

Description:

**Conveyor line for large-volume dispensing of parcels/items.**

Year: 2021.

Min. price: EUR 150,000.

Starting price: EUR 50,000.

**Professional disassembly and subsequent assembly at the destination can be carried out by agreement with the equipment manufacturer for a fee.**

Material at reception (required parameters):

- ❑ dimensions of transported items
- ❑ boxes max. 600 x 600 x 600/ min. 210 x 150 x 15 mm (An exception to the guaranteed dimensions is material coming from the existing conveyor line from the gallery, where the minimum dimensions are 300 x 300 x 121 mm)
- ❑ crates 600 x 400 mm
- ❑ weight of transported item min. 0.250 kg – max. 30 kg
- ❑ receiving capacity – approx. 2,200 t/hour

Description of the line and individual components:

- ❑ The sorting line assembly consists of roller conveyors, belt conveyors for ascending and descending, sorting roller conveyors, and belt feeding conveyors. Sorting capacity – max. 3,000 t/hour see Schematic diagram of the conveyor including capacities

#### 1. ROLLER CONVEYOR (CCA 258M)

Roller curves – 20 pcs

Conveyor side walls – perforated steel C profile 100/35 mm

Total conveyor width – 720 mm

width between side panels – 650 mm

rollers Ø50 Zn, EL = 650, 2 x ball bearings, spring shaft Ø10

roller center distance 105 mm

motor + gearbox Nord 0.37 kW drive belt section approx. 5,000 mm.

surface treatment of the structure – powder coating in RAL shades (standard gray 7004) + galvanizing

roller drive – drive belt with support rollers – completely maintenance-free design

## 2. BELT CONVEYOR (CCA 114M)

Conveyor side panels – perforated steel C profile 100/35 mm

Total conveyor width – 720 mm

FORBO SIEGLING belt,

motor + Nord 0.37 kW gearbox

surface finish of structure – powder coating in RAL shades (standard gray 7004) + zinc coating

bottom drive – drive roller with hardened shaft, SKF bearings

## 3. WHEELED TRANSFER DEVICE (67 PCS)

transfer device side panels – perforated steel C profile 100/35 mm

total width of transfer device – 720 mm

number of guide wheels 42 pcs

wheels Ø50 Zn+ Priž, 2 x ball bearings, spring shaft Ø10

motor + Nord gearbox

wheel turning in directions using pneumatic elements.

surface treatment of the structure – powder coating in RAL shades (standard gray 7004) + galvanizing

Sorting capacity max. 3000 t/hour

## 4. BELT TRANSFER (5 PCS)

transfer side panels – perforated steel C profile 100/35 mm

total width of transfer – 720 mm

number of transfer belts 5 pcs

motor + Nord gearbox

Lifting of the transfer device using pneumatic elements

surface treatment of the structure – powder coating in RAL shades (standard gray 7004) + galvanizing

Sorting capacity max 1500 t/hour

## 5. SLIDES

The steel structure supports the conveyor and suspended slides. It is made of standard steel profiles and covered with a sliding material for the smoothest possible departure of the sorted assortment. At the end of the chute, the stop is equipped with foam rubber for a smooth run-off. The chutes are hinged for easy access to the conveyors for easy repair. Individual chutes contain overflow sensors. Overflow is reported by a light signal at each transfer point.

The dimensions of the sorting chute area are: 2640 mm long, 1580 mm wide, conveyor height 1.9 m, collection point height 0.8 m.

Number of chutes: 132 pieces.

### Function description

The operator places goods intended for sorting on the infeed conveyor. This conveyor has a constant speed, which ensures the flow of the line according to the specified parameters. The principle is that goods can only be placed on the conveyor when the entire infeed area is free. From there, the goods enter a faster belt conveyor (this ensures the necessary spacing between individual items required for correct reading by the gate and sorting). When feeding, the operator must pay attention to the following key factors:

1. The dimensions of the package must not exceed/fall below the defined package dimensions.
2. The barcode must be on the visible side of the package, uncovered and undamaged.
3. The package must not be damaged and no sharp objects or stretch film must protrude from it.
4. The package must not tip over and must be stable (e.g., cylinders and balls cannot be sent).

When passing through the reading gate, the package is weighed and identified. Based on communication with your superior system, we determine which station to divert the goods to

(slide XY; noread, gallery).

If the goods were not sorted in the first row of the sorter (66 directions), they are transported by a belt conveyor to a steel platform (not included in the delivery), where goods destined for the gallery are separated from goods destined for the second row of the sorter (67–132).

These goods continue along a roller conveyor located on a steel platform along the gallery. In this section, a branch from the existing conveyor from the gallery (1000 t/hour) is connected, to which the conveyor from the pallet warehouse (500 t/hour) is also connected. This means a total of 1500 t/hour.

The line's throughput is max. 3000 t/hour under ideal conditions. Therefore, not all throughputs can be added together (gallery + pallet warehouse + entire intake. (It is assumed that the first row of the sorter will remove at least 40% of the goods from the intake). The condition for meeting the required throughput is a maximum of 90 pieces per drop per hour.

Goods from the gallery + pallet warehouse + intake to (67 – 132) fall from the platform into the second reading gate and, after determining the direction, pass through the second row of the sorter and are sorted. goods from the gallery and pallet warehouse that are destined for chute 2 – 66 are transported on conveyors at a height of 1.9 m above the floor and fed into the direct receiving conveyor, where they are scanned again and then sorted.

## Electrical section

### Sorting principle

Automatic sorting based on communication with the server - SQL DATABASE

Our system allows connection to standard SQL databases, where the customer prepares, for example, a table with data on the boxes to be sorted. That is, the customer prepares this table, which will contain the shipment barcode (unique identifier) and the sorting finger number. The Atyko system regularly queries the customer's table and stores the data in the PLC.

When a box is received by the barcode reader, after the barcode is read, the buffer of shipment records transferred from the SQL (pre-loaded data) is searched, and the target location is found for the barcode. We call this mode offline, and it is particularly advantageous for fast processes where the data about the expected destination is already available in our system and no query is created. Offline mode also allows short-term continuation even in the event of a connection failure with the superior system.

The shipment is classified according to the parameters.

The customer manages both tables in their system (i.e., removing already processed boxes from the first table).

System operation:

Monitoring and diagnostic system:

There are two large monitors located in the line area where the operator can monitor the operating status of the line, the percentage of individual chutes filled, including no-reads (oversized packages are also directed there).

Operating statuses include, for example

Operation/malfunction of individual actuators

Occupancy of individual fingers

Direction of movement

Mode selection

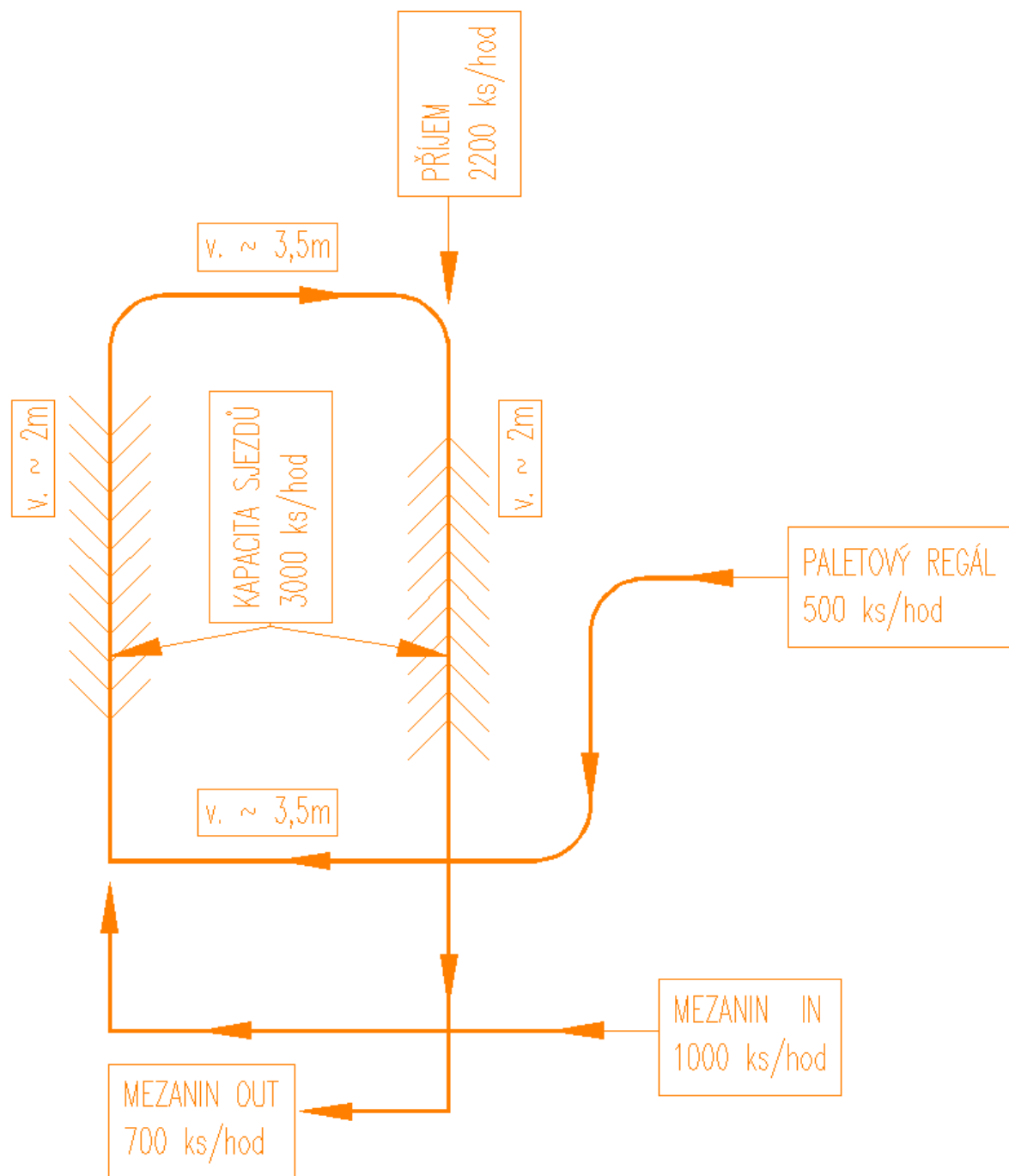
Furthermore, the operator panel can be used to actively control and monitor the entire operation of the conveyor line, including the option of manual control of individual actuators and tracking of individual shipments. Individual devices can be managed by the operator after logging in with their user authorization.

The system uses two 3D reading gates from Sick + one VMS module for measuring volume properties + weighing – all without LFT certification. 1

System power supply

Five power distribution boards will be used throughout the system – two main central ones and three secondary ones. An operator touchscreen display will be located on the central distribution boards.

## SCHEMATIC DRAWING OF CONVEYORS INCLUDING CAPACITIES



The total capacity of the sorting conveyors is 3,000 pieces per hour, with a limit of 90 pieces per hour per conveyor.