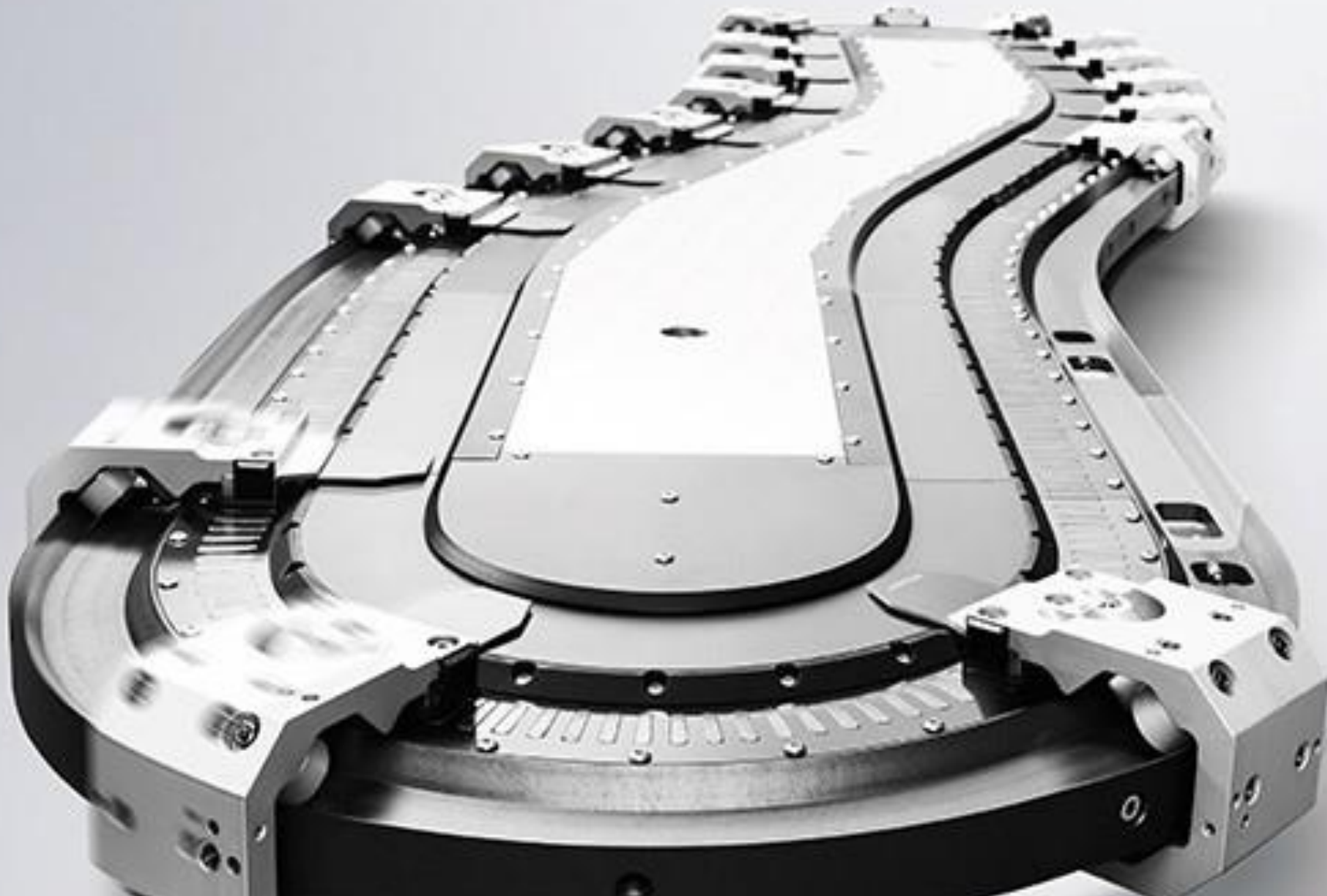


XTS TRANSPORT LAYER – DEMO APPLICATION

BECKHOFF



1. APPLICATION Transport
2. APPLICATION Members



▪ Transport specification:

- Output **500 – 550** movers/minute
- Placing of N [1 to 12] items on N movers
 - INFEED: items are placed from transfer-system
 - Transfer-System is either internal or external. (delivers parts in places)
 - N varies in place and count
- Sending of movers for N items to INFEED
 - BUFFER_INFEED: placement mask is written by transfer-system.
- INFEED sends 12 movers or less at a time
- BUFFER_OUTFEED acts as distributor to OUTFEED

▪ Transport specification:

- OUTFEED (max 24 mover):
 - OUTFEED must work 24 mover in sync
 - OUTFEED must work 2x12 mover individually
 - → OUTFEED_R1
 - → OUTFEED_R2
- 180° curve restrictions.
 - Max velocity 15000 mm/s
- Vertical system (return track has no process)
 - No queue in 180° curve
- Return track velo must be maximum

▪ Transport specification:

- Movers must be accelerated to max velocity once the 180° curve is passed:
 - SENDER_FAST: sends all passing movers to SENDER_BUFFER_INFEED
- Movers must not queue up in 180° curves:
 - SENDER_BUFFER_INFEED: only send as many movers as requested in ListEntry
 - ListEntry is written by INFEED when movers enter

▪ Transport Members:

- XTS_TRANSPORT_LAYER requires some AddOns
 - How to group single XtsStations?
 - fb_ProcessCollector
 - Grouping of single XtsStations
- How to write dedicated process procedures?
 - fb_Instance
 - Procedures of instances
- How to forward ListEntries from Transfer-System and/or processes
 - fb_Process_LinkedListCtrl
 - Transfer-System uses BUFFER_INFEED's LinkedList (AddTail)

▪ Transport Members:

- How many process instances do I need?
- **TransferSystem**
 - simulated list entries for bitmask of XtsStations
 - writes into LinkedList of BUFFER_INFEED (bitmask with used bits 0-11)
- **BUFFER_INFEED**
 - Checks linked list for new entries
 - sends required amount of movers to INFEED
 - Writes into LinkedList of INFEED

▪ Transport Members:

- How many process instances do I need?
 - **INFEED**
 - Checks LinkedList for new entries
 - Starts infeed of movers according to bitmask in list entry.
 - Writes a copy of the list entry into LinkedList of SENDER_BUFFER_INFEED
 - WORK, starts process
 - FINISH, ends process
 - Sends out movers to BUFFER_OUTFEED
 - **BUFFER_OUTFEED**
 - checks the assigned XtsStation for new mover
 - Sends single mover to output
 - Internal counter is keeping track of the 24 possible target XtsStations

▪ Transport Members:

- How many process instances do I need?
- **OUTFEED_R1**
 - Checks if all 12 XtsStations have a mover waiting
 - Infeed of 12 movers
 - Work 12 movers
 - Send 12 movers to SENDER_FAST
- **OUTFEED_R2**
 - Checks if all 12 XtsStations have a mover waiting
 - Infeed of 12 movers
 - Work 12 movers
 - Send 12 movers to SENDER_FAST

▪ Transport Members:

- How many process instances do I need?
- **SENDER_FAST**
 - checks the assigned XtsStation for new mover
 - Sends mover to SENDER_BUFFER_INFEED
- **SENDER_BUFFER_INFEED**
 - Checks ProcessList for new entry from INFEED
 - Sends the amount (written in ListEntry) of movers to BUFFER_INFEED