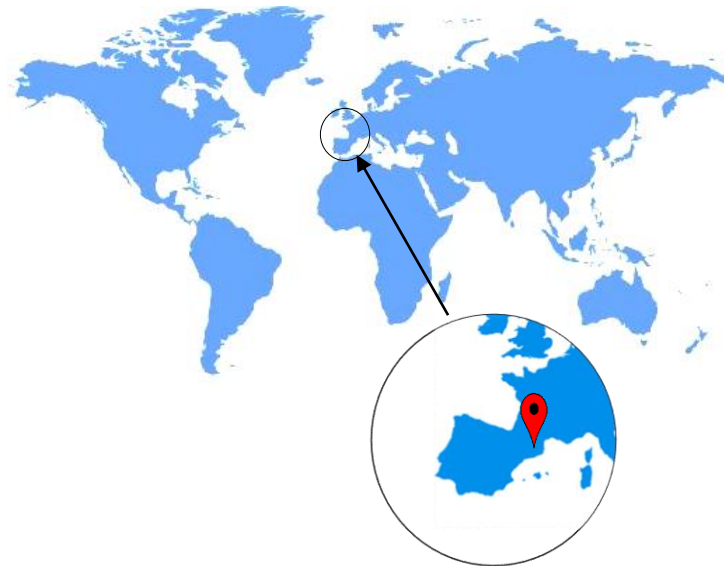


Dara®
Pharmaceutical Packaging

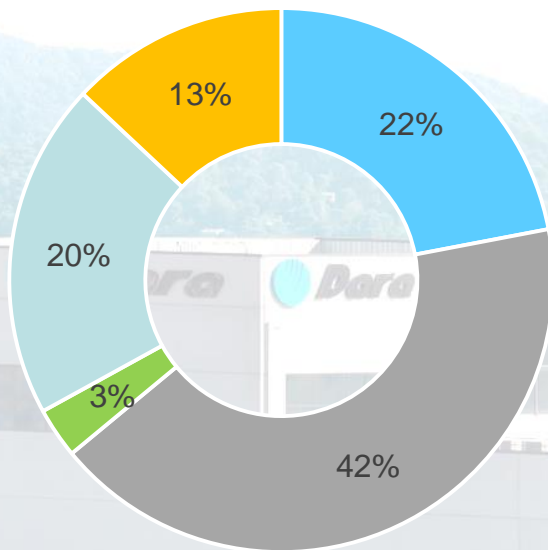
Adaptive solutions for aseptic filling

Servo Driven And Modular Design Construction



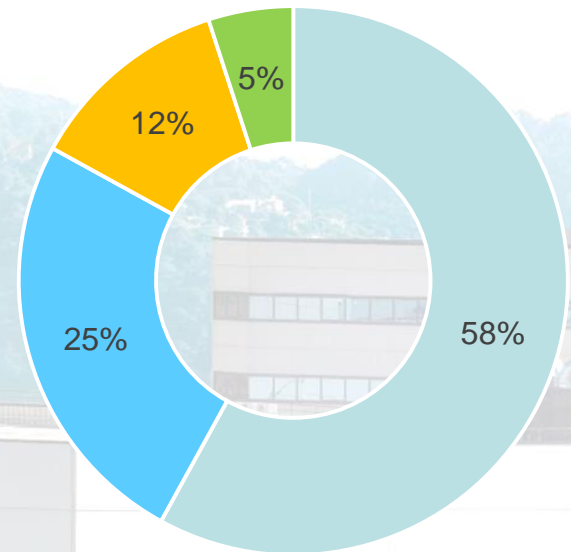
- **Founded in 1996 DARA is today one of the references of our sector.**
- **Installed base approximately 1050 equipment world wide, covering all continents.**
- **Our aim is satisfy the market in terms of Quality, Innovation and Excellence Technology.**
- **95% of sales are international, covering all continents.**
- **Production capacity 62 machines per year.**
- **We satisfy Pharmaceutical, Biotechnology and Cosmetic sectors.**
- **Dara machinery is well known for its Flexibility, Simplicity and Reliability.**

Sales 2016



■ Europe
■ Middle East / Africa
■ South America
■ Asia
■ North America

Activity Sectors



■ Pharma ■ Biotech ■ Reagents ■ Beauty

Modularity and Flexibility In Aseptic Filling

Flexibility has become an important feature. Features such as capabilities and flexibility are indicators for the Total Customer Ownership.

The better the flexibility the better the investment and productivity.

Few companies identified this and started to develop modular designs that could offer flexible solutions to final customers. In pharma industry, DARA is one of the leaders in modular design.

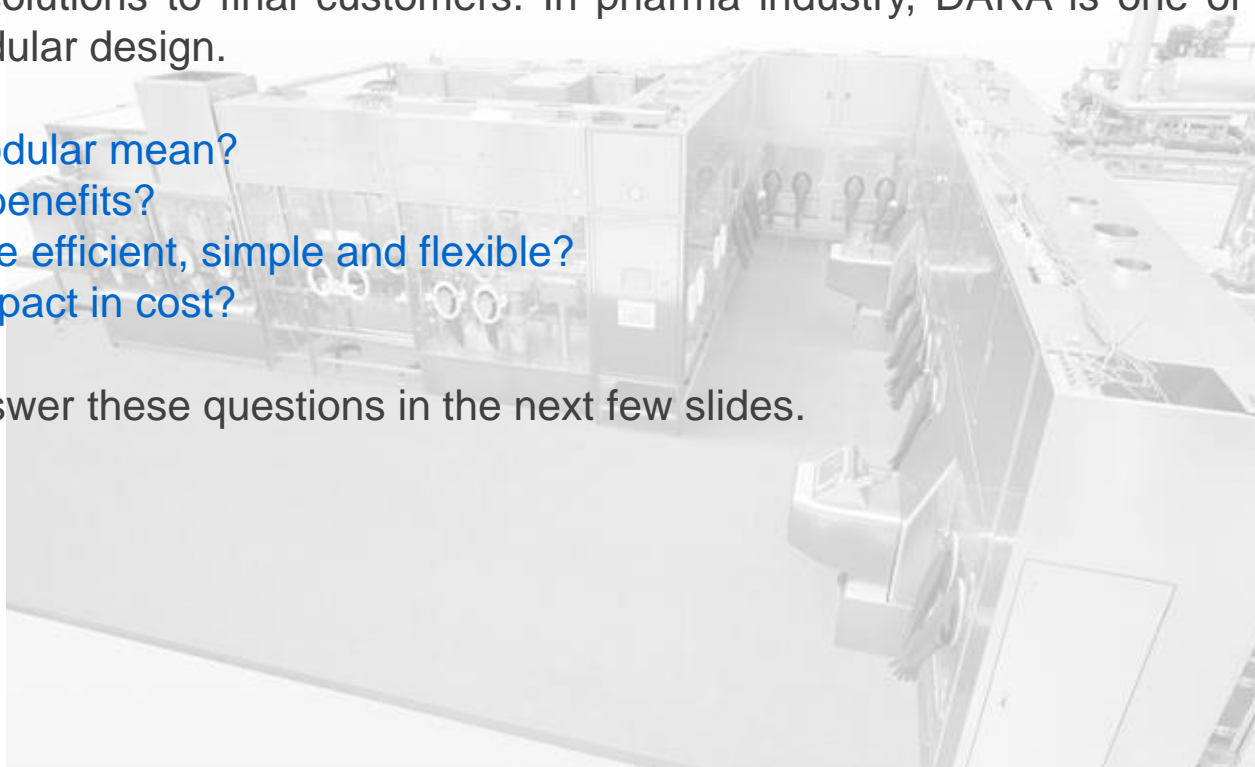
What does modular mean?

What are the benefits?

Are these more efficient, simple and flexible?

What is the impact in cost?

We'll try to answer these questions in the next few slides.



Modularity and Flexibility In Aseptic Filling

It is something that we learn from kids. Having different modules you can create any solution.



Modules are Possible Thanks to Servo-Driven Technology

- Modules controlled by servo-motors
- Servo-motors connected to PLC modularly
- Additional modules/servos can be added, so upgrades are possible.
- HMI manages parameters without mechanical adjustments and without modifying the core program
- Adding new formats is now easier than before



Most of our Machines Are Fully Servo-Driven

DARA is a Leader In Pharma Machinery Using This Technology



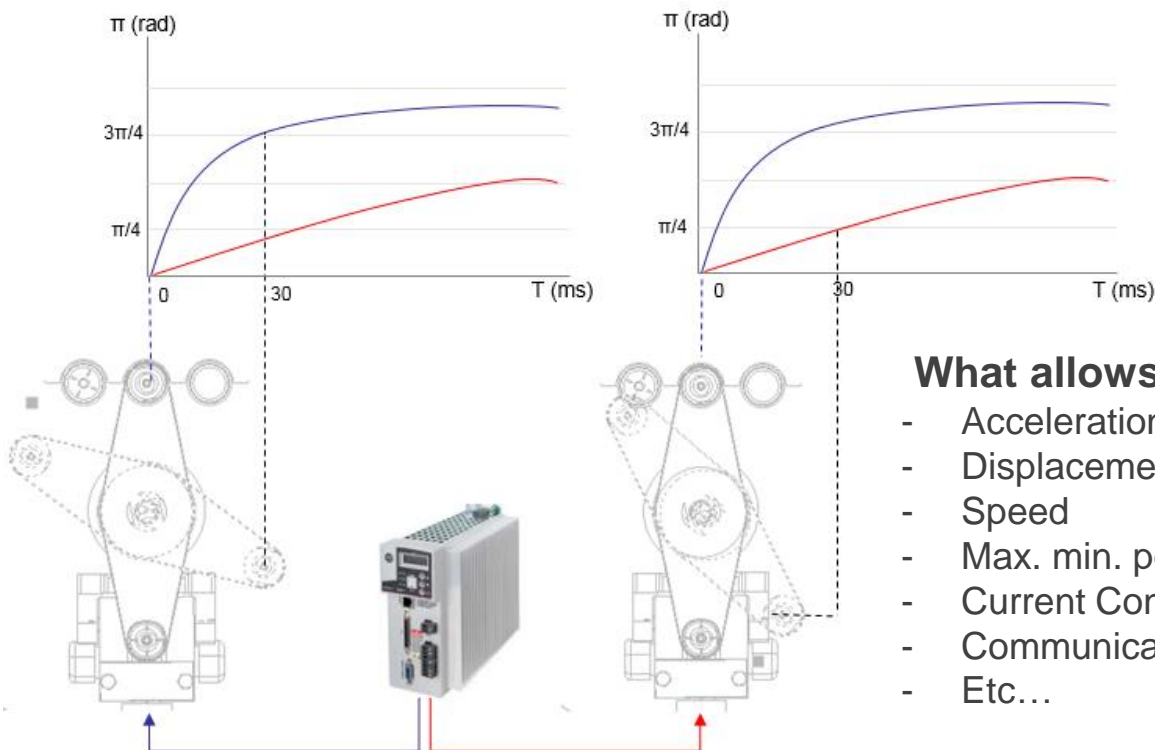
Accurate movements
(0.1 - 0.2 mm)

- Smooth movement
- Accurate elements positioning
- Easy to set formats adjustments
- Improved movements synchronisation
- Easy to report status

Introduction To Servo Technology

What is a servo motor?

Rotary or linear actuator that allows for precise control of angular or linear position, velocity and acceleration.

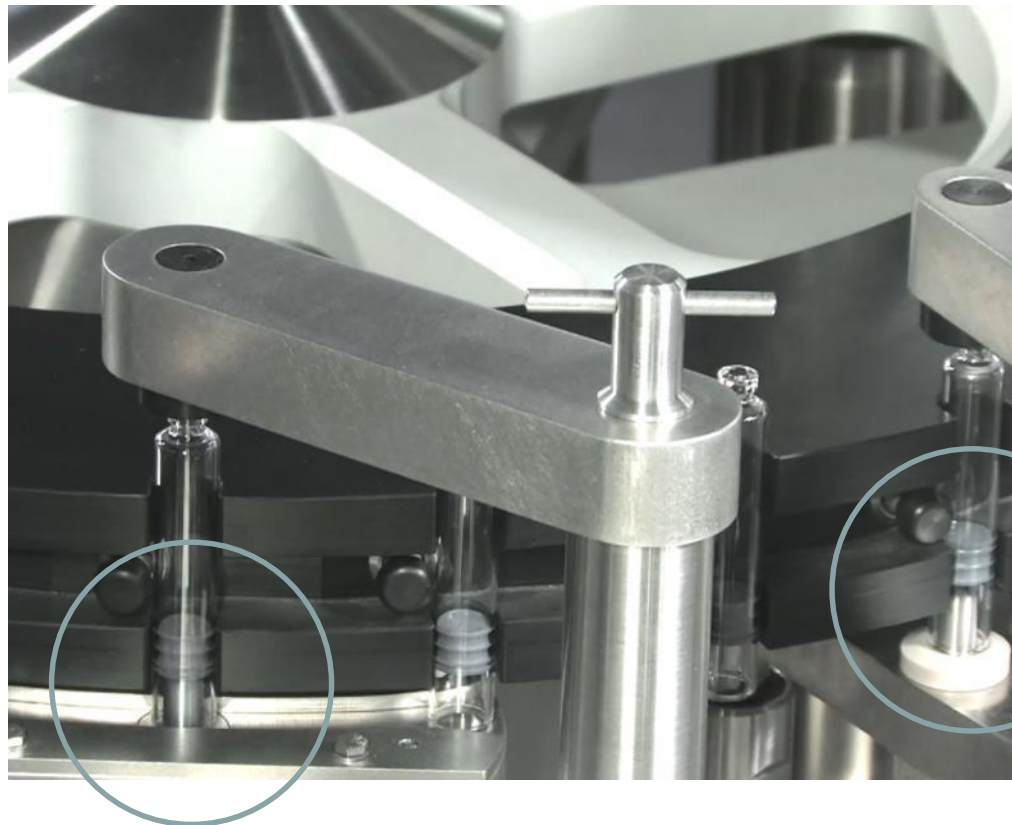


What allows to control?

- Acceleration
- Displacement
- Speed
- Max. min. position
- Current Consumption limits
- Communications
- Etc...

Introduction To Servo Technology

Accuracy and control

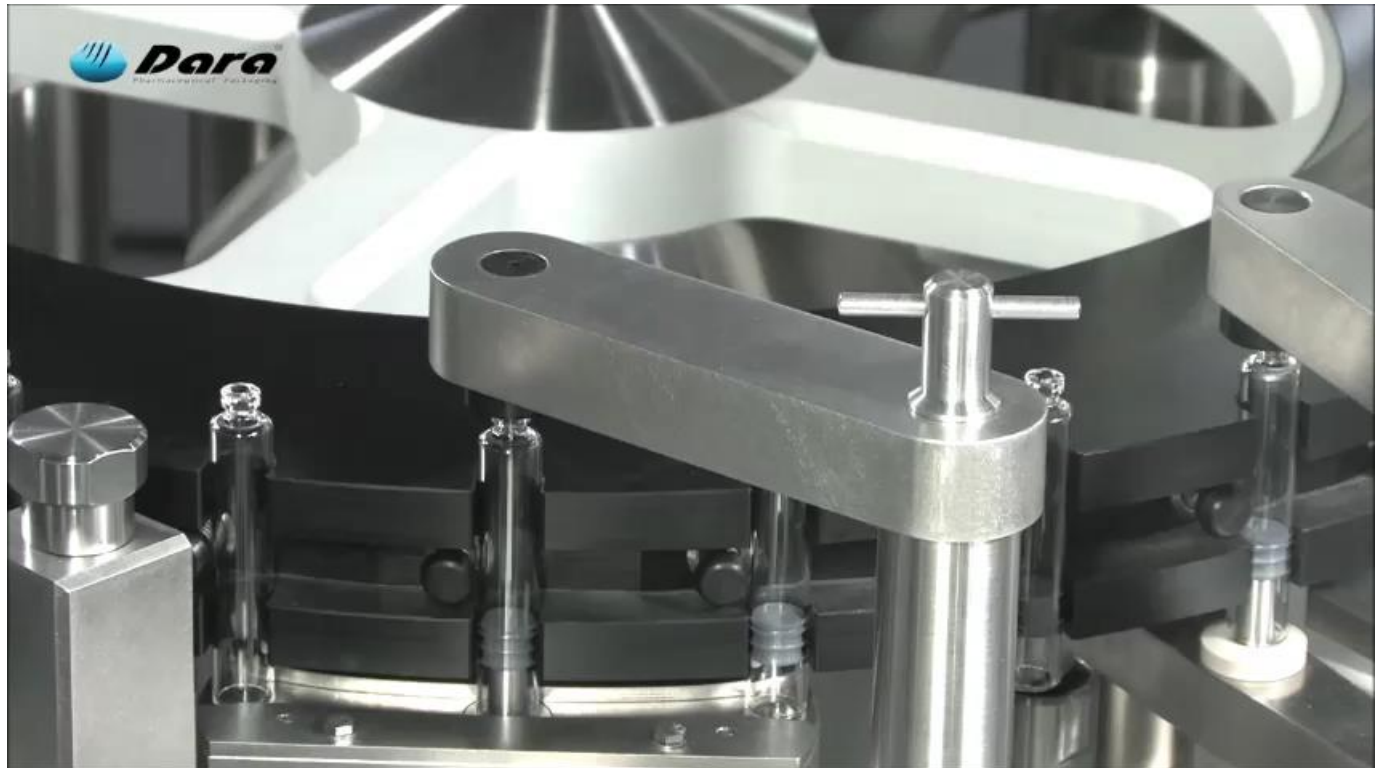


Non-precise Positioning

Precise Positioning

Introduction To Servo Technology

Accuracy and control



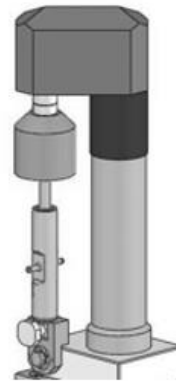
Introduction To Servo Technology

Servo-motor combination and modules development

- It is possible combine different servo-motor in different axis X, Y, Z
- Such a combination with an accurate structural design will generate different modules
- Each module can be controlled independently and it is considered an individual item



Pick and Place
module



Piston Pump
module



Filling Nozzle
module

Some Ready to install Options



Lyo:

Filling + Pre-Stoppering



Lyo+:

Filling + Pre-Stoppering + Crimping



Ophthalmic:

Filling + Dropper + Screw Cap



Spray Pump:

Filling + sprayer + Press Cap



Cartridge:

Plunger + Filling + Crimping



Cartridge ByP:

Plunger + Filling + Crimping + Flip + Filling + Plunger



Syringes:

Filling + Plunger + Plunger Rod + Labelling



Modules and machines

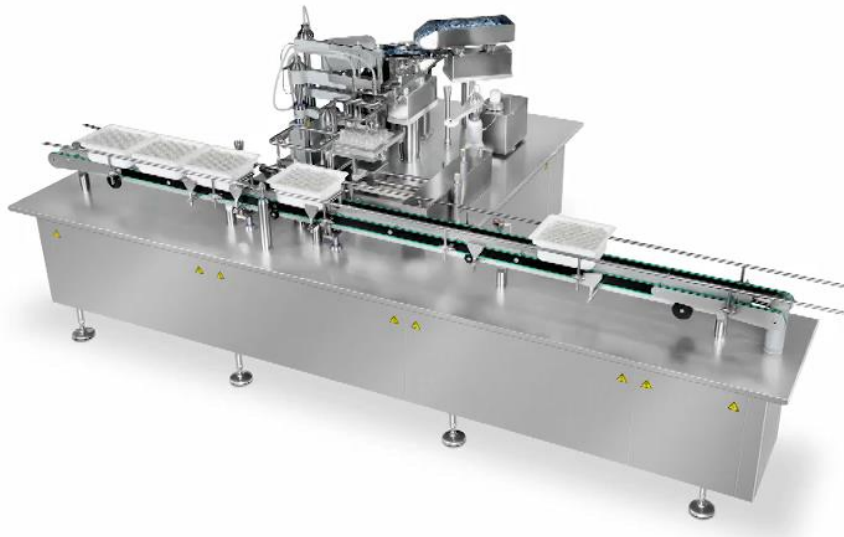
- The modules can be combined on a linear or circular frame, which finally becomes a filling machine



Modules and machines

Benefits

- Complex design to manage several formats
- Permits future upgrades adding new modules
- Movements are more reliable and precise, better control of the product and its integrity
- Centralization and managing through a HMI that controls all the parameters of each station



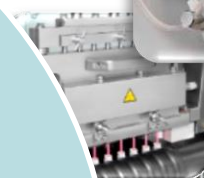
Combo Machines

• BOTTLES



Combination
of different
plastic and
glass bottles

• PRODUCTS



Combination
of different
kinds of
products

• CAPS



Combination
of different
types of caps
and closures

• INSERTS

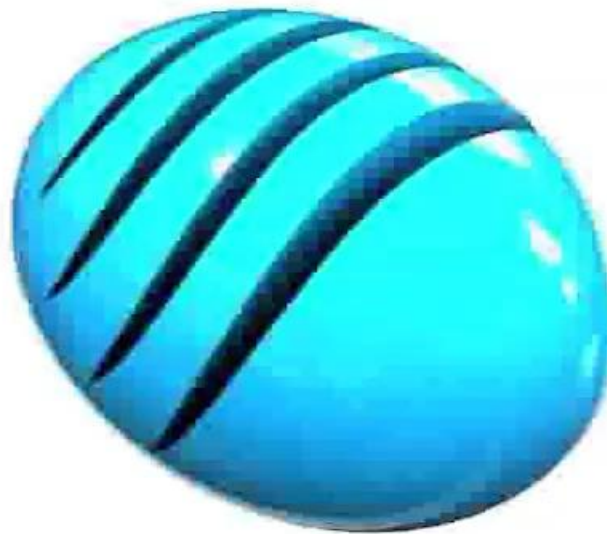


Combination
of different
types of
inserts and
pumps

The “Modularity” Concept Offers Tailored Solutions to Any Combination



Multifomat Filler System



The “Modularity” Concept Offers Tailored Solutions to Any Combination



The “Modularity” Concept Offers Tailored Solutions to Any Combination





Modules are Possible Thanks to Servo-Driven Technology



- Same module
- Same machine
- Same position on the machine
- Different function



This is possible thanks to DARA's Servo-Driven modular design.

Modules are Possible Thanks to Servo-Driven Technology



This is possible thanks to DARA's Servo-Driven modular design.

Modules are Possible Thanks to Servo-Driven Technology

- Modularity and flexibility are concepts that can be also applied to Isolators technology

Different module combinations:



One Airlock module + one operating module.



One BioDecontamination module + two operating modules.



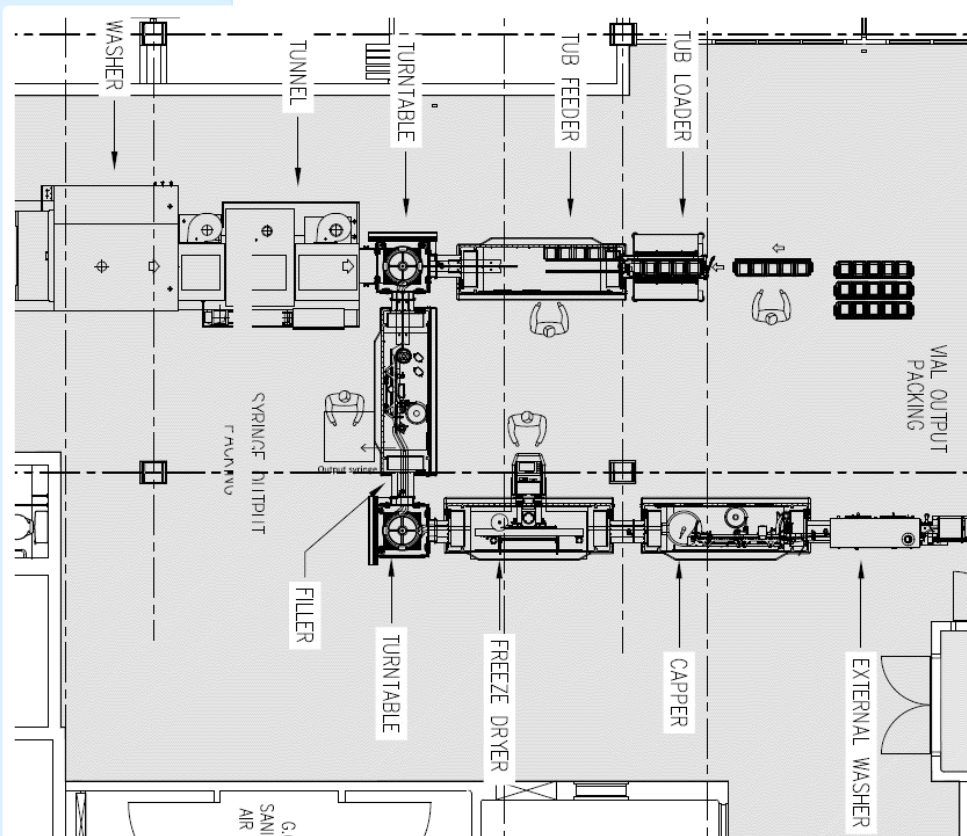
Two Airlock module + one operating module.



One Airlock module + three operating modules.

Modules are Possible Thanks to Servo-Driven Technology

- Modularity and flexibility are concepts that can be also applied to Isolators technology





Benefits of Modular Technology

Monitoring and Control

- Modules status can be reported allowing an accurate OEE analysis
- Individual control of each module
- Easy recovery set point configuration through software
- More information available for analysis

Formats and recipes

- Recipes contains information about products and modules positioning
- Recipes are easier to generate
- Less intervention of operators
- Easy to use

Maintenance

- Less maintenance required, minimum mechanical frictions/movement
- Maintenance can be monitored and individualized by modules
- Easy replace of modules, no re-program required
- Soft movements less vibrations
- Easy to identify and trace errors

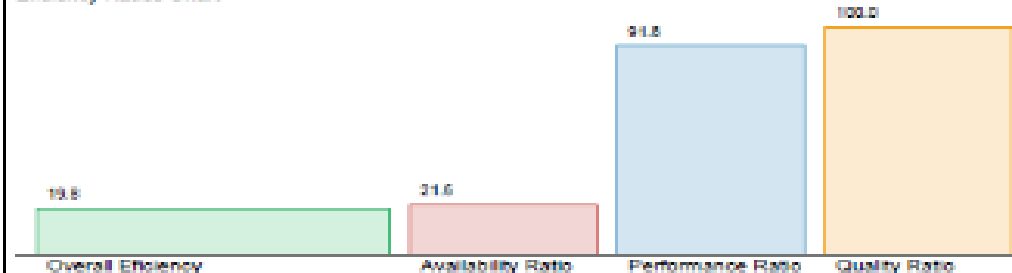


Filling and Capping Machine

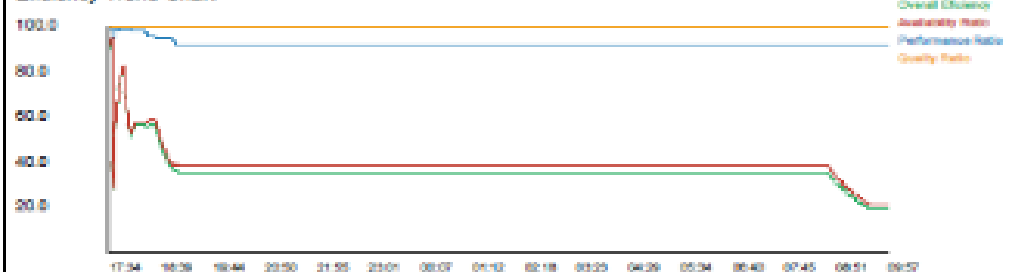
Start Time 16/01/2017 17:34:18
End Time 17/01/2017 09:57:59
Batch batch10000
Recipe FD v0
Product product10000

Process Time	2.0	Running Time	0.4
		Stopped Time	1.5
Total Quantity	931	Production Quantity	931
		Rejection Quantity	0
Nominal Speed	40.0	Average Speed	36.7
Overall Efficiency	19.8	Availability Ratio	21.6
		Performance Ratio	91.8
		Quality Ratio	100.0

Efficiency Ratios Chart



Efficiency Trend Chart



Comments

Review

Signature

Date

Benefits of Modular Technology

Cost improvement

- More reliability and less downtimes
- More data to analysis and take decisions
- Simplification of use with less intervention of operators
- Less time dedicated to adjustments and maintenance
- Shorter investment payback period
- Possibility to split investment (adding or upgrading of modules)
- Better TCO (Total Customer Ownership) indicator



Modularity is a market trend, DARA is a leader.



11. REFERENCES





Thank you for your attention.

www.dara-pharma.com

