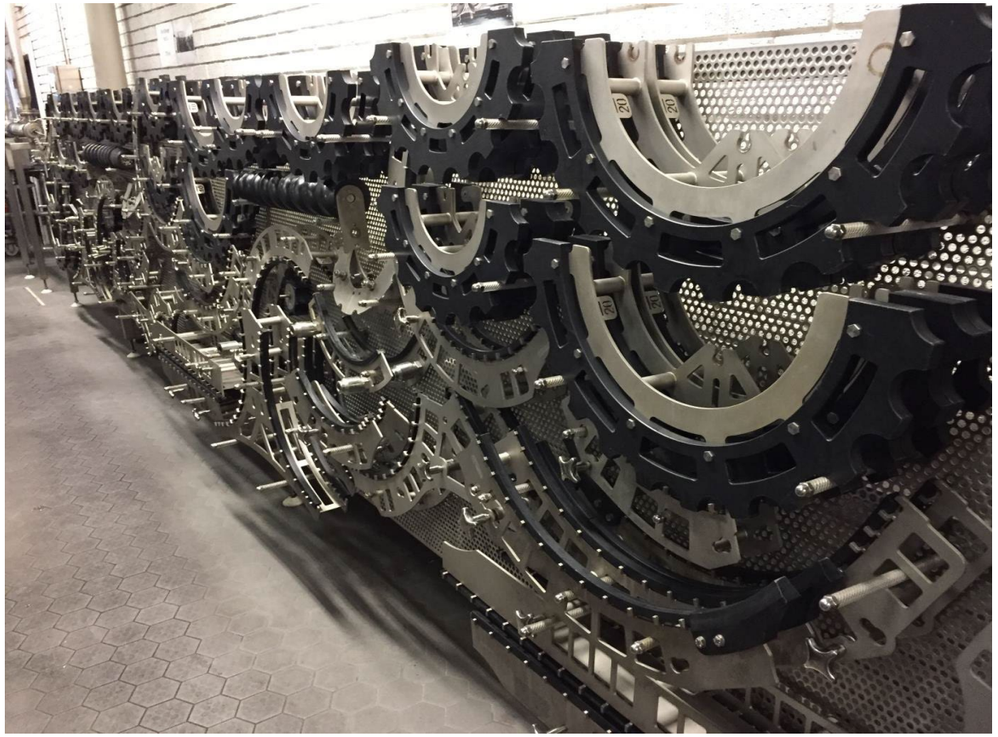
To good to be wasted, Learnings when changing bottles and products

Current situation for the wineries and craft brewers / cidermakers

-Strong diversification / differentiation of the product range , wide range of wines and bottles short production runs
-To justify Investments contract packaging possibilities have to be considered
-Growing export market, apart from bulk wines has high quality demands
-losses in time , product and material are lethal to the low margins
-Profitable brands face attempts or actual counterfeiting
-High amounts of dedicated parts are requiring space, highly trained operators and may be used only one season

Facing the time eaters

-manual individual interchangeable filling tubes
-manual false bottles
-change of dedicated change parts (infeed screws, transfer star wheels , etc.
-Change of the rinsing clamps

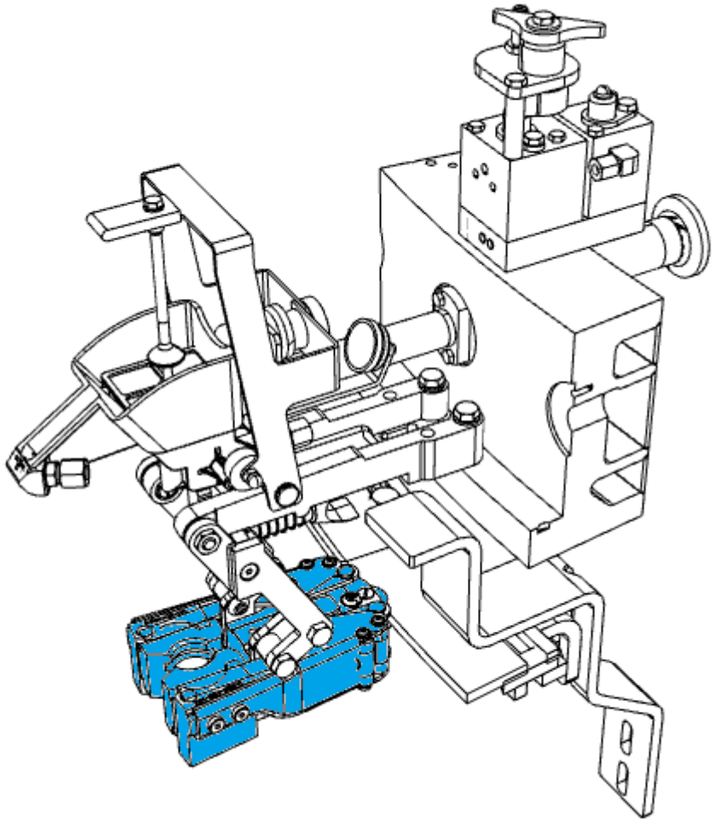


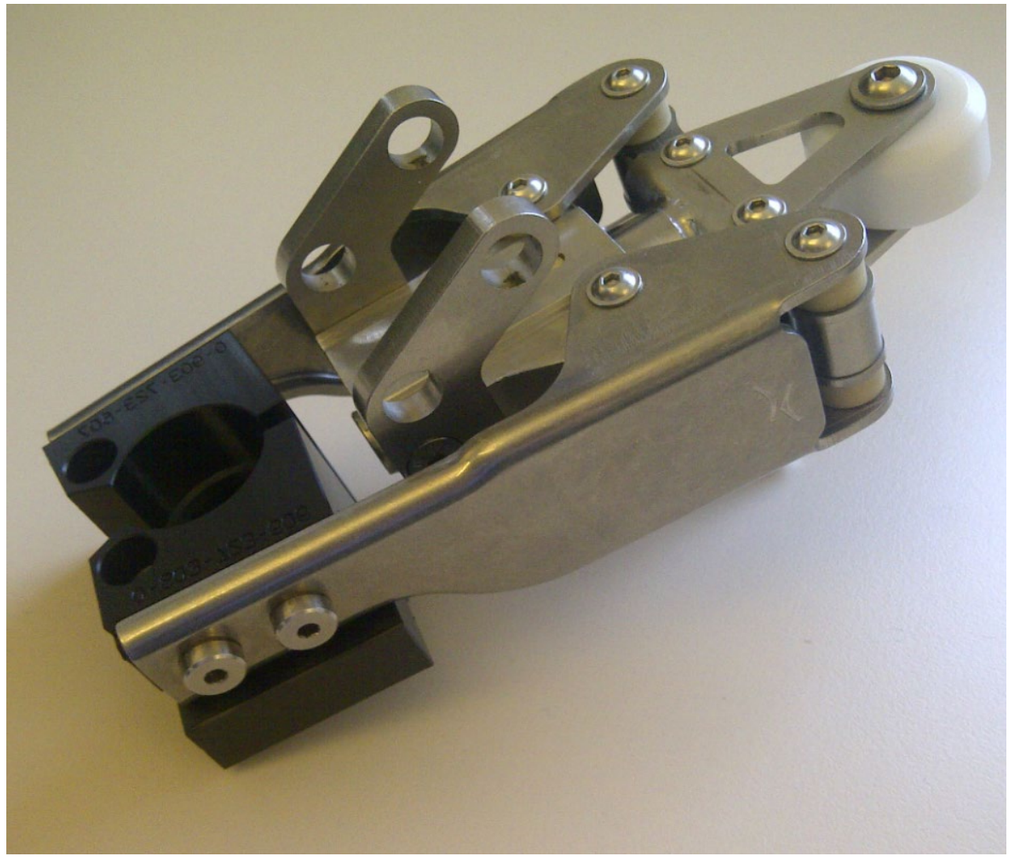
Update 1.8.18

Rinsing head with active gripping

KRONES

Product Rinser – Active gripping clamp

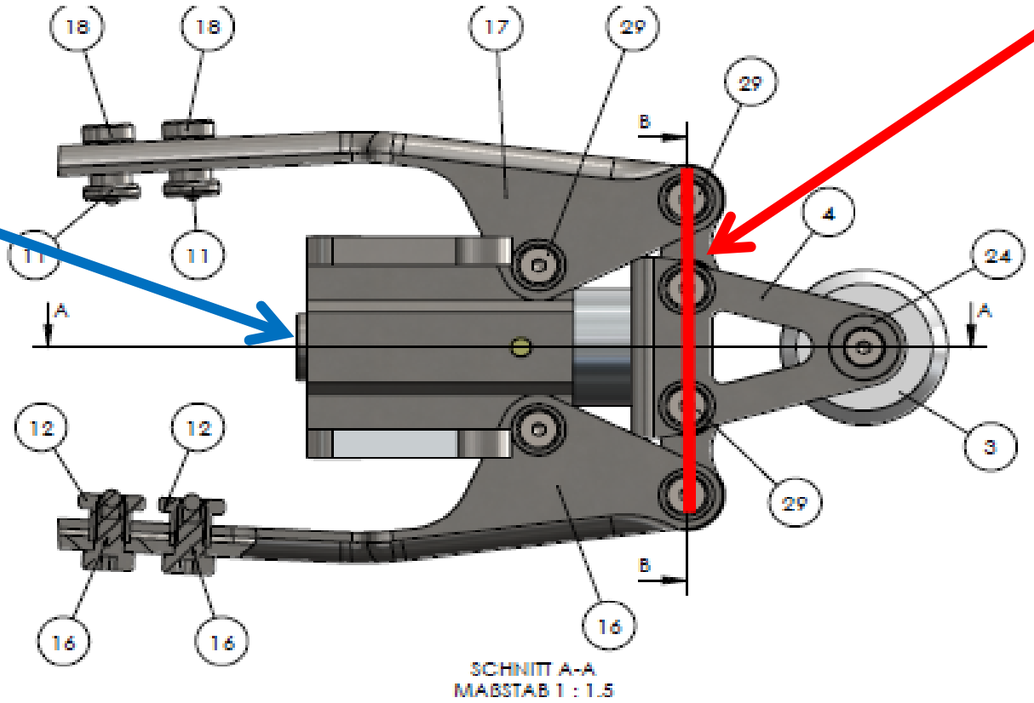




Moduljet – Active gripping clamp

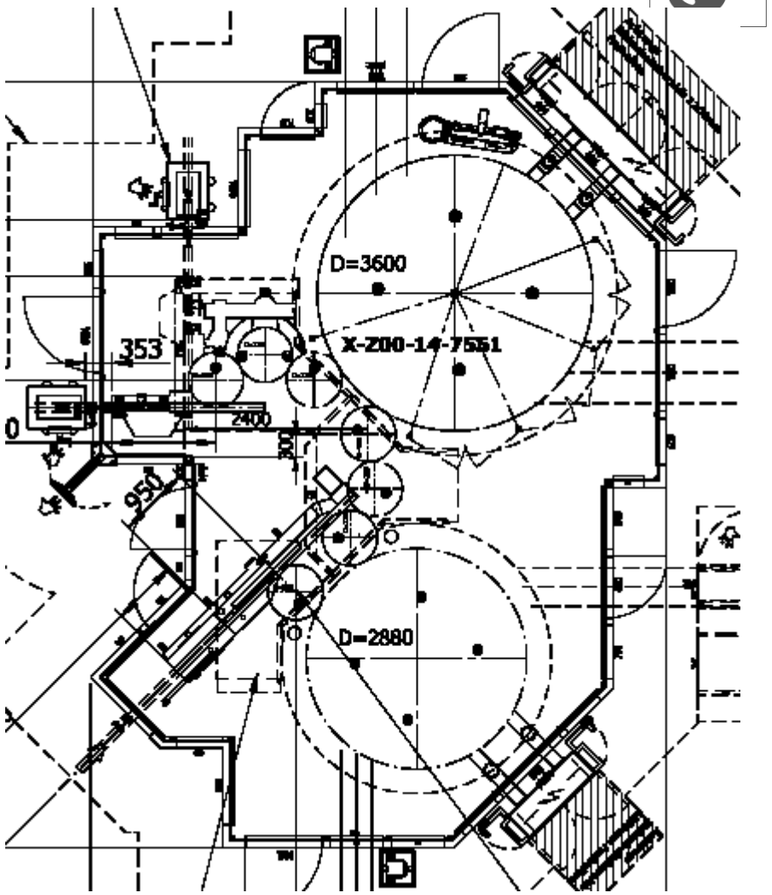
self-locking

Spring loaded -> clamp normaly closed



Rinser – Filler bloc template / Change over parts

	Overview - change over parts	Changeover trained operator / parts at machine
Bloc	Automated height adjustment	3 min
Rinser	Infeed worm / Infeed starwheel / Discharge starwheel Rinser clamp inserts (if different neck finish) Transfer starwheel (3pcs)	10 - 12 min 14 - 16 min (Presauption 88pcs) 15 min
Filler	Infeed starwheel / Discharge starwheel Centring bells (if different neck finish) Explosion shields Probeadjustment	8 – 10 min 55 – 60 min (Presauption 110pcs) 25 – 30 min (Presauption 110pcs) 1 – 10 min (auto –manual 110pcs)
Capper /Crowner	Central starwheel / Neck guidings / Discharge starwheel	15 – 20 min (with neck guiding)



Modulfill HRS short-tube filler with correction functions and automatic filling tube adjustment

Short-tube filler with correction functions and automatic filling tube adjustment

- Reliable fill level determination via the vent tube
- Low-oxygen filling through several pre-evacuation steps with intermediary CO_2 flushing
- Electropneumatically controlled filling valve
- Fill level correction via separate correction channel
- One filling speed
- Automatic swinging-in of the CIP cups

Applications

Suitable for still wine and sparkling wine

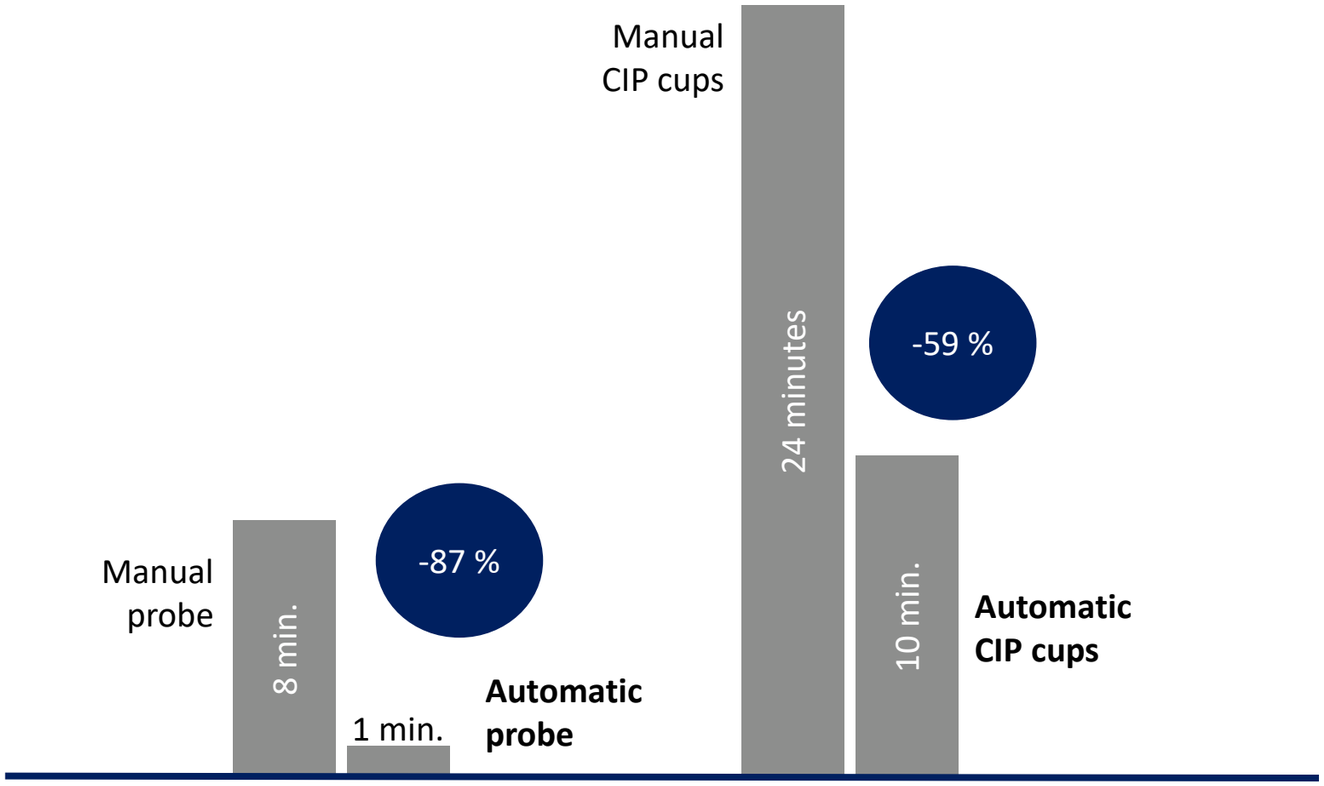
Output

Up to 60,000 containers per hour

HRS = Height filling system, Return gas tube, Short tube

Modulfill HES probe filler
Optional: with automatic probe adjustment and automatic CIP cup adjustment

Time saving during change-over:



Modulfill HRS short-tube filler with correction function and automatic filling tube adjustment

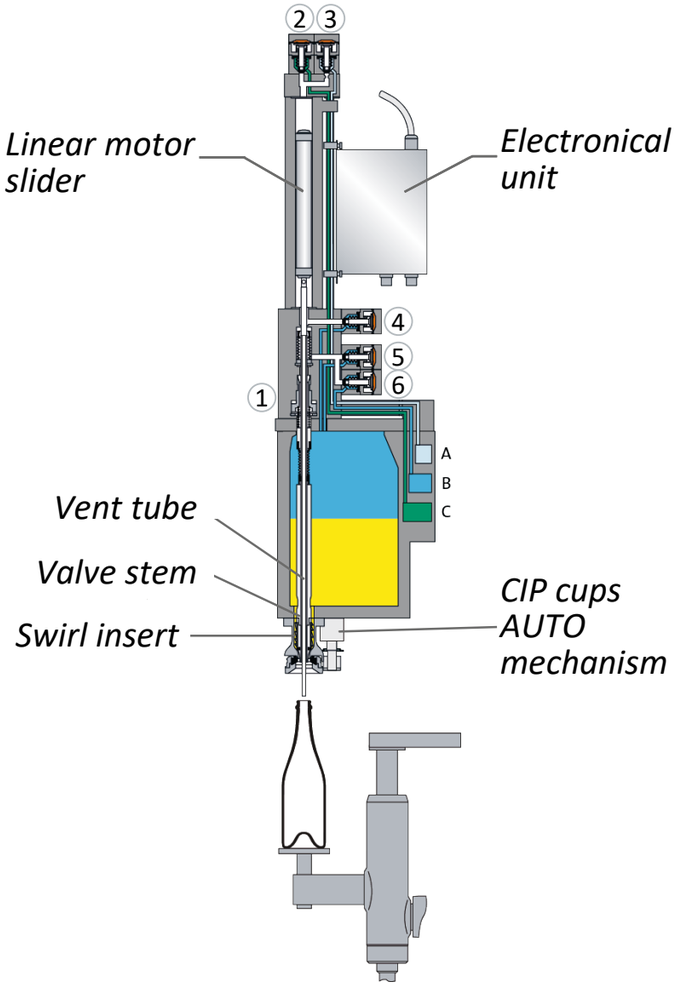
Functional principle of the valve

First the glass bottle is pressed on and then it is pre-evacuated several times. The filling valve opens after pressurisation and the filling process begins: The product runs into the bottle via a swirl insert. Once the bottle is filled up to the brim, the valve closes electropneumatically. The correction channel opens and the excessive fill quantity is displaced from the bottle up to the end of the vent tube. Afterwards, the bottle is snifted via a channel.

The special feature of this version: Both, the vent tube adjustment and the swinging-in of the CIP cups are performed fully automatically.

1. *Product open/closed*
2. *Vacuum and CIP return valve*
3. *Snifting and CIP return valve*
4. *Pressurisation and filling valve*
   Product return (correction)
5. *Pressurisation valve (dry)*
6. *Correction valve (fill level)*

A Snifiting and CIP return channel
B Correction channel (fill level)
C Vacuum and CIP return channel



Bottle volume:	200 to 2,000 ml
Viscosity:	< 10 mPa·s
Pulp:	max. 0.1 x 0.1 x 0,1 mm/portion < 5%

Modulfill HES probe filler
Benefits to you

Foamless filling
- Use of swirl inserts at the filling valve outlet
- Use of PFR valves

Maximum filling accuracy
- KRONES probe technology

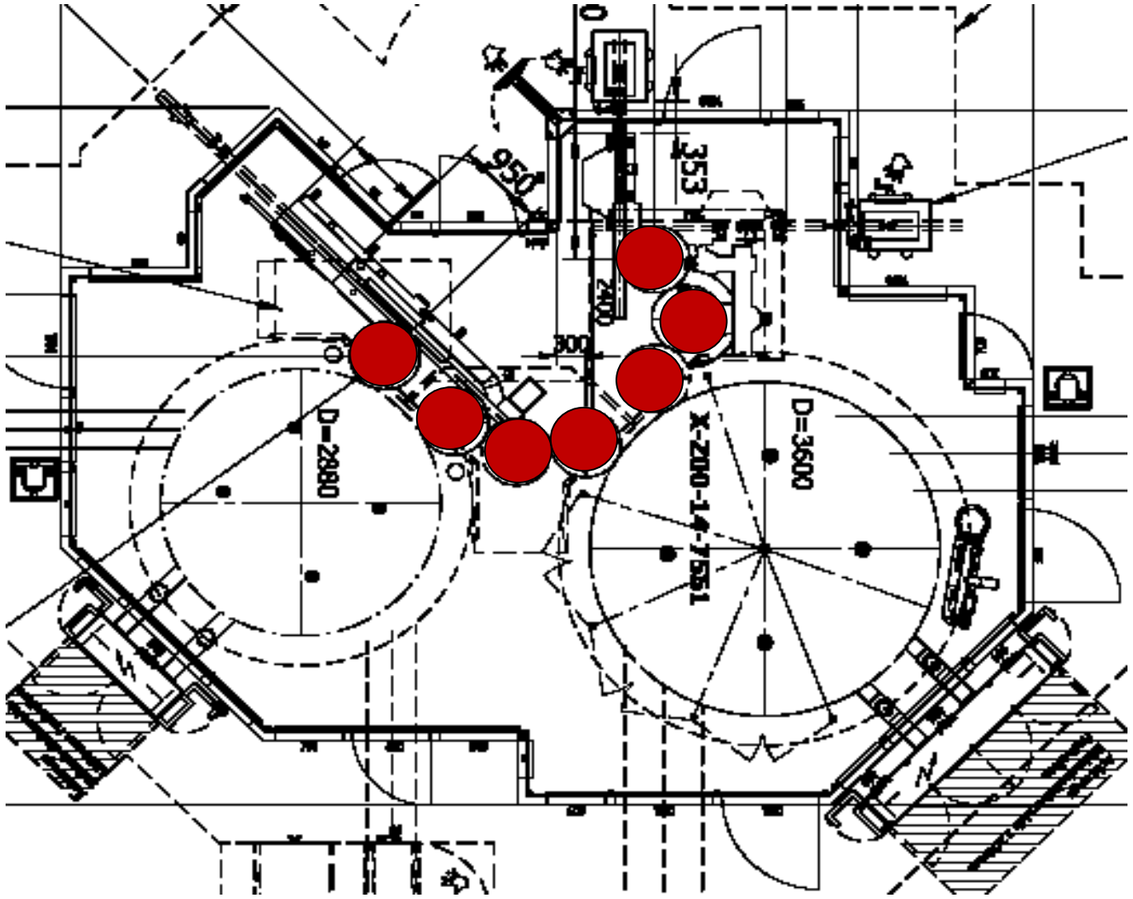
Perfect harmony between the pneumatic components and the electronic components
- All processes can be reproduced to one-hundred percent: no additional fittings required (such as pressure sensor with the respective electronic components)

Best technological values
- Several pre-evacuations
- Optimal interconnected CO_2 flushing

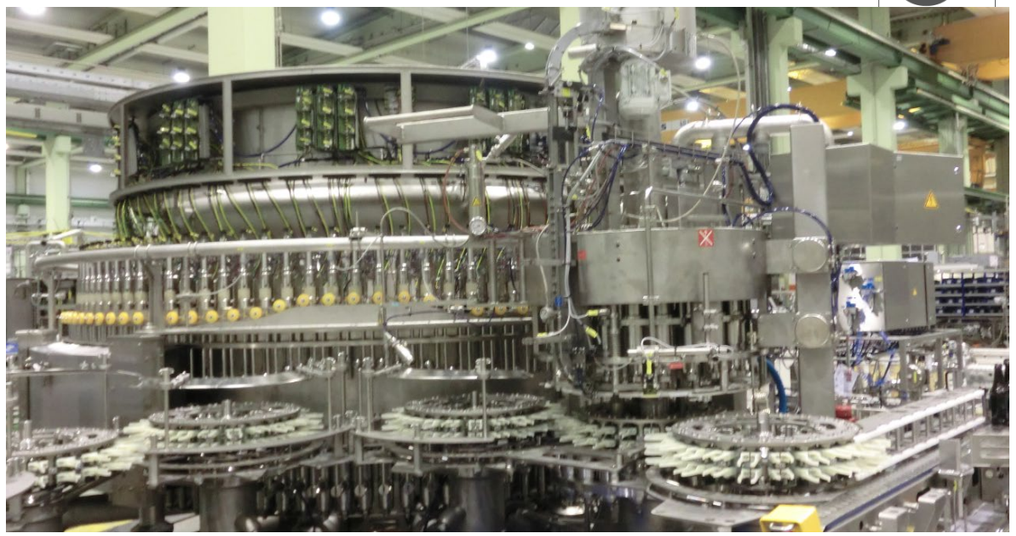
High filling stability
- Separation of the pressurisation channel and the snifting channel
- Absolutely dry pressurisation without any aerosol carry-over

Precision and long service life
- Use of special pneumatic components with a significantly higher life cycle than the one of conventional switching valves

Hygienic design
- No installed parts in the tubular ring bowl
- Vacuum pump integrated in the CIP circuit
- Height-adjustable splinter washout system
- Oil-free lift cylinders
- Self-draining surfaces
- Clean pneumatical components hosing and electrical wiring



tyrolon



Tyrolon/Krones Solution :
Advantages:
- One format for many deferent formats and diameter
- For big range of bottle no change over time needed
Disadvantage:
- cleanable/hygiene many springs
- Non fast changeable starwheels (& tools needed)

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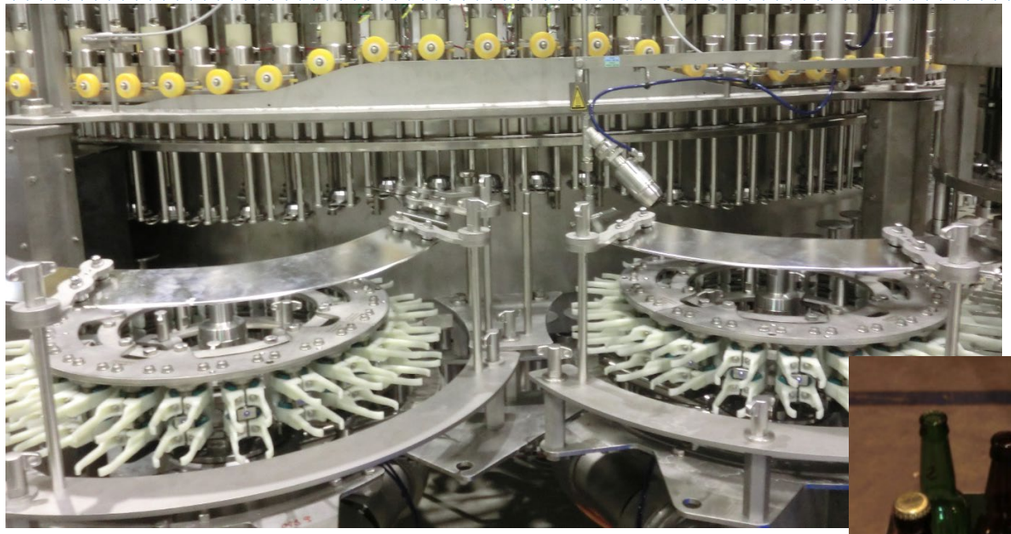
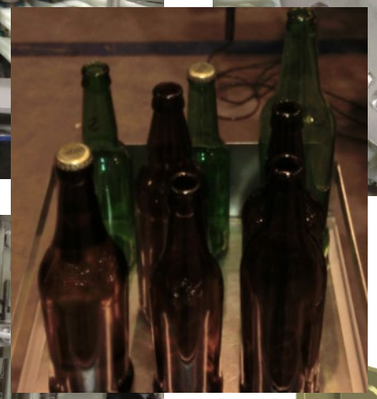
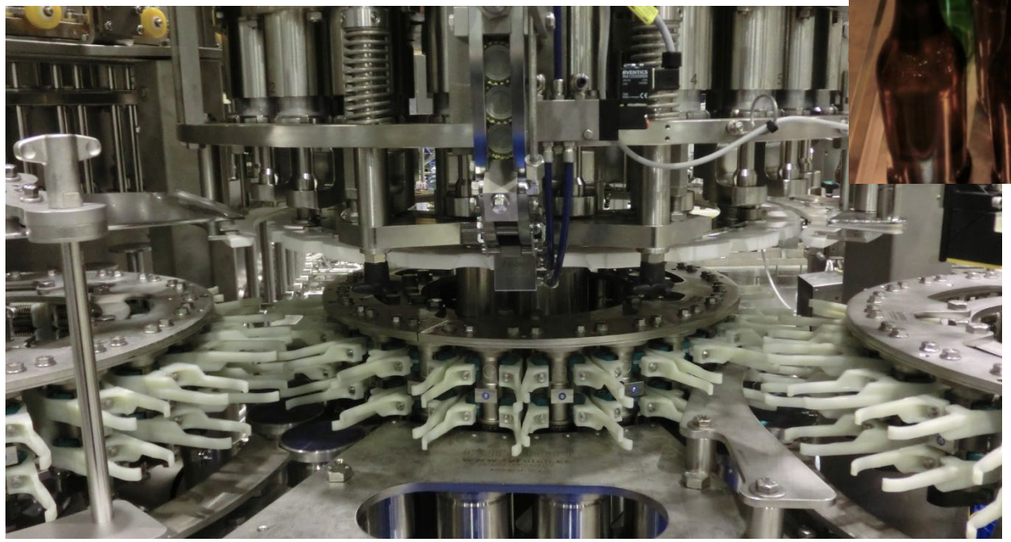
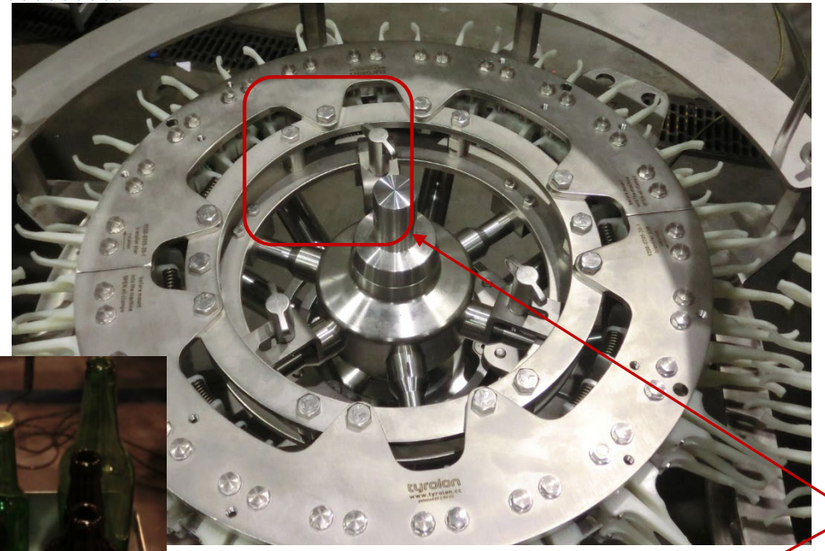
Bottle situation during, infeed, filling, capping

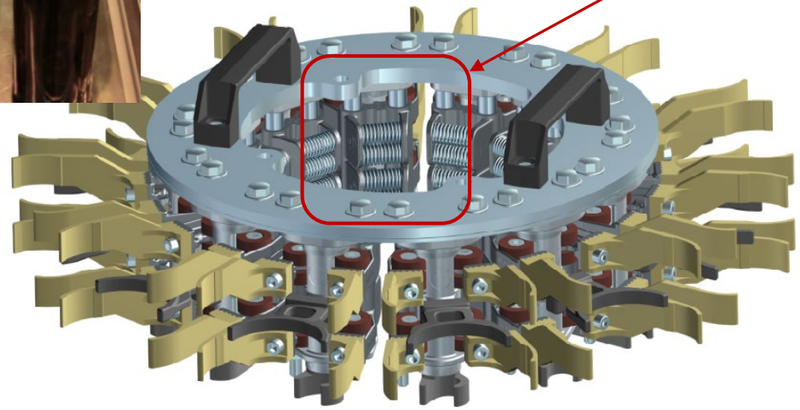






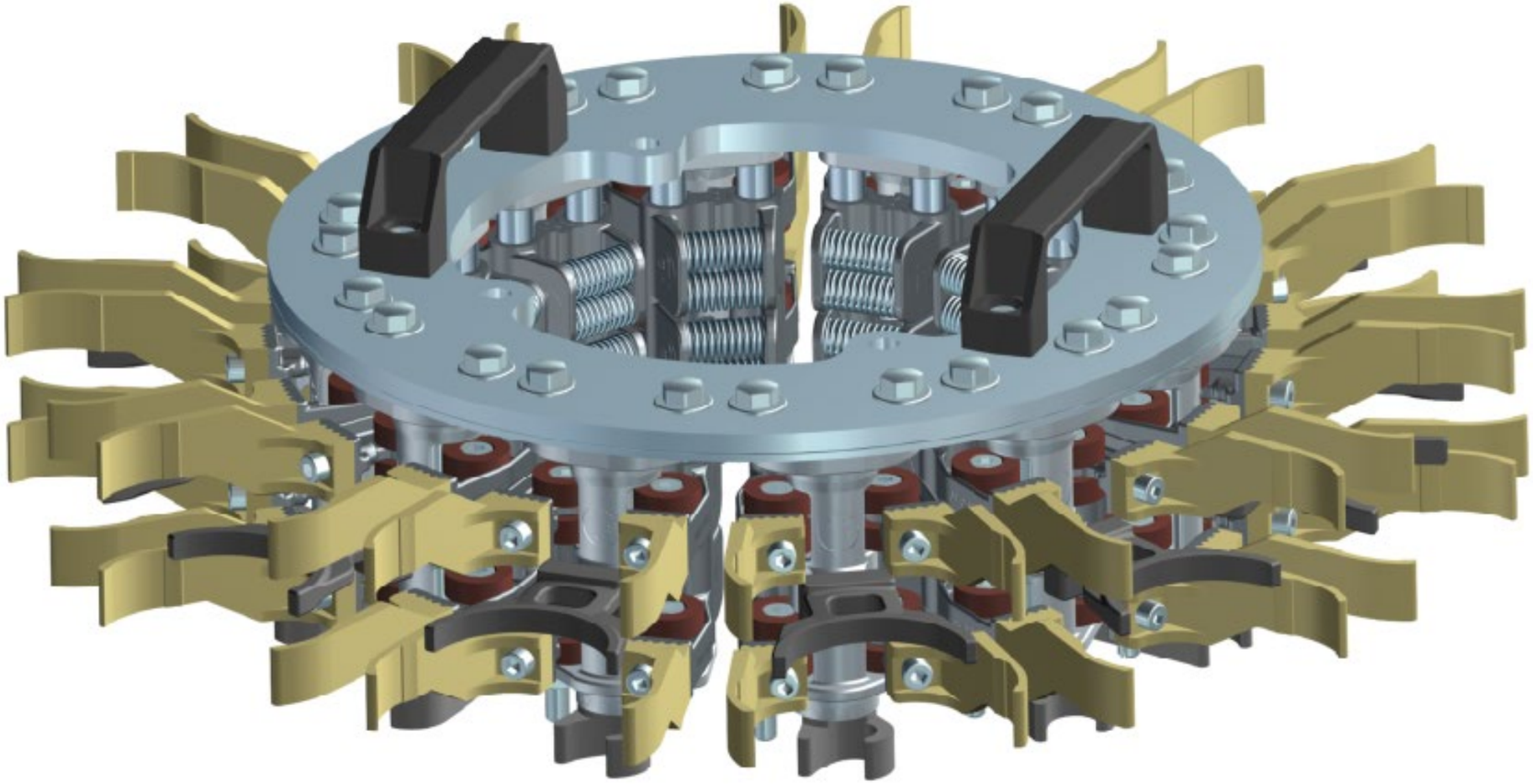
Tyrolon Starwheel





Disadvantage:
- cleanable/hygiene many springs
=> Compare the Krones design “Raptec” change Parts

Tyrolon Starwheel



Line Management System: Parameterization of Machine/Line

ERP Order

Interfaces/ Database

LMS

- Check order/article
- Identify material via BOM
- Determine route/machines
- Determine order program (sort) and parameters
- Identify raw materials
- Request material
- Parameterize machine

- Release order
- Confirm material request

IT-supported assignment

XLS

Manual assignment

- Define participating machines
- Define machine program (sort)
- Determine parameters for batch
- Identify/Determine raw material

- Coordinate timing
- Set sort and parameters
- Request material from warehouse

Machine ready for production

Line Management System: Features

Coordinate

Material Request/
Material Supply

Changeover Matrix

Material Valildation

Tracking & Tracing

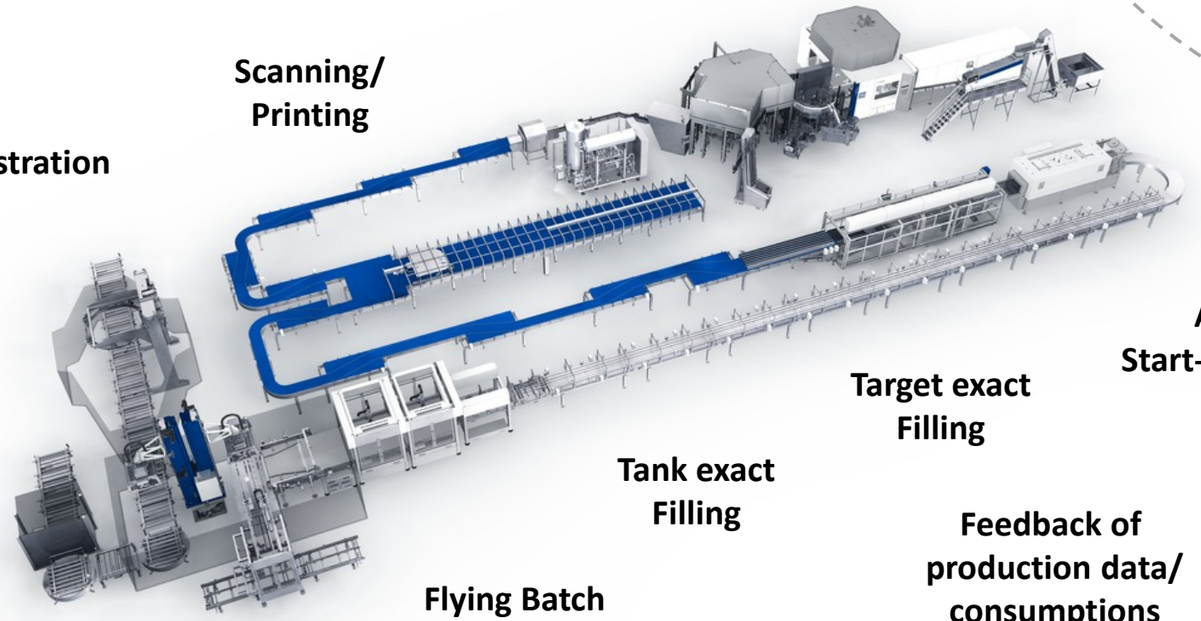
Batch Aggregation

Scanning/
Printing

Central
Batch Administration

Machine Selection/
Routing

Order Receipt/
Confirmation



Tanks

Flash Pasteurizer

Mixer

Warehouse

Automatic
Start-Up & Emptying

Target exact
Filling

Tank exact
Filling

Feedback of
production data/
consumptions

Control

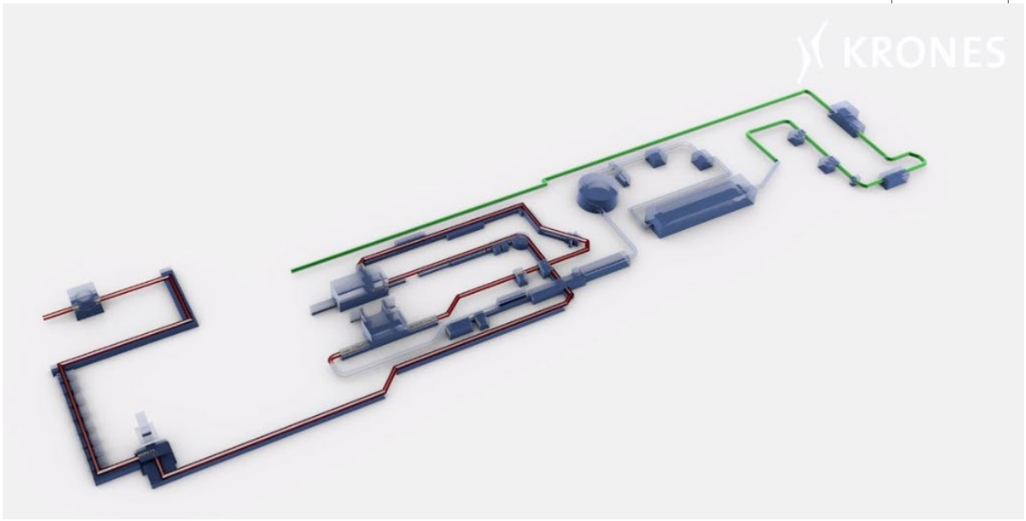
Flying Batch
Changeover

Following
Batch/Sort

Operator
Guidance

Warehouse

Success Story „Flying Changeover Concept“



Savings for the Customer:

- Time for a batch change has been reduced by 30 minutes
- Normally 2 batch changes per day
- Additional production of 28.000 cans per day

KRONES blog https://blog.krones.com/blog/technology/batch-change-on-the-fly/?lang=en

https://www.youtube.com/watch?v=v9SbznPJiJw

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Line Management: Opportunity Identification

- High number of SKUs
- Small batch sizes
- Several changeovers per day
- Expensive products (e.g. wine)
- Automated material supply into line and return to warehouse
- Demand for material validation before supply to machine
- Interface to warehouse management system required
- Interface to superior systems requested, e.g. planning system or ERP

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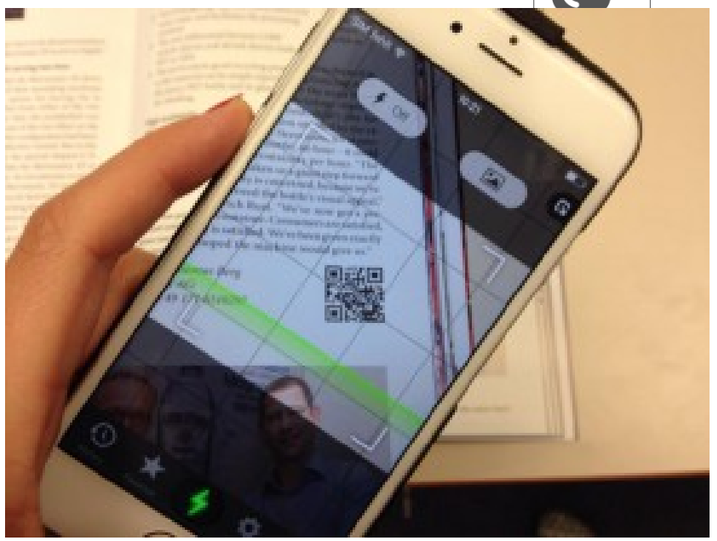
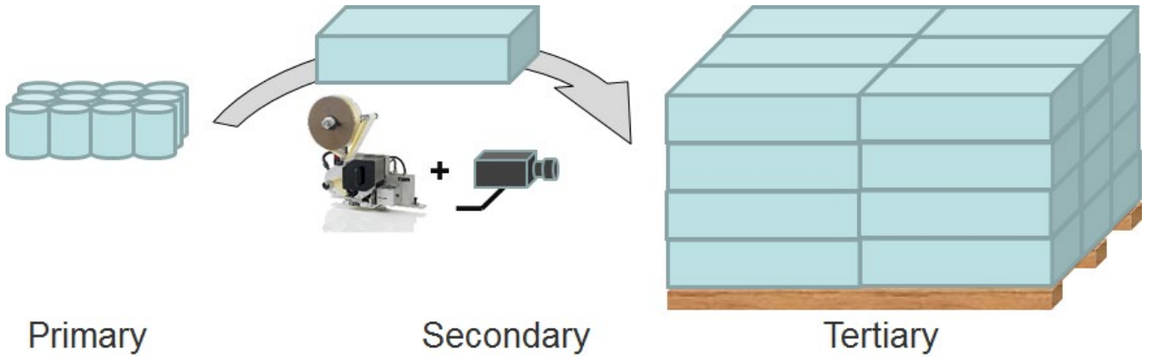
https://www.youtube.com/watch?v=klASg70z2rY

Serialisation: Legal Background and Drivers

- Customers need to comply with regulations from the market
- Every single container must be uniquely identified by a QR-Code
- The end customer should be able to trace back the origin of production when scanning the code with his smartphone
- For an unbroken traceability tagging is mandatory on each can, carton and pallet





Serialisation – answer for customer challenges:

Challenge - Fake Goods

- Counterfeiters - visually perfect
- Brand reputation - risk
- Existing solutions - costly, hard to integrate, difficult

Challenge -Product Diversion

- Grey Market activity
- Sales Statistics are skewed with data of unknown origin

Challenge -Market Research

- Customer preferences and demographics (expensive to obtain, i.e. Nielsen)
- Interaction & behavior at point of sale
- Market feedback

Anti Counterfeiting

- Copy-Proof 2D barcodes
- Mobile authentication
- Cost-effective, easy to integrate and scalable

Supply Chain Integrity

- Track each and every product at the unit-level
- Quickly trace any issue to determine its root cause
- Find distributors selling outside their designated regions instantly

Consumer Engagement

- Interact with customers 1-on-1
- Customized promotions
- Engage your customers by with surveys, loyalty programs, etc.
- Low cost demographic collection from point of sale

KRONES

Digitalisation

Process technology

Bottling and packaging equipment

Intralogistics

Lifecycle Service

We do more.

KRONES