asyril

Experts in
Flexible Feeding Systems

ASYRIL TECHNOLOGY PRESENTATION

Cours Robotique Industrielle, EPFL, 13.05.2022

Dr. Mélanie Dafflon, Chief Customer Support Officer

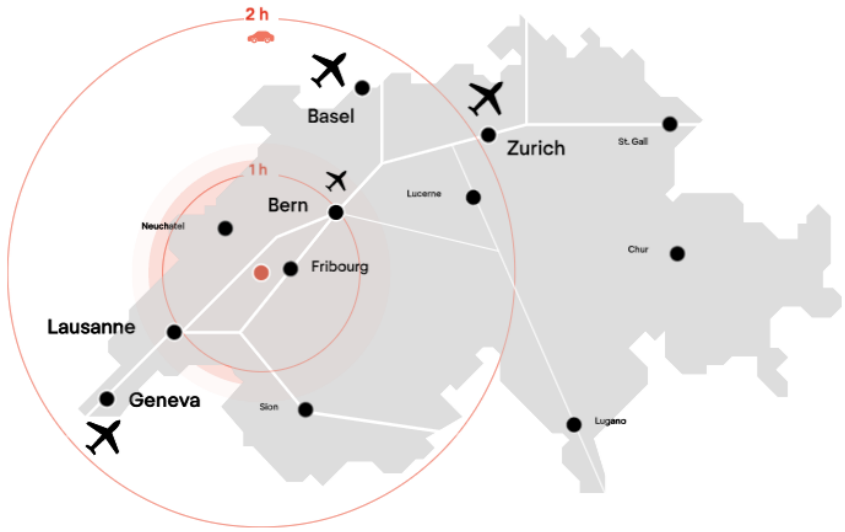
COMPANY

asyril

2007 Established

60 Employees

Villaz-St-Pierre, Switzerland
Headquarter



Technology park

le vivier

Majority owner

capiton

COMPANY

asyril

Over 40 distributors worldwide
based in 29 countries

COMPANY

NIVALIS GROUP

1999 Established

120 Employees

Industrial Companies

asyril

cpa

regenHU BIOSYSTEM ARCHITECTS

rovenso

EPOS

bionomous

Incubator

VENTURI

Technology Park

le vivier

COMPANY HISTORY

2007

Asyril Established

Two Business Units

- Custom Systems for the Swiss Watch Industries
- Develop and Manufacture Components for Automation

Received Swiss Technology Award

2009

Market Introduction of Asycube

Filed Patent

Received Innovation Prize from the Canton of Fribourg

INNOVATION AWARD

PRIX À L'INNOVATION
INNOVATIONSPREIS
FRIBOURG – FREIBURG

2011

Market Introduction of the Asyfeed Pocket

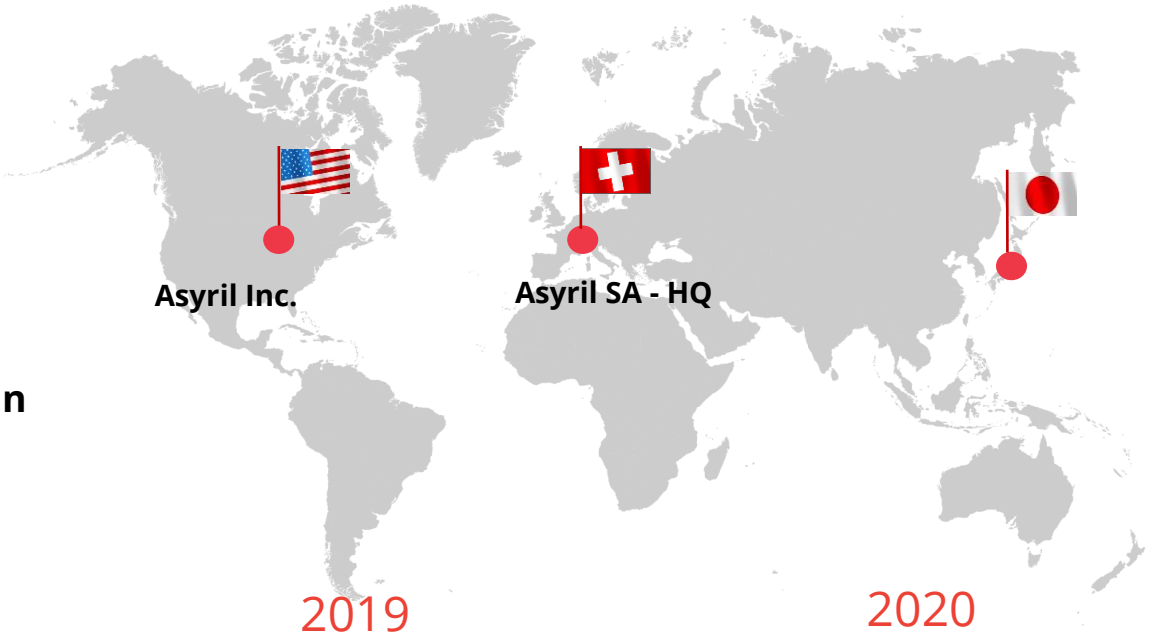
Cell for Palettizing

Watch Components

2013

Decision to Focus on Flexible Feeding Components

Market Introduction of Asycube 240



Received German Handling Award

Market Introduction of EYE+

2014 2018 2019 2020 2021

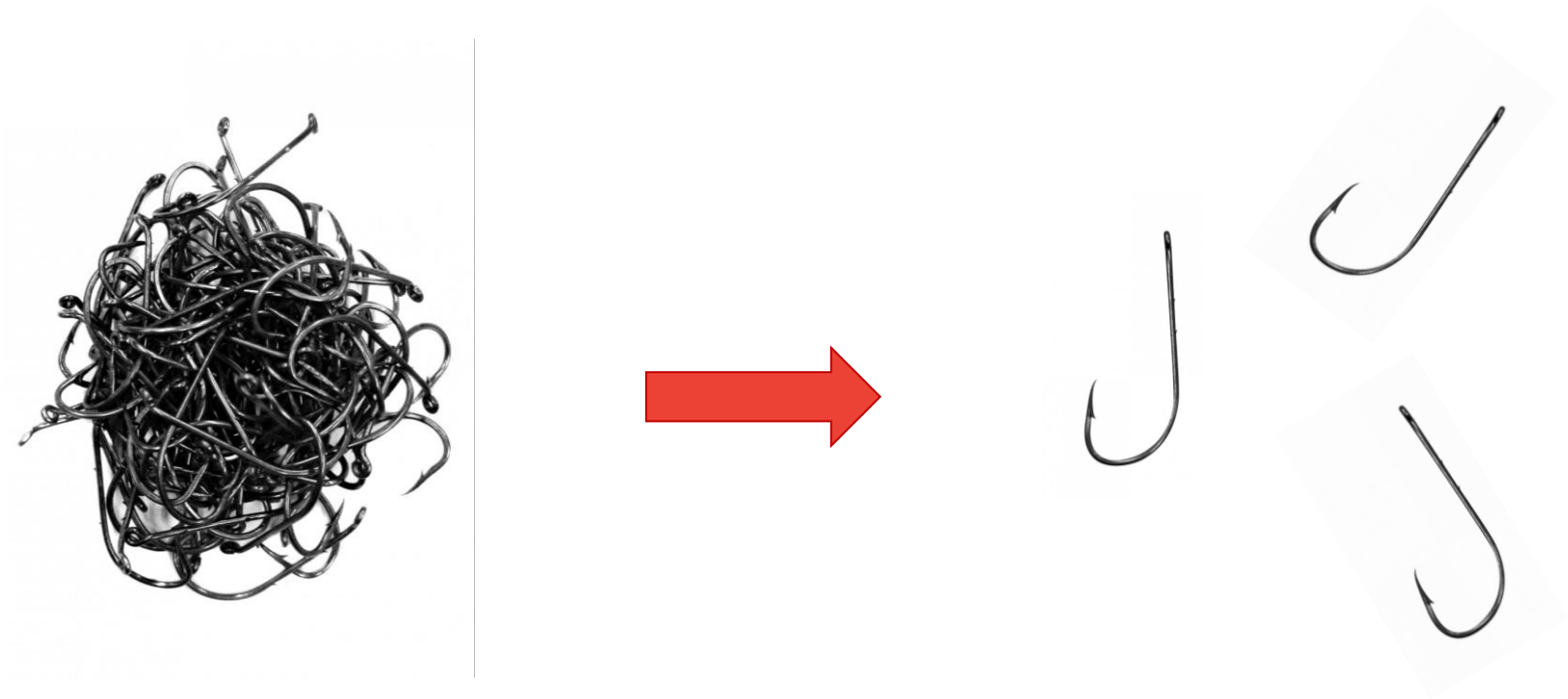
Development of Global Distributor Network

Opening of Technical Center in Edina (Minneapolis), Minnesota USA

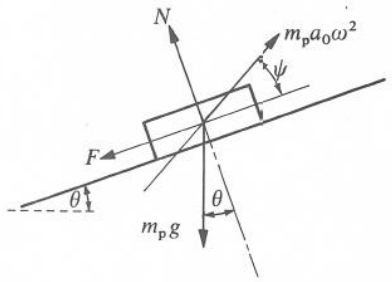
Opening of Technical Center in Yokohama (Tokyo), JP

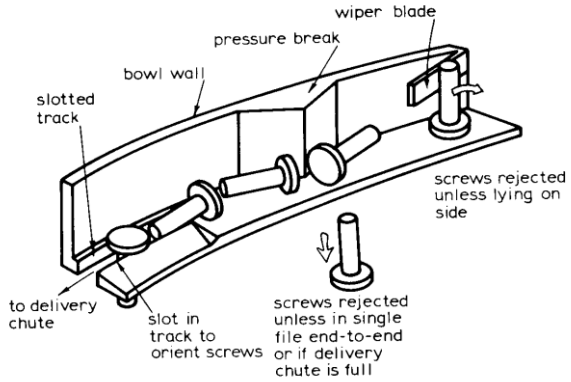
FEEDING OF PARTS IN A PRODUCTION LINE

- The most economic way to stock parts is in bulk
- A key task in automated assembly systems is to separate parts supplied in bulk and bring them to a manipulator at a given **position** in the desired **orientation** in a given **time**



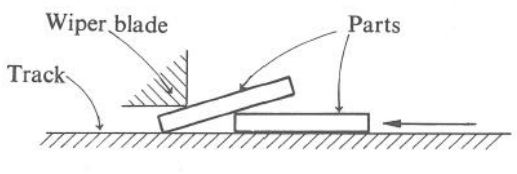
CLASSICAL SOLUTION: VIBRATORY BOWL FEEDERS

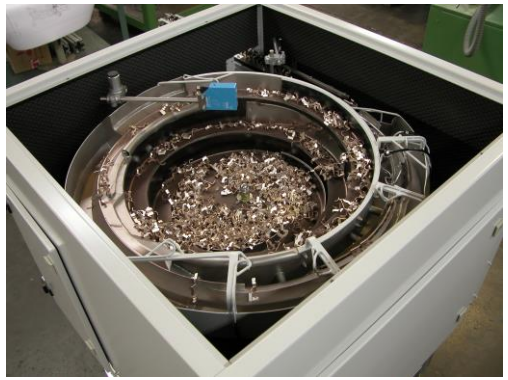




- The use of vibratory bowl feeders is the classical way to feed parts
- Used very commonly since its invention in 1950; works well for many applications
- Motion of parts is achieved by vibratory patterns
- Orientation of parts is achieved by mechanical selectors

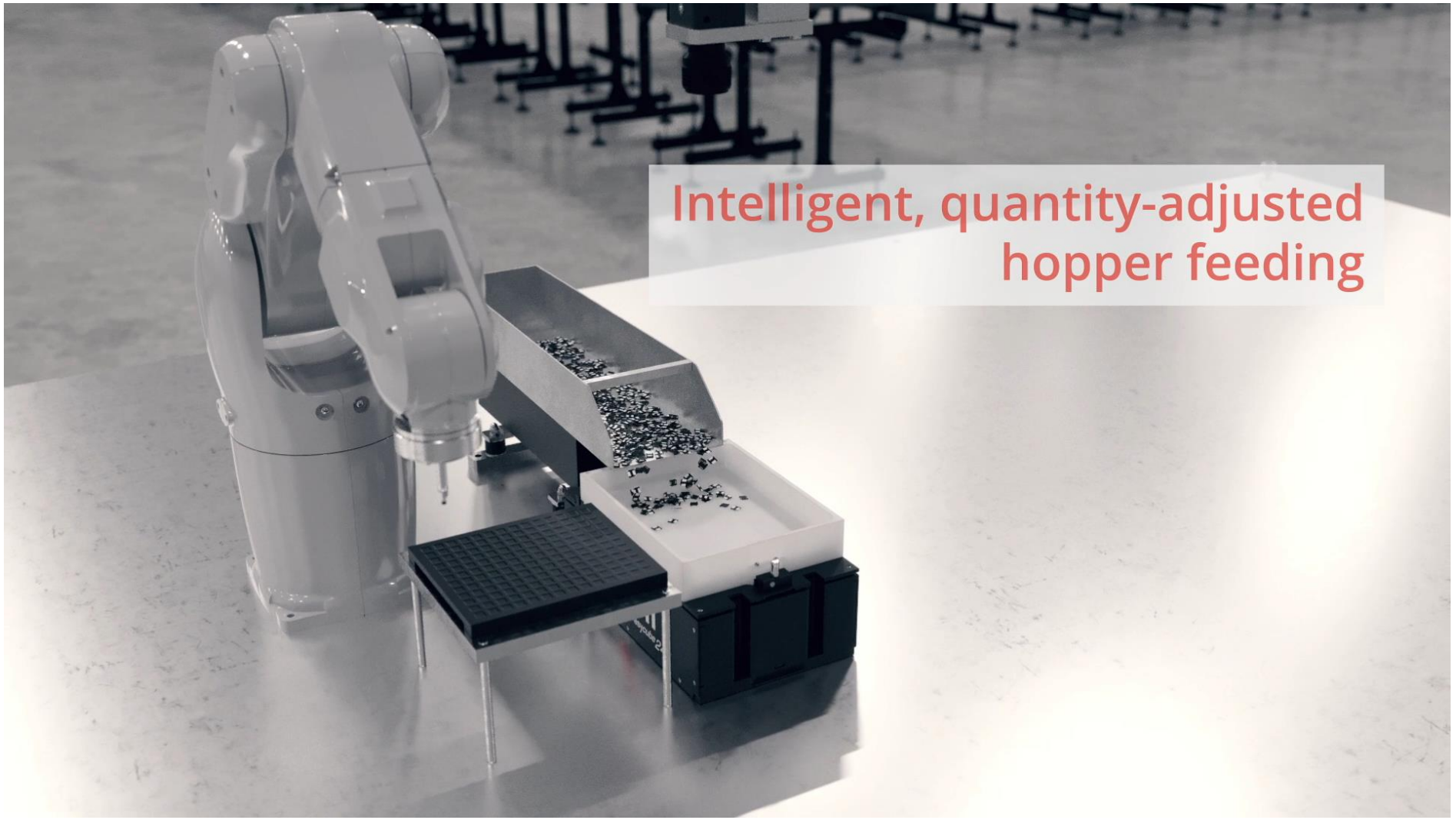
LIMITATIONS OF BOWL FEEDERS





- Low flexibility
  - Usually a bowl feeder is dedicated to one type of component only
  - Product variant change-over not easy and slow
- Parts can jam in mechanical selectors
- Slow delivery lead time
  - Bowl cannot be designed simultaneously to part design
  - Tuning a bowl is a tedious, complex task
- Bowls can damage sensitive parts
- Some components geometries are impossible to feed
  - Lack of orienting features
  - Small components can charge electrostatically, sticking together or to the bowl
- Noise exposure endangering worker safety

FLEXIBLE FEEDER : HOW IT WORKS

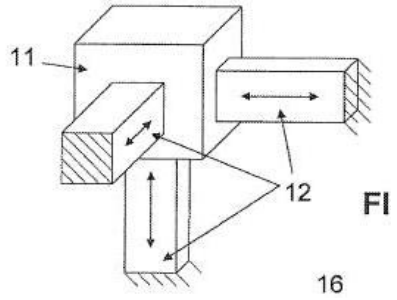


ASYRIL'S UNIQUE 3-AXIS VIBRATION TECHNOLOGY

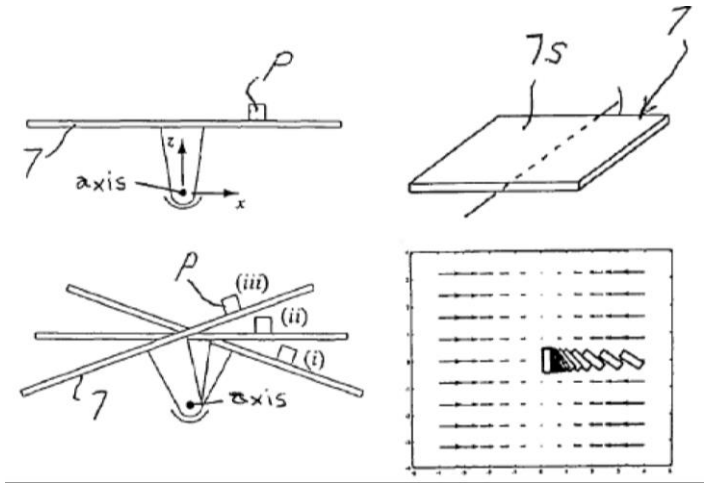
- Parts can be moved in all directions
- Parts do not accumulate in a corner or on an edge
- Parts do not need to recirculate
- Delicate parts are gently handled by
  the precise tuning of frequence & amplitude

ASYRIL 3-AXIS VIBRATION TECHNOLOGY PRINCIPLE

- Integrated voice coil actuators allow the parts to move in all directions on the platform surface
  - X direction (forward / backward)
  - Y direction (left / right)
  - Z direction - precise setting of optimal flip amplitude



- By intelligently setting and combining the vibration parameters, the system can be tuned to work with any part
  - Vibration frequency
  - Vibration amplitude
  - Phase difference between actuators
  - Signal type and waveform



FLEXIBLE 3-AXIS VIBRATION FEEDERS

For parts and components from <0.1 up to 150 mm in size

Asycube 50
< 0.1 to 5 mm

Asycube 80
3 to 10 mm

Asycube 240
5 to 40 mm

Asycube 380
15 to 60 mm

Asycube 530
30 to 150 mm

HIGH FLEXIBILITY: PARTS OF ANY SHAPE AND MATERIAL

99% of parts can be fed by our feeders, including complex geometries and highly delicate parts.

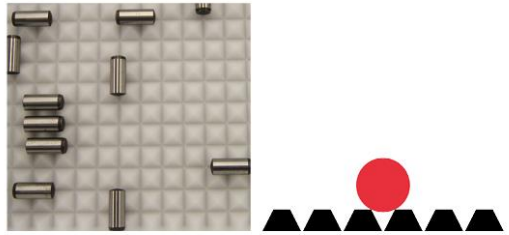
DIFFERENT STRUCTURES DEPENDING ON PART GEOMETRY

- The Asycube can be fitted with a variety of structured platforms to guarantee a swift and correct orientation of parts.
- Different types of material can be used for the platforms:
  - Black, FDA, ESD (Anti-static)

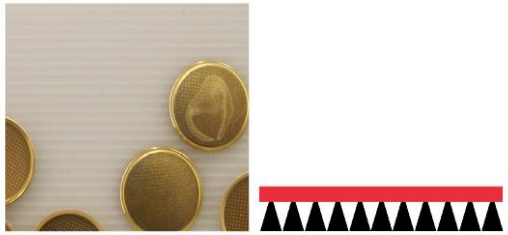
Flat

Grooves

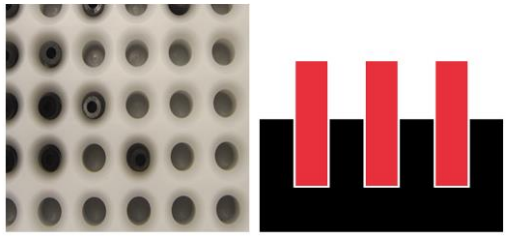
Anti-roll



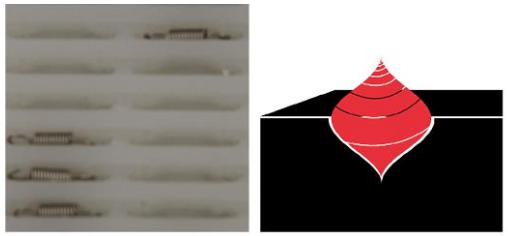
Anti-stick



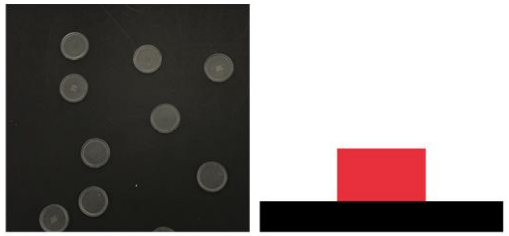
Holes



3D Pockets



Black



FUNCTIONAL SURFACES

Anti-stick and anti-roll platforms are perfectly suited to limit travel and stabilization time.

Flat Plate

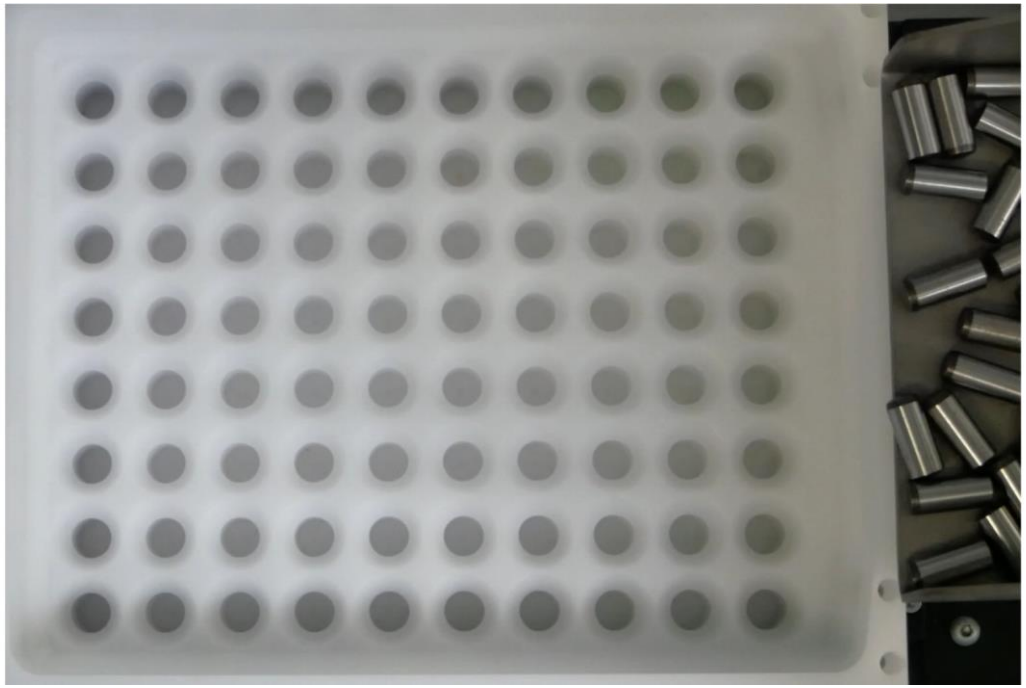
Anti-roll Plate

Flat Plate

Anti-stick Plate

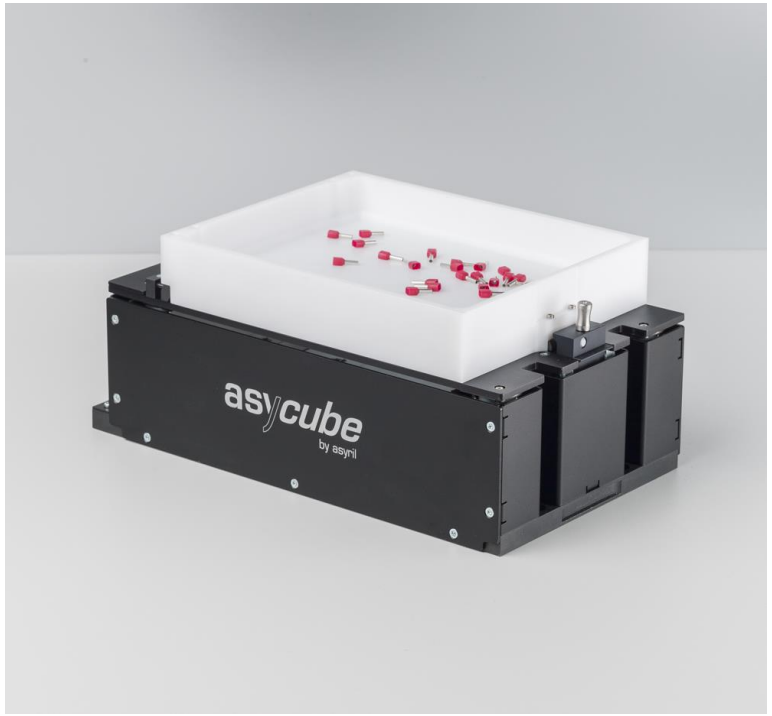
PRE-ORIENTATION OF PARTS

In addition to standard anti-roll and anti-stick plates, Asyril also offers customized platforms to facilitate parts gripping by the robot .

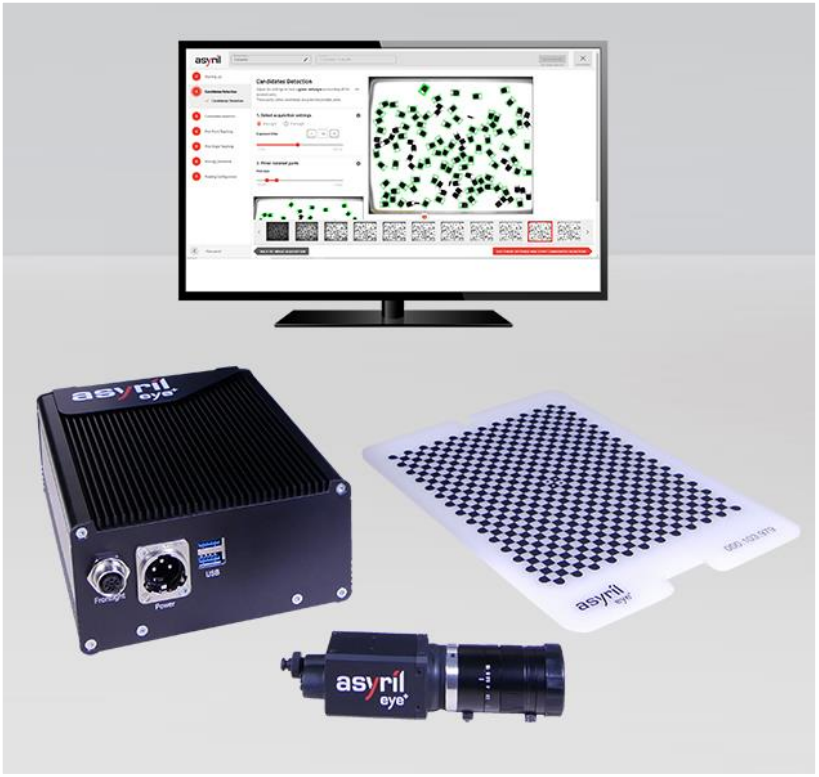


PRODUCTS

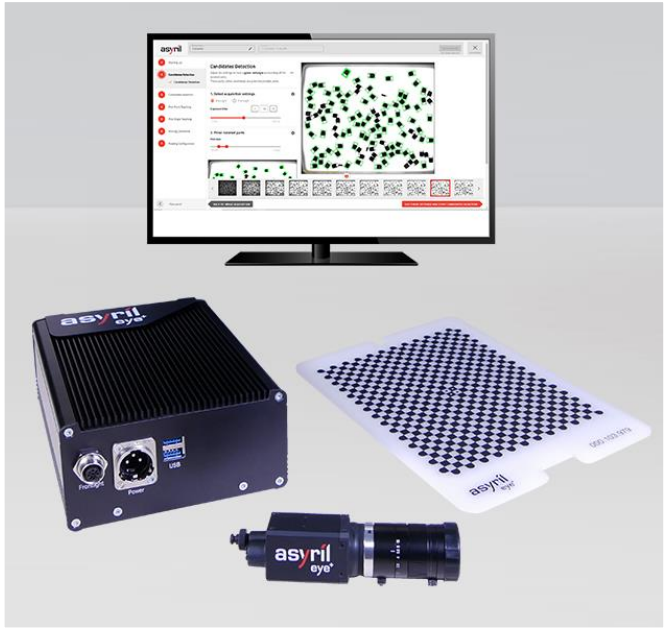
Asycube Series
Flexible 3-axis vibration feeders



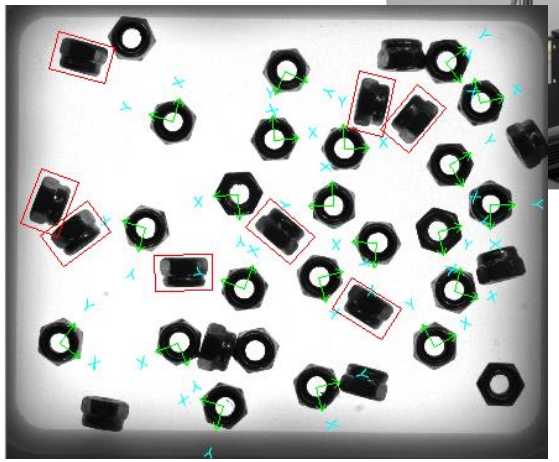
EYE+
Smart Control System for Asycube



EYE+ CONTROL SYSTEM FOR ASYCUBE

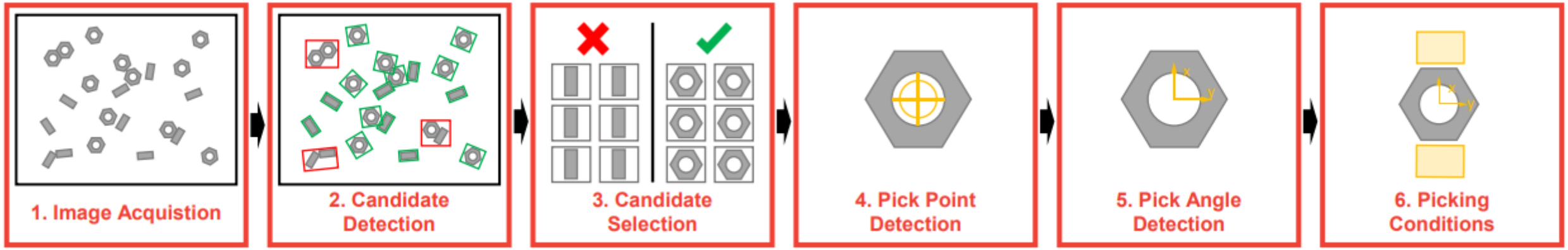


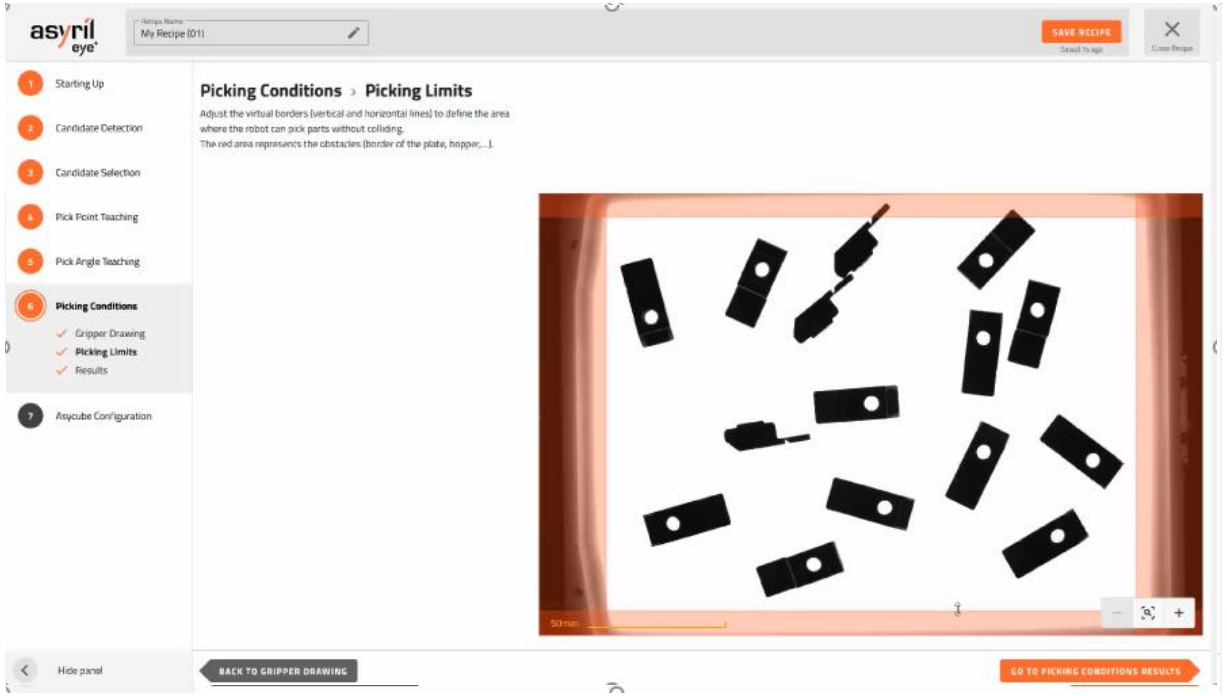
- Control automatically the motion on the feeder
- Optimize part distribution on the platform
- Refill the platform when needed
- Detect parts that can be picked
- Give coordinates of parts to the robot



- Easy to use
- Plug and Play
- Intuitive recipe creation and configuration
- Compatible with any Asycube
- Compatible with any PLC & industrial robot brand

EYE+ CONTROL SYSTEM SETUP

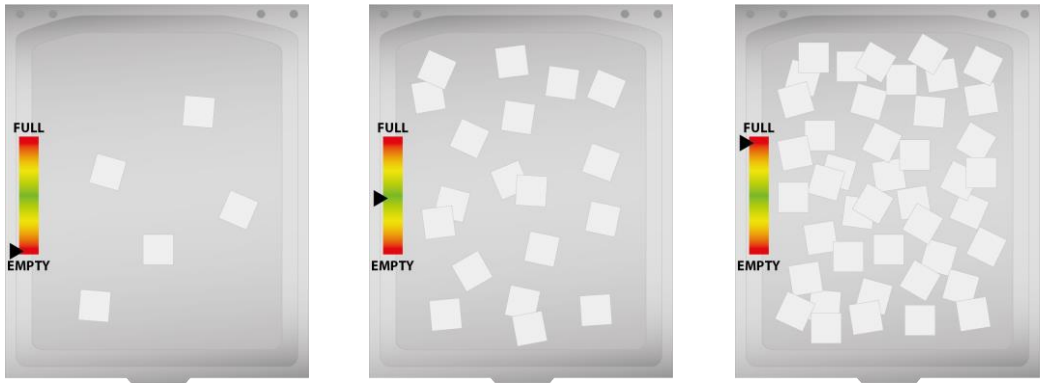




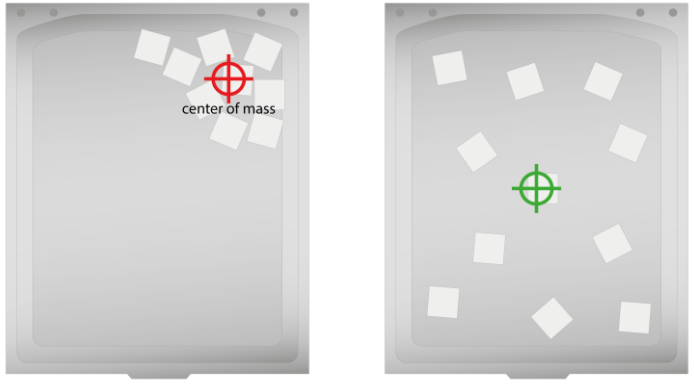
EYE+: DETERMINE THE BEST VIBRATION SEQUENCE

- Evaluates the quantity of parts on the platform
- Observes the location and behavior of the parts
- Determines the best vibration sequence for platform and hopper

Vibration of the hopper
to get enough parts on the platform



Vibration of the platform
to have a maximum number of grippable parts



EYE+: INTEGRATION

- TCP/IP communication & Fieldbus (EtherCAT)
- Plugins for an easy and fast integration

ABB	DENSO	FANUC	KUKA	MITSUBISHI ELECTRIC *Changes for the Better*
Coming soon	Get the plugin	Get the plugin	Get the plugin	Coming soon
STÄUBLI	UNIVERSAL ROBOTS	YAMAHA	YASKAWA	
Get the plugin	Get the plugin	Get the plugin	Get the plugin	

FLEXIBILITY

- End User : STRYKER-SPINE
- System Integrator : FIRAC (FR)
- Industry : MEDTECH
- Parts : Headless screws, poly-articulated screws, screw heads, blocker
- Challenge : Palettize hundreds of different references
- Solution : Asycube 240 with UR10 and ROBOTIQ Hand-e.
- Result : Palletization done without any tool changes for all references

asyril

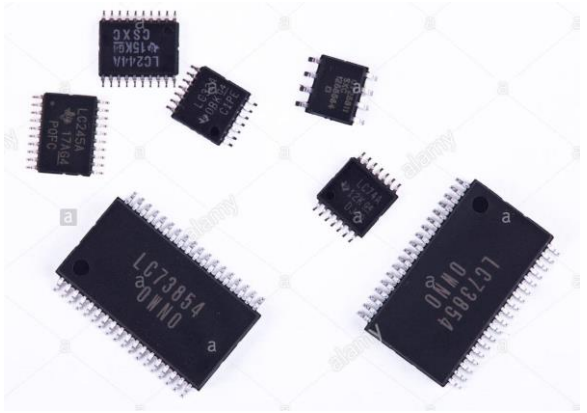
CELLULE COLLABORATIVE

Dévracage & palettisation

By FIRAC Etupes

FLEXIBILITY

- End User : US Customer
- System Integrator : AATEC (CH)
- Industry : Electronic components / Tape & Reel Application
- Parts : SMD Microchips



- Challenge : Components to be placed into tapes from 0.3 to 10mm in size
- Solution : Asycube 80 with SmartSight, Jenny-Science cartesian robot
- Result : We are in the Low Volume/High Mix category. The machine successfully addresses the wishes of end user by providing a Flexible and easy to use solution. Our simplified SmartSight vision software is adapted to end user without high vision skills and allows the end user operators to create new recipe if necessary without assistance.


asycube 80

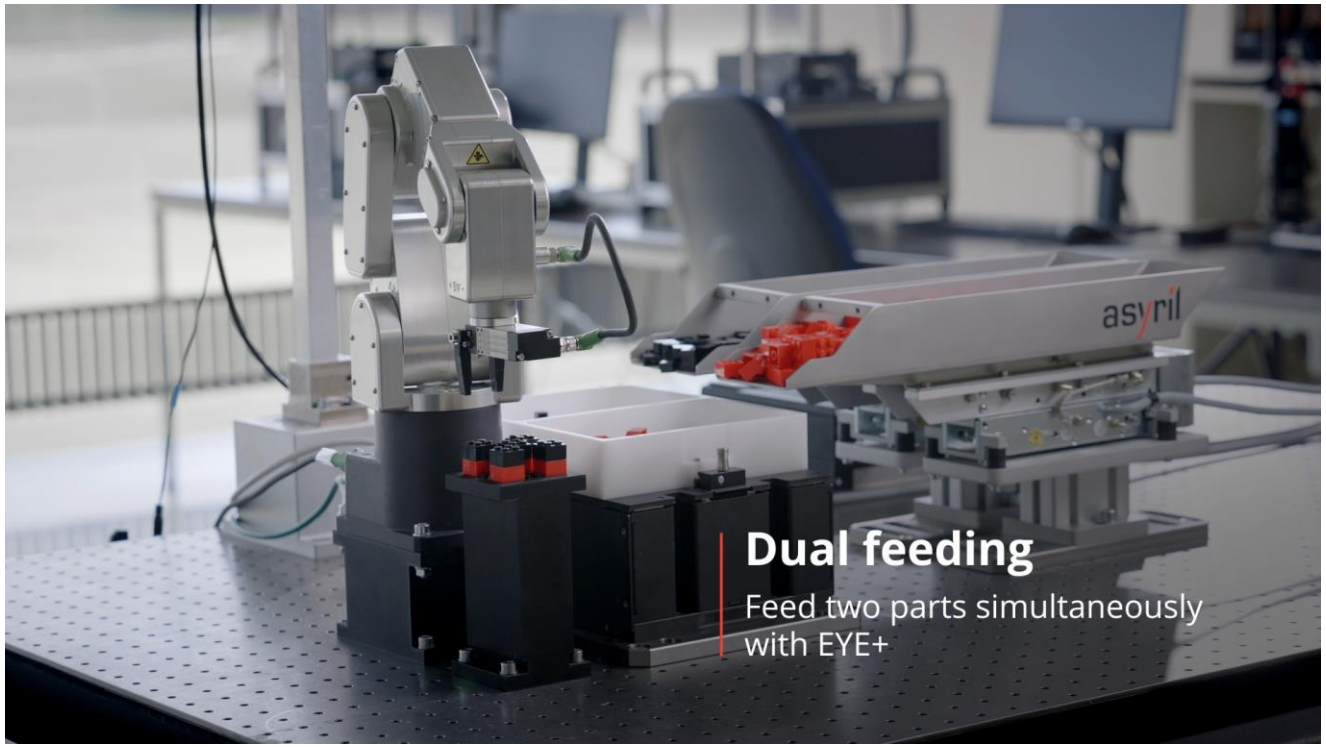
FRAGILE PARTS

- End User : All best known watch makers
- System Integrator : ATEC-CYL Automation (CH)
- Industry : Micro Assembly / Watch
- Parts : Anchors or other watch parts (ruby stones, diamonds, Pins, screws, …)
- Challenge : Design a standard machine able to palletized micro parts for surface finishing/polishing. No scratches allowed => Soft handling mandatory
- Solution : Asycube 80 Jenny-Science cartesian robot
- Result : The MEA line is able to pick and place parts with variable shapes, dimensions while staying standard. ASYRIL ability to master the vibration avoid too many shocks that may damage the components. No recirculation is also a key factor.


ATEC-CYL

DUAL FEEDING OPTION

- Cost reduction (less hardware)
- Space saving
- Efficiency, handling 2 types of part
- Intelligent hopper management



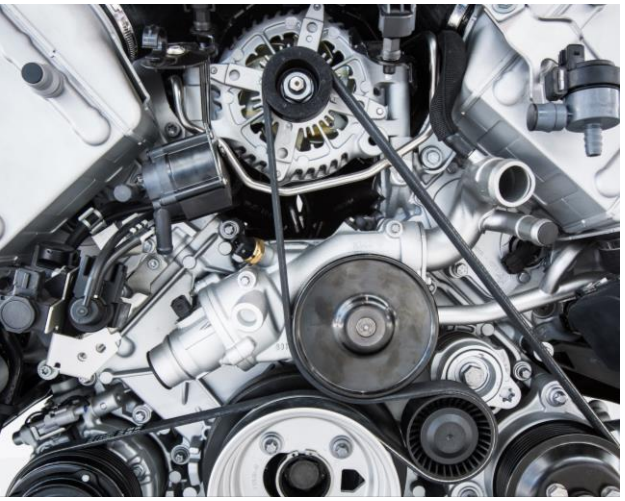
Integration challenges:

- Gripper size, multi-part gripper
- Frames collisions, complex robot movement
- Low cycle times only

INDUSTRIES

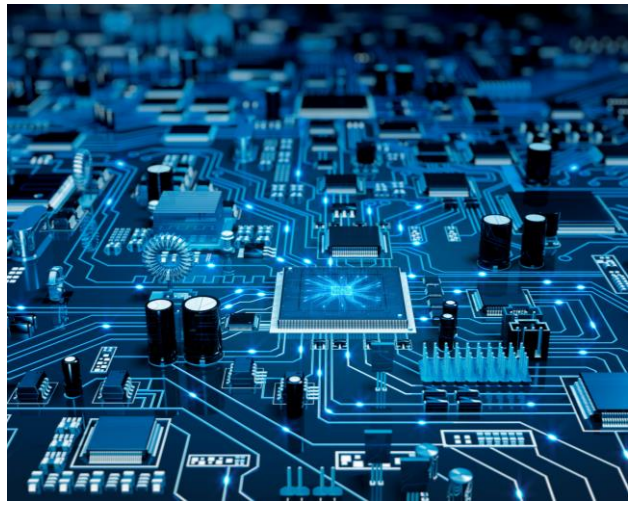
asyril

Automotive



Medical & Life Science

Electronics & Semiconductors



Watch & Jewelry

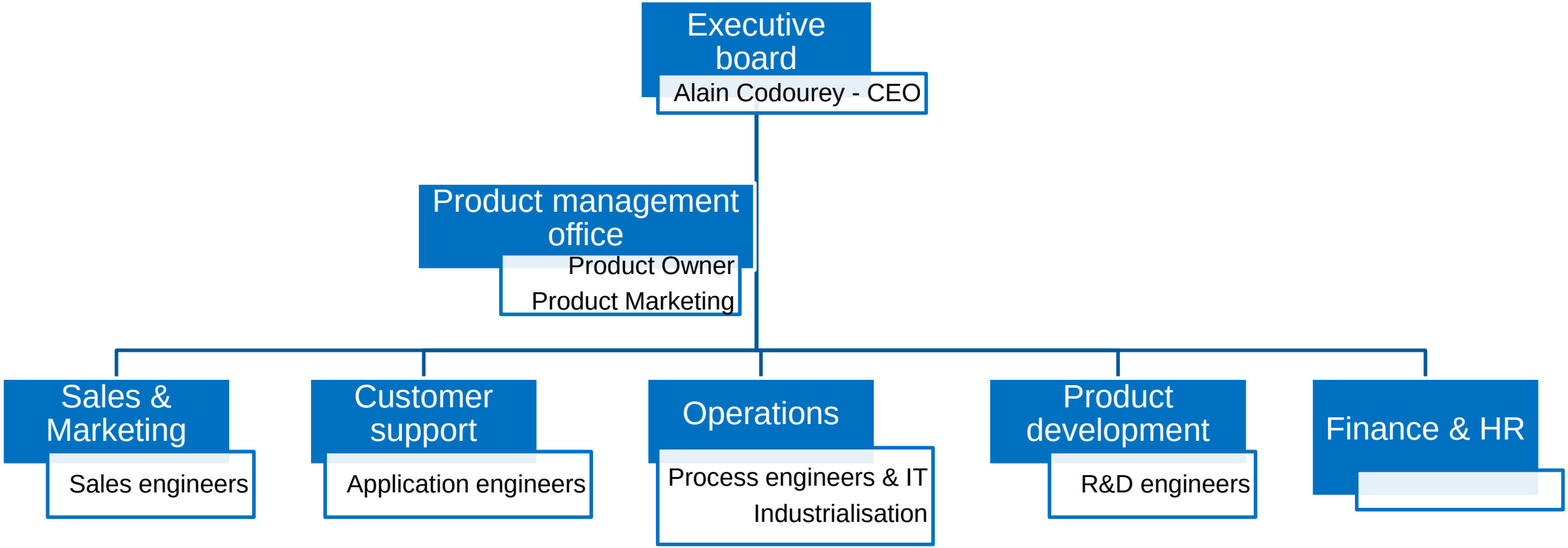
CONCLUSION

- Flexible feeding systems for small components are ready for the market and offer many advantages compared to traditional bowl feeders
  - Asyril's flexible feeders are compatible with 99% of all part geometries and materials
  - 3-Axis vibration technology is able to handle also extremely small and delicate parts
  - Fast programming of new parts through easy teach-in software
  - Quick production changeover
  - No jamming
  - Almost no wear of parts
  - Low maintenance and operating costs

- In a horizon of 10 to 15 years, flexible feeding systems may replace a significant amount of traditional bowl feeder based solutions

A TEAM OF ENGINEERS

… NOT ONLY OF COURSE !



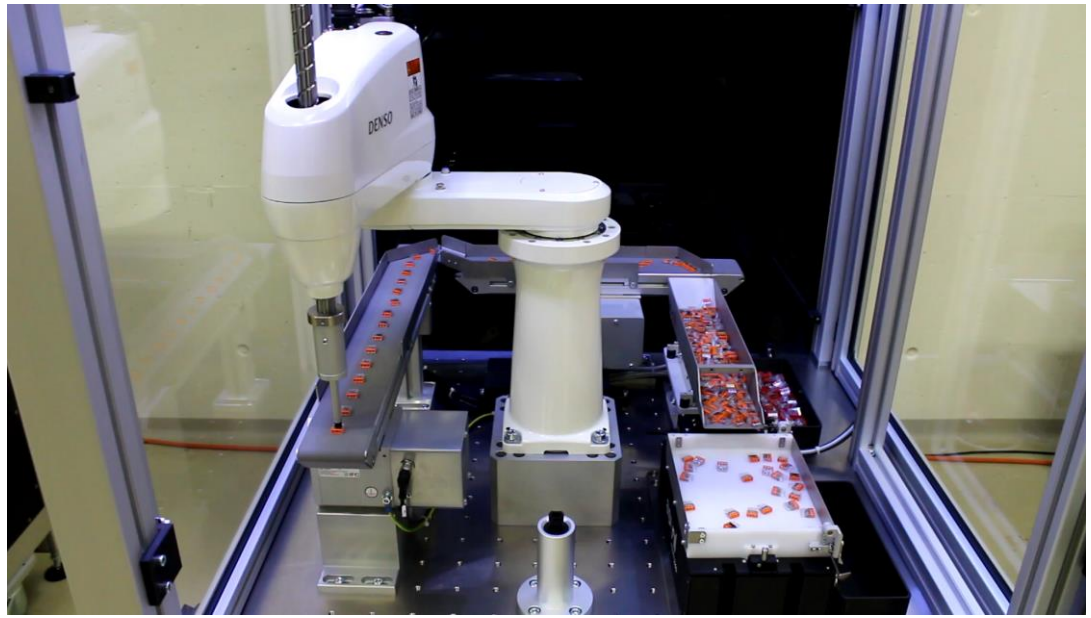
ENSURE THE TECHNICAL EXPERTISE – COMPETENCES CENTER

Asyril competences center

- Ensure top level know-how of all **Application Engineers**
- Share update information on products and applications
- Internal projects (demonstrators, custom accessories, …)

Customer oriented skilled teams with high **technical knowledges**

- General automation
- Robotics
- Mechanical design
- Application programming
- Fieldbus & TCP/IP communication
- Machine vision and lighting



Typical **projects**

- Sample codes, specific production scenarios
- Accessories/non-standard products
- Development of demonstrators, training & feasibility equipment

STAY INFORMED ON ALL ASYRIL NEWS AND DEVELOPMENTS

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Thank you
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