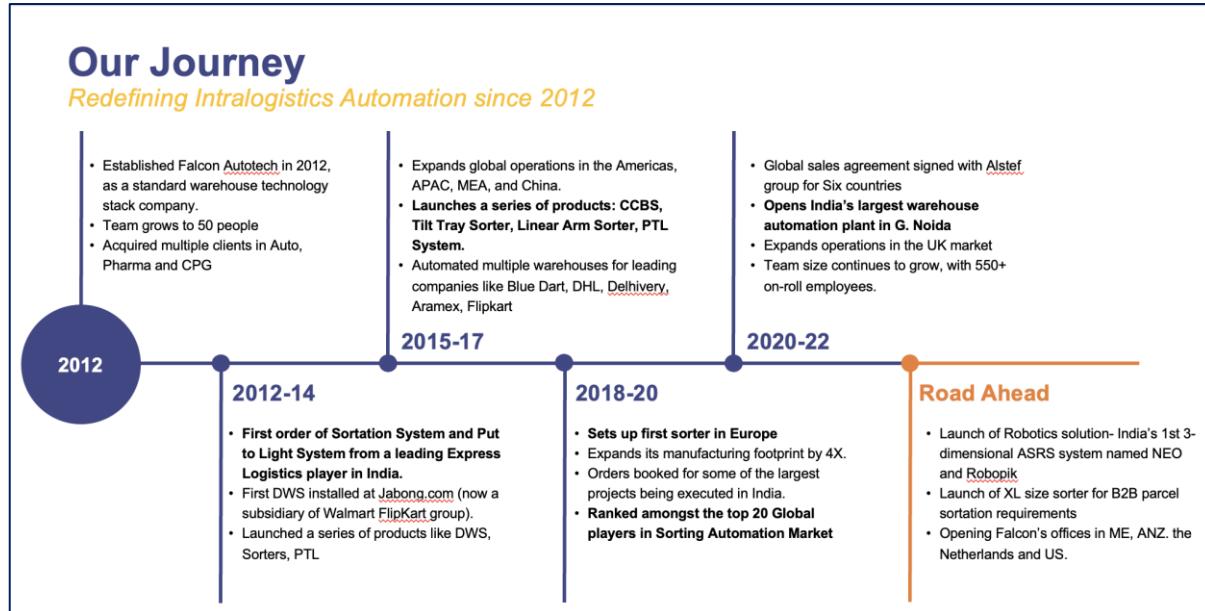
News & Articles	
Falcon Autotech UAE EXPANDS PRESENCE IN THE MIDDLE EAST WITH NEW OFFICE OPENING	Falcon Autotech is pleased to announce the opening of its new office in Dubai, UAE, marking a significant milestone in the company's expansion into the Middle East market.
FALCON AND ALSTEF GROUP ANNOUNCE GLOBAL TECHNOLOGY PARTNERSHIP	Falcon Autotech and Alstef Group Announce Global Technology Partnership for Parcel Sortation Solutions Published - Sept 2022

Falcon Autotech is currently among the top 15 intralogistics automation company, 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.



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.



## Product and Solutions

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



- SORTATION SOLUTIONS**
- Cross Belt Sorter
  - Linear Arm Sorter
  - Swivel Diverter 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  
**FACITS** | **SORT IT** | **Control IT**

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.

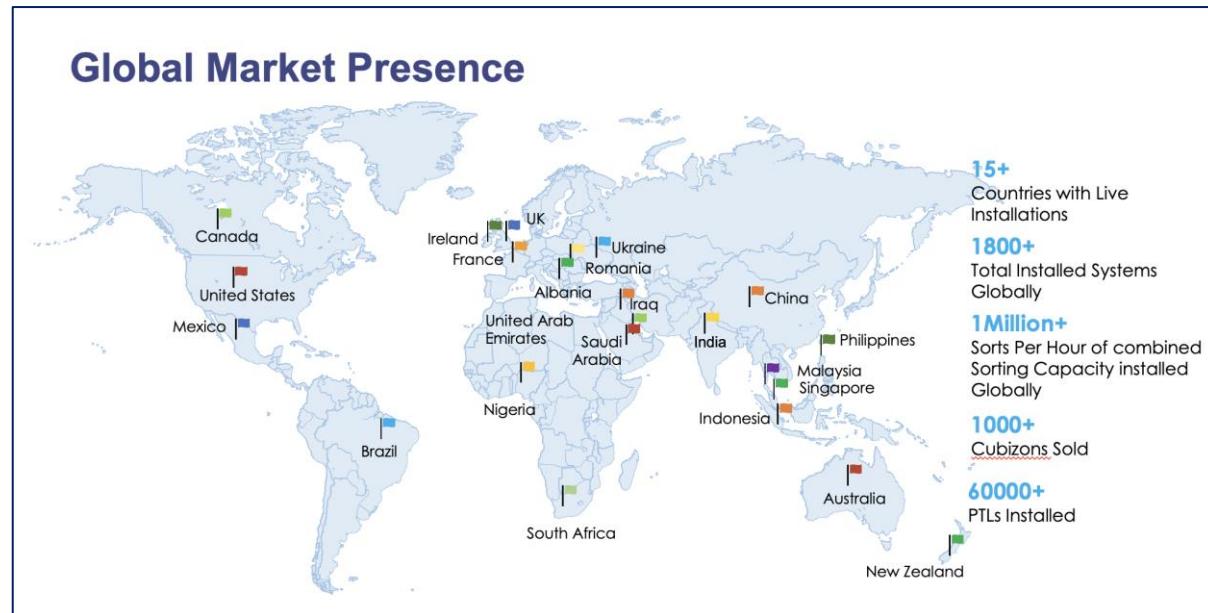
Over the last 10 years, Falcon has worked with some of the most innovative brands worldwide and has established long standing partnerships. These brands are testimony of our strong focus on delivering superior customer satisfaction and offering end-to-end intralogistics solutions.

## 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.



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

- Ranked among **Top 20 Sortation System Suppliers** globally. Only company from APAC/EMEA Region.
- Currently possess one of **the World's largest portfolios in Sortation Technologies**: 7 In-house technologies.
- Total installed capacity of **10 million Parcels per day** worldwide.
- Only company to be able to offer a **Fully Integrated AMS**.

The screenshot shows a news article from the NP News Portal. The header features the NP News Portal logo with 'NEWS' above 'NP' and 'PATROLLING' below it. Below the logo is a navigation bar with links: AutoMobile, Business », LifeStyle », Health, Travel, Entertainment, Career », News », and Profiles. A red banner labeled 'TOP NEWS' contains the headline: 'Axis Bank appoints former RBI Deputy Governor, N.S. Vishwanathan as Non-Executive (Part-time) Chair'. The main article title is 'FALCON AUTOTECH CHOSEN AS THE TECHNOLOGY PARTNER FOR ASENDIA'S HEATHROW AUTOMATED PARCEL SORTING CENTER'. It includes a timestamp 'Posted by: Mahender August 3, 2022 in PR' and social sharing icons for WhatsApp, Facebook, Twitter, Pinterest, and LinkedIn. The article text discusses Falcon Autotech's selection by Asendia to automate their parcel sorting center in Heathrow, UK, handling 7,200 items per hour. It quotes Ed Turner, CIO of Asendia, and Naman Jain, CEO of Falcon Autotech, about the fast and efficient movement of parcels. The system is described as equipped with infeed conveyors and automatic label applicators.

New Delhi, 1st August 2022: Falcon Autotech, a leading supplier of Intralogistics automation solutions, has been selected by Asendia, a leading cross-border delivery company, to automate their parcel sorting center in Heathrow, UK. Using its cross-belt sorter technology, Falcon has designed Asendia's parcel sorting center, which can handle 7,200 items per hour and operate in a 24 x 7 environment.

"As consumer shopping habits have increasingly shifted online over the past couple of years, their expectations have risen. Retailers thus need their orders to be fulfilled quickly. Asendia continues to be a front-runner in adopting innovative solutions. Our collaboration with Falcon Autotech, a leader in sortation solutions, underscores our commitment to the fast and efficient movement of parcels within our ecosystem." Ed Turner, CIO, Asendia.

Naman Jain, Chief Executive Officer, Falcon Autotech, said, "We are delighted to have been chosen by Asendia for delivering a world-class sortation solution for them. Completing the UK project marks another milestone for us as a company growing in the international markets."

The system is equipped with infeed conveyors that are seamlessly integrated with automatic label applicators. All parcels are automatically labeled and enter Falcon's automated Loop Cross Belt Sortation

POSTED ON APRIL 17, 2023 IN / NEWS

## Falcon Autotech Expands Presence in the Middle East with New Office Opening

Dubai, UAE – 17<sup>th</sup> April 2023 – Falcon Autotech (Falcon) is pleased to announce the opening of its new office in Dubai, UAE, marking a significant milestone in the company's expansion into the Middle East market. The new location will enable Falcon to better serve its existing customers in the region and expand its reach to new markets and prospects.

The decision to establish a presence in the Middle East was driven by the growing demand for Falcon's solution in the region, as well as the strategic importance of the Middle East as a hub for business and innovation. With a team of experienced professionals based in the region,

## Falcon Autotech and Alstef Group Announce Global Technology Partnership for Parcel Sortation Solutions

Falcon Autotech, a leading supplier of Intralogistics automation solutions, and Alstef Group, an expert in comprehensive baggage handling solutions and parcel automation integration announce a strategic technology partnership for parcel sorting solutions. As part of an exclusive distribution agreement, Alstef Group will exclusively expand the deployment of Falcon Autotech's Cross-belt sorter range to specific geographies. Falcon Autotech's Cross Belt Sorter (CBS) range includes a linear CBS and a loop CBS option. With proven features, such as automatic item centering, flexible chute positioning, wireless data communication, real-time video coding, and variable electric discharge, the Falcon CBS range is one of the fastest and smoothest sortation systems available in the market.

## 5. Reference Projects

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

1. Expertise in Parcel 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 focusing on Sortation Solution –

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

This Solution is designed to handle a volume of 7200 parcels per hour. The system is equipped with three infeed conveyors integrated with automatic label applicator before parcels enter the sortation system. The parcels 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 Nos

**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 –**



## 5.2 Project 2- (CEP Client, Iran)

In 2019, customer selected Falcon Autotech as a preferred supplier for its airport hub to supply linear cross belt sorter for processing of parcels arriving via Air from different states and countries to distribute them locally. The customer chose Falcon Autotech based on its strong track record of success in providing intralogistics automation solutions, optimized design, software integration capabilities and life cycle support services.

### Solution Specifications –

- Throughput: 4800 PPH
- End Destinations: 52 Nos

### Key Technology Modules –

- Powered Belt Conveyors.
- Automatic Induct Lines.
- Automatic Barcode Scanner with Image Capture.
- Automatic Weight & Volume Measurement System.
- ARB Conveyor.
- Automatic Label Applicators.
- Linear Cross Belt Sorter.
- Specialized Chutes for Gentle Parcel handling.
- FOCR Engine.
- WCS Software System.

### Site Picture –



### 5.3 Project 3- (Client – Courier Express Parcel, Dubai & Jeddah)

This Solution is designed to handle the bulk volumes through Launchpads and induct them into Falcon's Linear Arm Sorter. This system is designed for a throughput of 3000 parcels per hour equipped with automatic barcode scanning, dimensioning, weighing and image capture capabilities to into a total of 480 end destinations with a combination of primary and secondary sortation system. The secondary sortation is achieved by integrating put to light system.

#### Solution Specifications –

- Throughput: 3000 PPH
- End Destinations: 480 Nos

#### Key Technology Modules –

- Powered Belt Conveyors.
- Linear arm sorter.
- Automatic Barcode Scanner.
- Automatic Weight & Volume Measurement System.
- WCS Software System.

#### Site Picture –



### 5.4 Project 4- (CEP Client, Sydney)

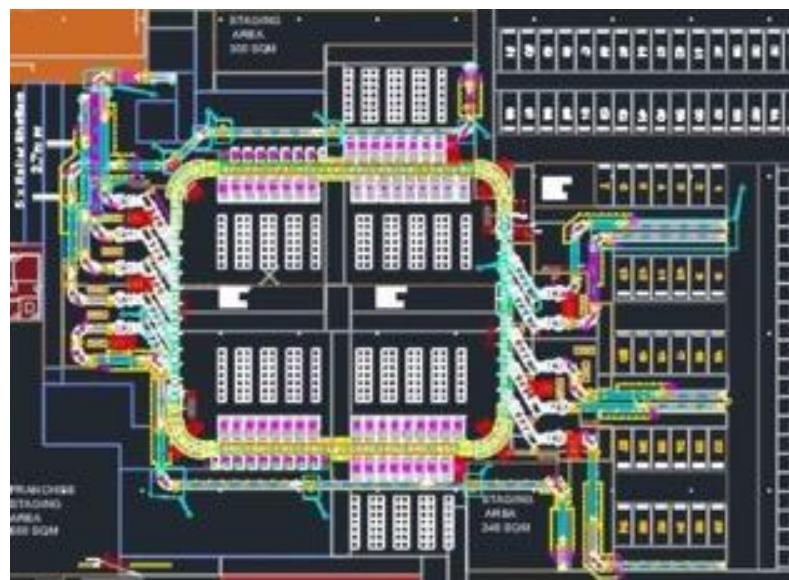
Solution is designed for handling a throughput of 16,000 parcels per hour with the help of Falcon's Linear Cross Belt Sorter. The system consists of 2 feeding zones with a total of 10 feedlines. Sorter design enables the van drivers to directly drop the parcels at the dock doors. It has a total of 369 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 parcels.

#### Solution Specifications –

- Throughput: 16000 PPH
- End Destinations: 369 Nos

#### Key Technology Modules –

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

**Site Picture –****5.5 Project 5- (Client – E-Commerce, India)**

Use Case – Destination Sorting of Packed Parcels.

In 2019, Client was looking for a potential automation partner for design and development of a new automated sortation system for B2C parcels. 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.

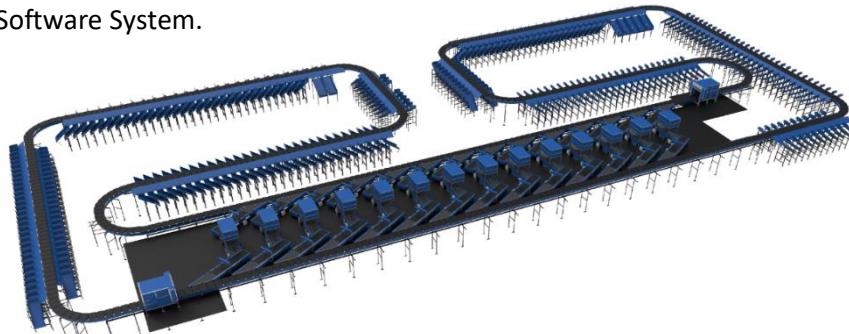
**Solution Specifications –**

- 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.



## 5.6 Project 6- (Ecommerce Client, India)

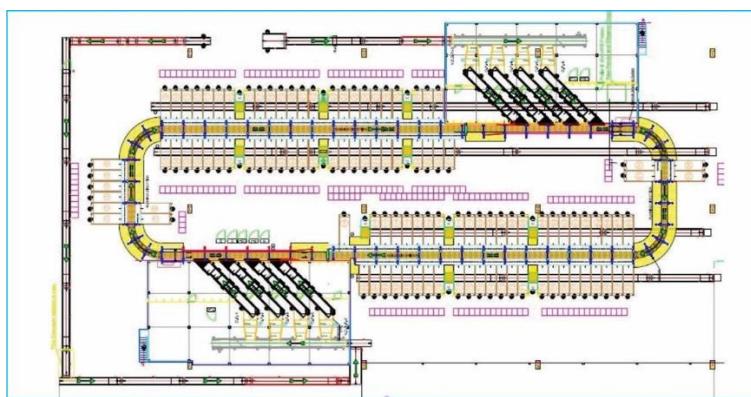
Use Case - Destination Sorting of Packed Shipments

### 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 -



## 6. Handled Parcel Spectrum

As per the parcel data provided By Mark3 International, Falcon has studied and analysed the parcel spectrum in detailed.

Falcon purposes to use its “SWEDI Sorter” to provide the maximum benefits to Mark3 International in-terms of handling parcel sizes and weight.

### 6.1    Parcel size loadable on the sorter

Falcon's SWEDI sorter has a capability to handle the below mentioned parcel sizes and weight.

Specification	Unit	Value
<b>Max Length</b>	mm	600
<b>Max Width</b>	mm	600
<b>Max Height</b>	mm	600
<b>Max Weight</b>	Kg	30
<b>Min length</b>	mm	150
<b>Min Width</b>	mm	150
<b>Min Height</b>	mm	10
<b>Min Weight</b>	gm	100
<b>Avg Length</b>	mm	300
<b>Avg Width</b>	Mm	300
<b>Avg Height</b>	mm	300
<b>Avg Weight</b>	Kg	5

**Note- Dimension will only be captured for parcels > 20 mm in height .**

### 6.2    Parcels 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 parcel 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. Parcels 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 parcels 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 Parcel not loadable on the sorter

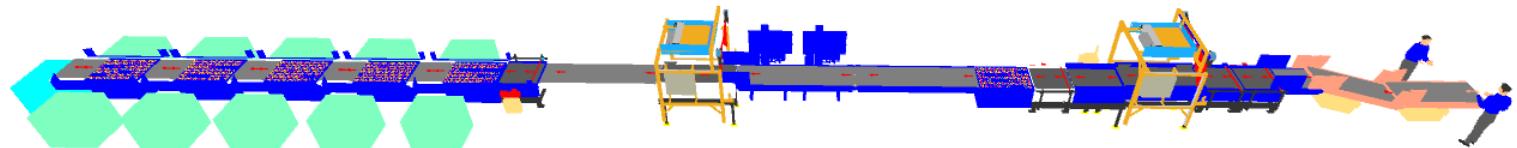
All products that are not within the range as described here, are considered non-conveyable products, and must be taken out of the main sorter flow by the operators.

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 parcels 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 **SWEDI Sorter** for sorting parcels.



### 7.2 Summary of the System

Process flow of the SWEDI Sorter System-

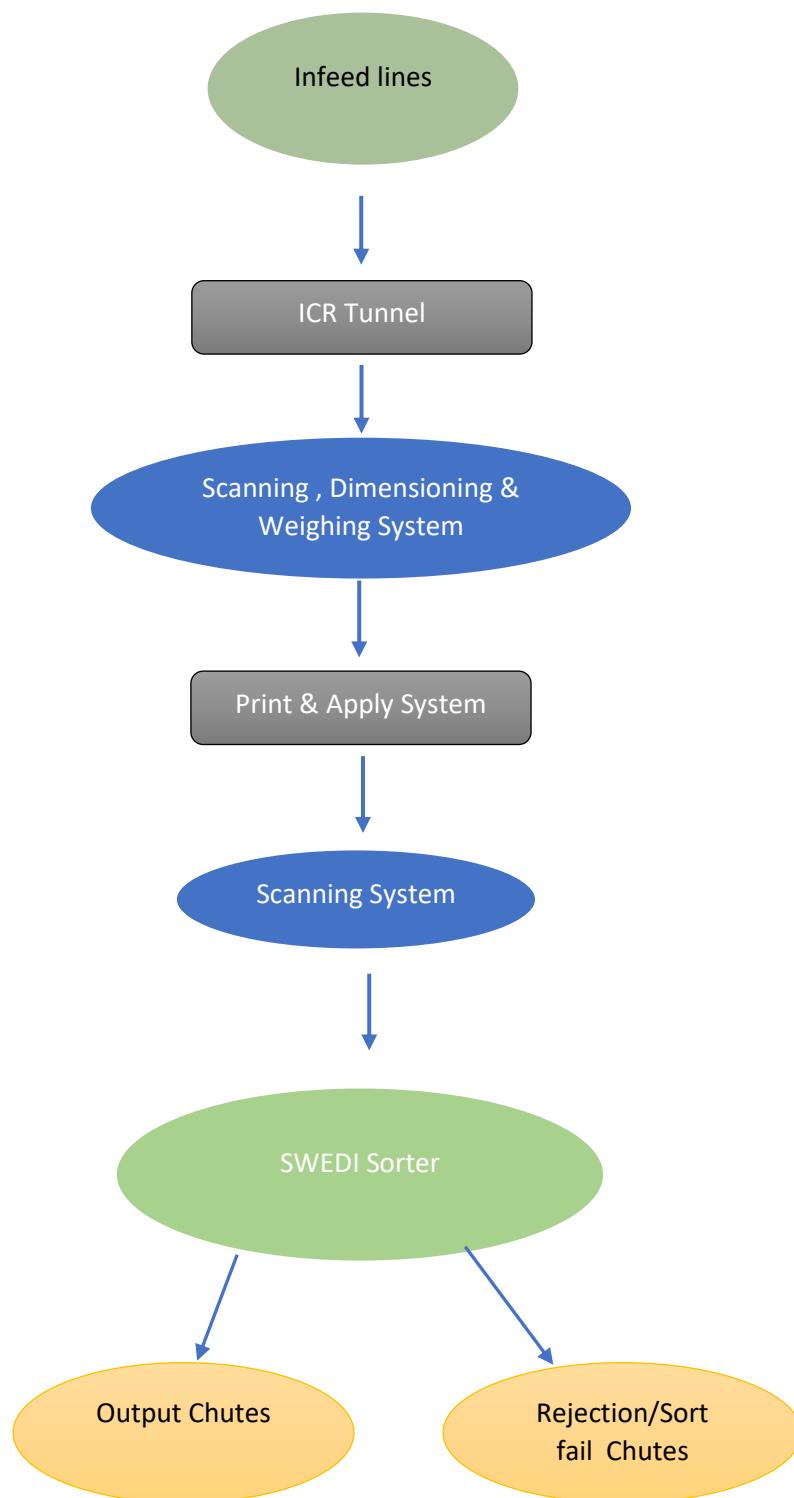
1. **Infeed System:** - Parcel are loaded manually on the loading conveyor present at the beginning of the sorter. Parcel loaded here travel further to ICR for scanning.
2. **Parcel Scanning & Weighing:** - Once the parcels reach the Scanning zone, Set of Buffer conveyors automatically maintain sufficient space between two parcels, Now the singulated parcel will get scanned via ICR & its weight will be captured with the help of dynamic weighing machine.
3. **Print & Apply System:** Once the shipment passes from scanning tunnel it reaches to print & apply system, the label will be automatically applied by the P&A System
4. **SWEDI Sorter:** - Once the parcels are on main sorter line, the SWEDI diverters sorts the parcels into respective chutes using data from Mark3 International Sorting logic.
5. **Output Chutes:** - The shipments are discharged into different types of chutes-
  - a. **Output Chute- 10** Output chutes (roll cage type) are present in the system. Parcels sorted in this chutes gets collected in Magnum (Client Scope)
  - b. **Rejection Chute-** One rejection chute is present at the end to handle rejected parcels.

### 7.3 Main benefits of the SWEDI System

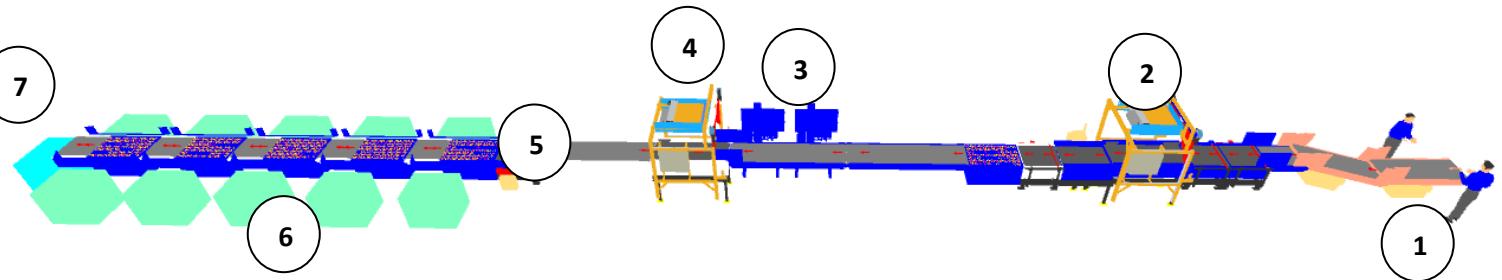
The proposed solution has the following advantages:

1. Low occupancy of floor space in the building
2. Narrow discharge centers for the increased number of splits in limited space.
3. FALCON's SWEDI sorter can adapt to changing business requirements by adjusting its speed to match the operational throughput requirement, thereby leading to Power Savings and reduced system Wear & Tear.

## 8. Concept Description



## 9. Layout View of SWEDI Sorter

**Legend**

1. Loading Conveyor
2. Scanning, Weighing & Dimensioning System
3. Print & Apply System
4. Scanning/ICR Tunnel
5. SWEDI Sorter
6. Output Chute
7. Rejection/Sort Fail Chute

## 10. Proposed System Capacity Calculations

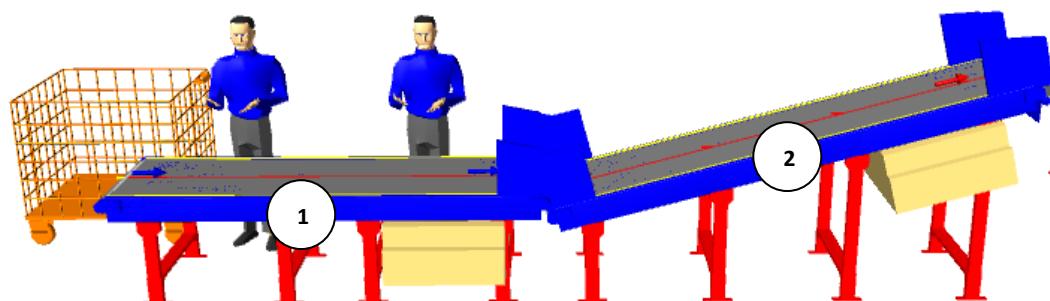
### 10.1 Sorter System Capacity

The following table shows the throughput calculation for the sortation system designed based on Mark3 International RFP requirements.

SPECIFICATION	VALUE
Sorter Type	SWEDI Sorter
TPH	2400 PPH
No of Loading point	1 Nos.

## 11. System description

### 11.1 Infeed System



Legend
1- Straight PVC Conveyor
2- Inclined PVC Conveyor

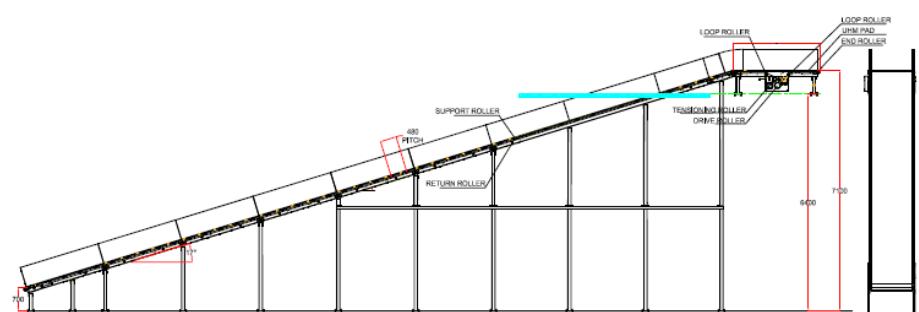
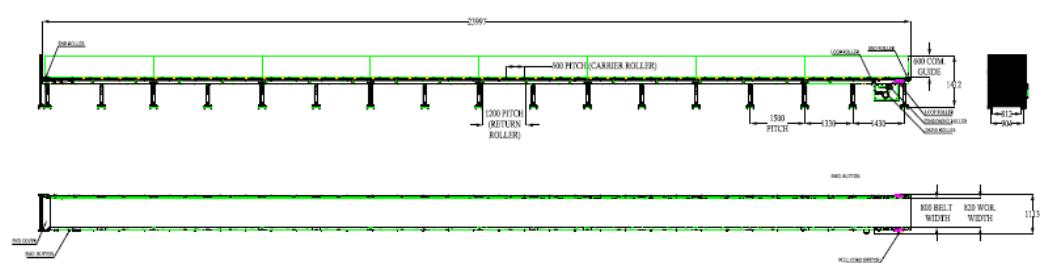
### 11.1.1 Straight and Inclined Powered Belt Conveyor

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:

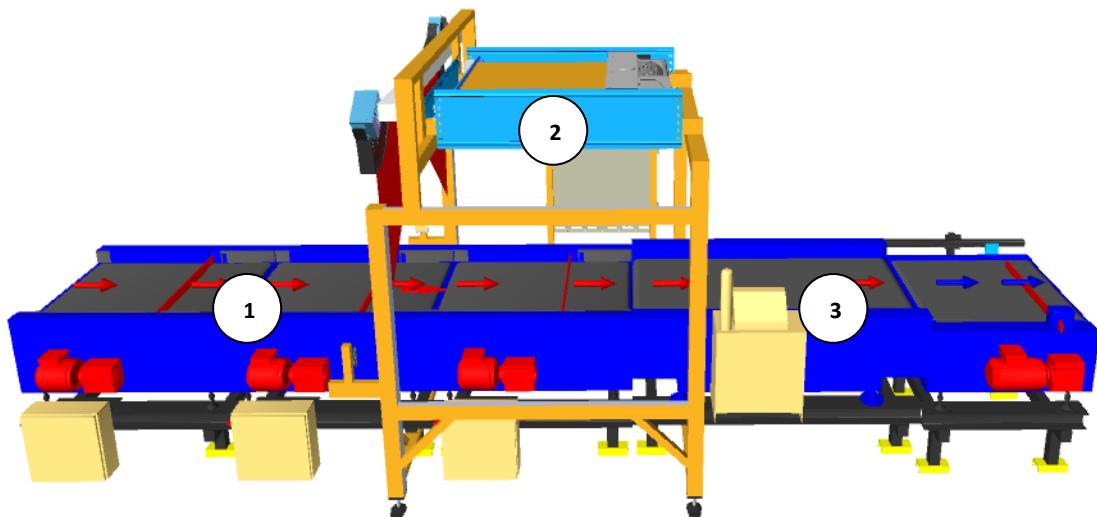
- Low Noise
- Maximum uptime.
- Minimal maintenance
- High safety standards.
- Fastest ROI.



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	800
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
Load capacity per unit length of Conveyor	kg/m	50
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
Drive	make	Lenze/Omron/Allen Bradley
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 Automatic Scanning & Weighing



### Legend

- 1- Spacing Conveyor
- 2- ICR Tunnel
- 3- Weighing Conveyor

### 11.2.1 Automatic Barcode Scanning & Dimensioning System

System is Integrated with Automated Line Scan Camera Technology (Sick ICR) for scanning 1D & 2D Barcodes

**VMS 5200 quoted for Dimensioning of Parcels.**

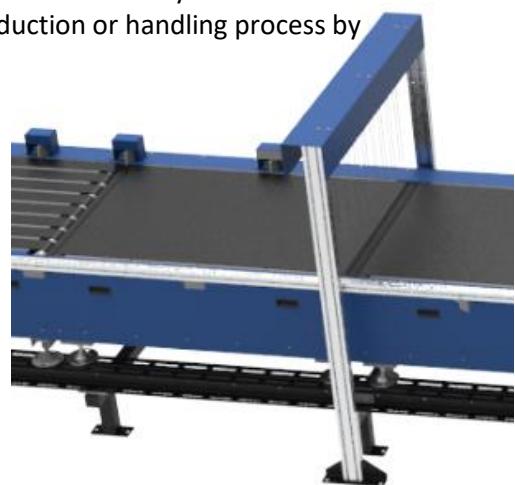
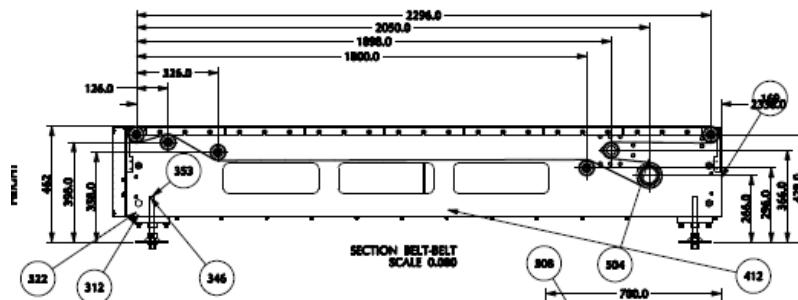


Specification	UOM	Remark
Manufacturer Name	Name	SICK
Barcode Type	Type	1D & 2D
Module Size	Mils	>=10 for 1 D & >=25 for 2D
Shipment Size	Mm	Min: 150 x 150 x 10 Max: 600 x600 x 600
Number of Codes	Nos	1
Location	Side	Top
Orientation	Type	Top side
Color of bars	Color	Black
VMS	Nos	1
Under Foil	yes/no	No

## 11.2.2 Spacing Conveyor

Spacing conveyor is used to temporarily store or hold parcels 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.

Buffer conveyor is particularly useful in scenarios where there is a discontinuity or variation in the flow rate of items. They allow for a smooth and continuous production or handling process by absorbing temporary surges or gaps in the flow.



### 11.2.3 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.

## **Make- Bizerba/ Equivalent**

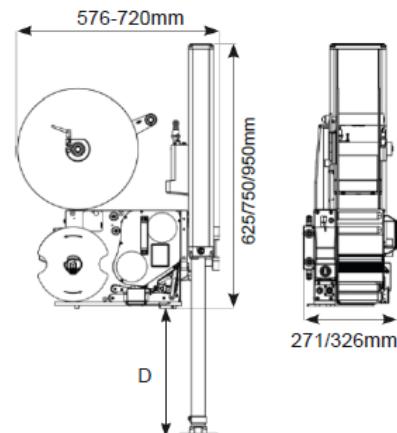


### 11.3 Automatic Print & Apply System

An Automatic Print & Apply system is a machine that prints labels (e.g., shipping labels, barcodes, or tracking information) and applies them directly onto packages. In the proposed solution P&A System will be integrated with FAPL conveyor and Sorter system for re-labelling purposes.

**Label Size:** 4 \* 6 Inches

**Label Position:** On Top

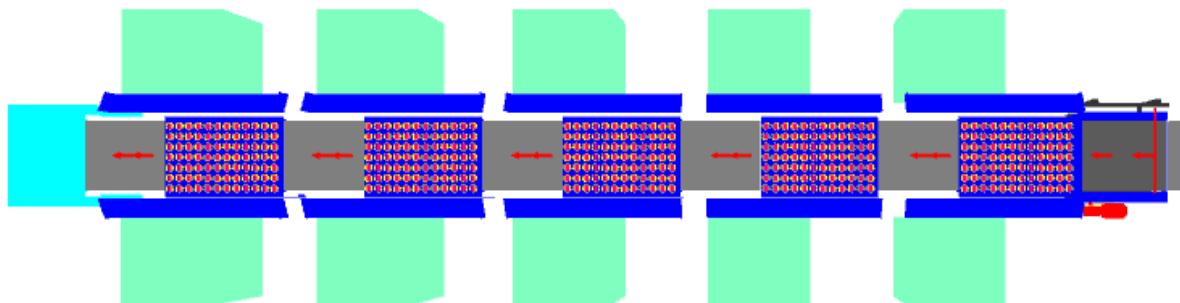


### 11.4 SWEDI Sorter

Swivel Wheel Diverter (SWEDI) is a non-impact sortation module for linear sortation lines, ideal for medium volume sort centres. SWEDI's modular design allows it to save space while also allowing for future expansion of sorting point

Items	Make
<b>SWEDI Unit's Dimensions</b>	585 mm (L) x815 mm (W)
<b>Load Capacity</b>	30 KG
<b>Throughput</b>	2400 PPH
<b>Conveying Drive Unit</b>	48V, 50 Watt DC powered smart roller
<b>Diverting Drive Unit</b>	Servo Motor; 220V, 50HZ, 750W, Single Phase
<b>Conveying Speed</b>	Up to 80 m/min
<b>Diverting Angle</b>	60 Degrees at double sides
<b>Frame Material</b>	MS Powder Coated Steel Frame
<b>Stand Support</b>	MS Powder Coated Steel Frame
<b>PLC</b>	Siemens
<b>Servo Motor</b>	Delta
<b>Noise Level</b>	<75 Db when measured from 1 m in a silent warehouse.





1. The proposed SWEDI Sorter will be installed on ground level. The Sorter runs at 1400 mm from ground level.
2. We have provided SWEDI Diverters with a pitch of 2400 mm.
3. As Parcels pass through the Barcode Scanning Tunnel on the SWEDI Sorter, their barcodes are scanned, and chutes are assigned. Once the shipment reaches the respective chute, the SWEDI Diverter unit diverts the shipment and drop the shipment in the assigned chute.

#### 11.4.1 Output Chutes

Output chute is a type of transfer chute which will sort the parcels in a Magnum pallet box supplied by the client.

On each chute below accessories are considered:

- Chute Full Sensor: 1 No
- Tower light: 1 No
- Push Button: 1 No

On each chute one Chute full sensor will be planned to detect the Magnum status. Once the magnum is full and chute full sensor got triggered, the sorting will stop on the chute and Tower light turns red to indicate the status of chute.

Once the magnum will be replaced then operator needs to press push button to resume the sorting in the chute.



## 12. Proposed System Technical Details of Linear CBS

### 12.1 Mechanical equipment

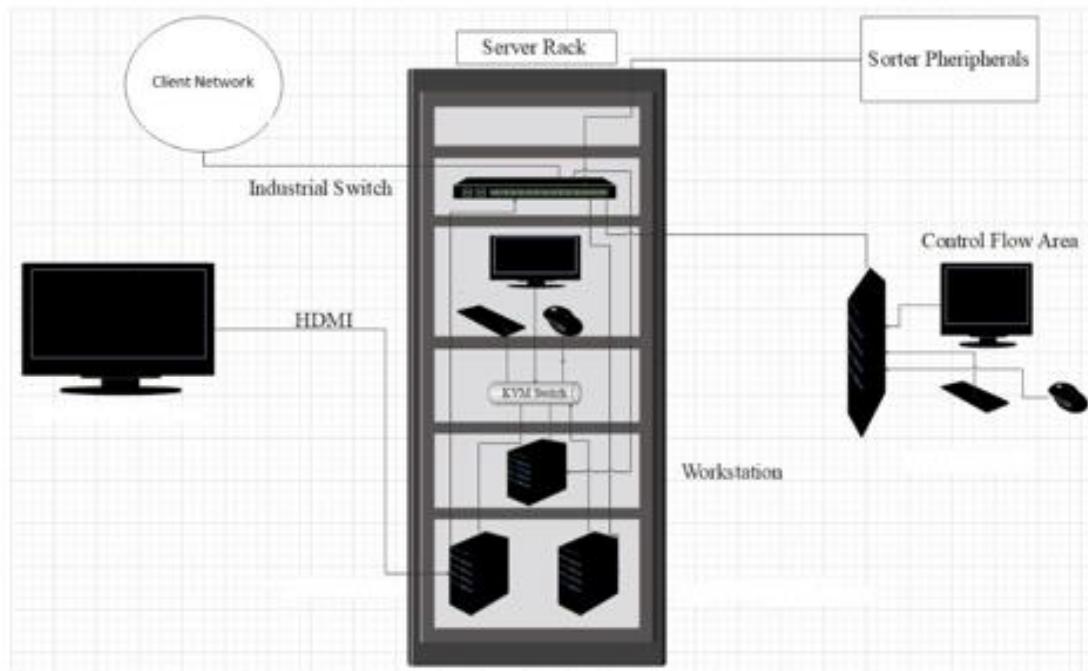
Pos.	Qty.	Description	Value
1	1	<b>Infeed System</b> <ul style="list-style-type: none"> <li>Powered Belt Conveyors</li> <li>Scanning Conveyors</li> <li>Spacing Conveyor</li> <li>ICR scanner</li> <li>VMS 5200</li> <li>Weighing Conveyor</li> </ul>	~18 metres (11 Conveyors) 2 Nos 4 Nos 2 Nos 1 Nos 1 Nos
2	1	<b>SWEDI Sorter</b> <b>1 SWEDI Sorter</b> <ul style="list-style-type: none"> <li>Sorter Height</li> </ul> <b>Including:</b> <ul style="list-style-type: none"> <li>SWEDI Diverters</li> </ul>	1400mm (from ground level) 6 Nos
4	1	Sorter Outputs <ul style="list-style-type: none"> <li>Output Chute</li> <li>Rejection Chute</li> </ul>	10 Nos 1 No

### 12.2 Electrical Equipment

Electricals		
1	1	<b>Consists of</b> <ul style="list-style-type: none"> <li>Main Power Distribution panel</li> <li>Main Control Panel</li> <li>Network Switches</li> <li>Field Cabling</li> </ul>

Included

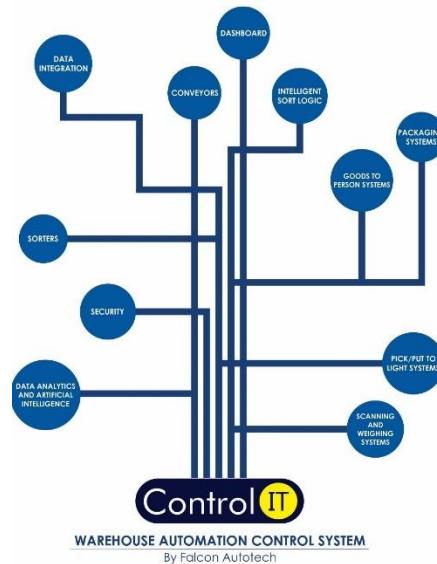
### 13. IT Architecture (For Reference Only)



### 13.1 HAA Server (In Mark3 International Scope)

S.no	Description	Qty
<b>20Core Config with 128 GB RAM in T440 and 64 GB RAM in T40</b>		
1	<b>Synology_storage_DS723+</b> 2.6 GHz AMD Ryzen R1600 Dual-Core, 2 x Gigabit Ethernet Ports, 2GB ECC DDR4 RAM, 2 x 3.5/2.5" Bays   2 x M.2 2280 Slots E10G22-T1-Mini 10GbE RJ-45 network upgrade module for compact Synology servers	2
2	<b>Dell Tower Model T440</b> -PowerEdge T440 Xeon Gold 6148 2.4GHz/20C/27.5MB/150 W 16 DIMMS 4 x32GB RDIMM Up to 8 3.5"" Hot Plug Hard Drives Tower Configuration 2 x 1.2TB 10K RPM SAS 12Gbps 512n 2.5in  Hot-plug Hard Drive PERC H750 Adapter Full Height 8GB Cache Dual Hot-plug PS495W iDRAC9Enterprise 3YR ProSupport Next Business Day Onsite/Dual Port Lan	2
3	<b>Dell PowerEdge T40</b> Intel Xeon E-2224G Processor 3.5GHz 8M Cache,4C/4T,Turbo,71W,TPM, 4*16 GB RAM (4 DIMM), 2x1TB SATA 3.5" 7.2k rpm HDD (3 Bay), 1Gbe LOM ,DVD Writer, Onboard RAID 01, Inbuilt PSU Standard (Max 1), 3 Year Onsite NBD,480 GB SSD,1 Gbe Dual Lan Card Extra	1
4	Windows Server 2019	3
5	Monitor	1
6	KVM Switch	1
7	Mouse	1
8	Keyboard	1
9	Lan Cable	10
10	Power Cable	8
11	VGA Cable	1
12	42 AC Server Rack	1
13	Netgear 24 Port Giga Switch	2
14	2 TB SSD Micron	4
15	DP to VGA Convertor Cadyce Brand	1

## 14. Falcon's WCS CONTROLIT (For Reference Only)



### Key Values

#### Supports Multiple Use Cases

- Order Consolidation, SKU wise Sorting, Route Level Sorting, Transporter Wise Sorting and many more

#### Supports dynamic and static Sort Logic Definition and unlimited Sort Logic Wave definitions

#### Supports various peripheral Equipment Inputs and Outputs

- Automated Scanners, Manifest Printers, Label Applicators and many more

#### Ability to define Custom Business Logics

- Cut Off Timings, Quantity/Weight and Volume Thresholds etc

#### Security

- User profiling with Role Right Mapping
- Database Encryption
- Secured and Protected Communication between WMS and WCS layers

### Supported Protocols

API	FTP	FILE UPLOAD / DASHBOARD	ODBC
WEBSERVICES	AMAZON S3 SERVER	FIREBASE	Any Customer Protocol

## 15. Key Components Make

Items	Make
Belts	Forbo/ Derko
Rollers	Falcon
Volume Scanners (VMS 5200)	SICK
Weighing Scales	Bizerba/ Mettler Toledo
Encoders	SICK
Sensors	Sick/Leuze/ P&F
PLC	Omron/Siemens
Control Panels	Rittal/ BCH
VFDs	Lenze/ AB/ Omron
Cables	LAPP/ Equivalent
Switch Gear	Schneider/Equivalent
Bearings	NTN/SKF/Equivalent
Power Transmission Systems	Vahle
HMI	Omron/Siemens
SWEDI	FALCON/Similar

## 16. Program Organisation

### 16.1 Program/ Project Schedule

S.No.	Activity	Timeline
1.	Receipt of PO	Week 0
2.	Project Kick off	Week 1
3.	DAP Submission	Week 4
4.	DAP Approval	Week 6
5.	Detailed Designing	Week 10
6.	Manufacturing & Procurement	Week 20
7.	Inhouse Assembly & Packing	Week 26
8.	Material Ready to Dispatch	Week 28

\* Above plan is tentative, detailed plan will be shared post order confirmation.

### 16.2 Program Management

For this program, proposed approach covers the following aspects:

1. Creation and monitoring of the project plan.
2. Communication with Mark3 International
3. Weekly/Fortnightly Meeting Mark3 International 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.

## 17. Mark3 International Responsibility

### 17.1 Mark3 International Responsibilities During the Assembly and Commissioning Phase

- Provision of the site complex and office area facilities.
- Mark3 International to provide 1 nos. forklift for 15 days.
- HPT/BOPT & Scaffolding - 2 nos. each is considered in customer scope for throughout the project's duration.
- The possibility of authorizing access to the site and the execution of the installation work up to 7 days a week and 24 hours a day if deemed necessary and if requested by FALCON.
- 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 parcelsorting 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.
- The customer 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.
- The customer is responsible for the demarcation of aisles and danger zones with floor paint.

### 17.2 Responsibilities of Mark3 International 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 parcels 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.

### **17.3 Mark3 International Responsibilities During the Training**

- Free from their usual work, the employees participate in the training for the duration of 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 space for 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 technical staff.
- The invitation of staff to attend the training courses will be at the expense of MARK3 INTERNATIONAL.

## 18.Commercial Terms

### 18.1 Price Sheet

S. No	Component	Qty per set	Set	UOM	Price
1	Sorter Package	1	1	Set	£ 142,321
2	Conveyor & Chute Package	1	1	Set	£ 85,033
4	Software Package & Tool Kit	1	1	Set	£ 6,422
5	Installation & Commissioning	1	1	Set	£ 200,779
6	Packaging	1	1	Set	£ 11,386
7	Project Management and Engineering Charges	1	1	Set	£ 7,344
8	Freight	4	1	Containers	£ 21,803
<b>Total</b>					<b>£ 475,089</b>
<b>Critical Spare Package</b>					<b>£ 30,000</b>

The Total Price is to be understood.

- Freight - Included
- Taxes as applicable
- Packing and Forwarding - Included
- Installation and Commissioning – Included
- Material Unloading at Site: Client Scope
- Price is valid for 30 days from the date of proposal.
- All works conducted in compliance with CDM requirements with Falcon undertaking the role of Subcontractor. It is assumed that Mark 3 International or their nominated agent will undertake the role of Principle Contractor

### 18.2 Payment Terms

Payment Percentage	Stage
40%	Advance along with PO
40%	Prior to dispatch against Commercial Invoice / Packing list
10%	After Installation
10%	Acceptance and complete handover

*\*All invoices (if due as per payment terms) should be cleared within 7 days from the date of receipt of undisputed invoice by the buyer*

## 19. Warranty Period

Falcons offered System comes with a standard warranty of 1 year (Starts from the date of beneficiary use) and post completion of warranty, customer can opt for an Extended warranty. The warranty covers the following support:

- 24 X 7 Telephonic, Email and Remote Service Support when required.
- 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 tear.
- Consumables.
- 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 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.

## 20. 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:

- Servers including standard Windows server operating system
- Magnum pallet boxes / Roll Cage Trolley
- Construction Power
- Compressor for Print & Apply System
- Steel Works- If not specified
- SCADA
- Assembly tools like forklifts and hoisting machines
- Building infrastructure; building structure, doors, fire exits, levelling devices, building extinguisher and fire alarm system, building heating and lighting system.
- Electrical power supply and network 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
- 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.

## Appendices

1. Lay-out Mark\_3\_International SWEDI Sorter 2K\_Op-2\_Rev-02