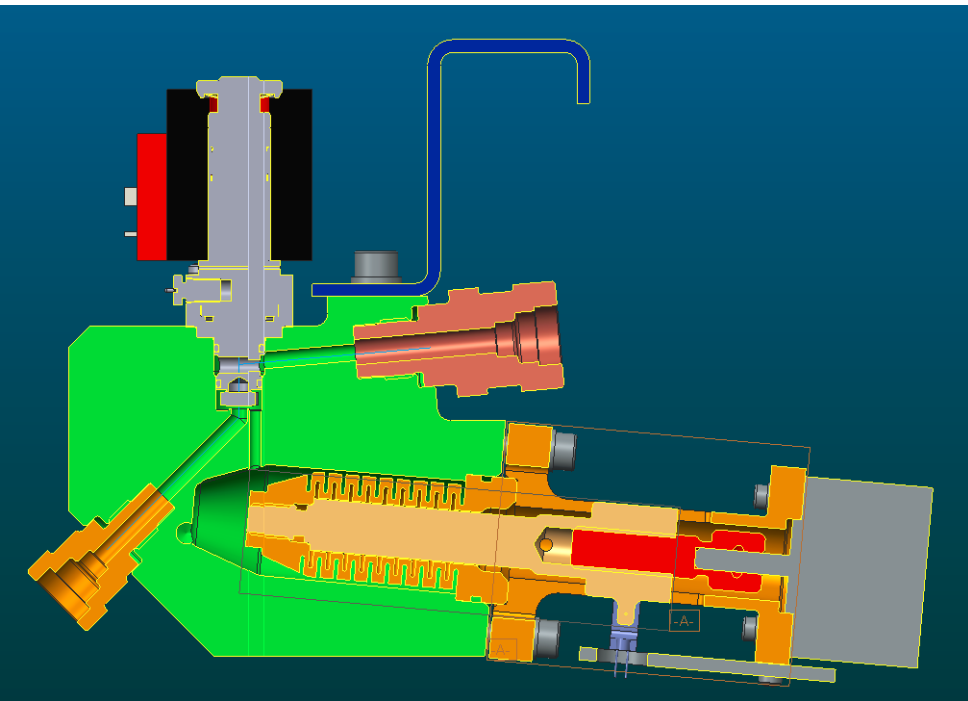

Alfa's Know-How



Patented Alfa dispensing technology

0,05 lit/min
For colorant pump



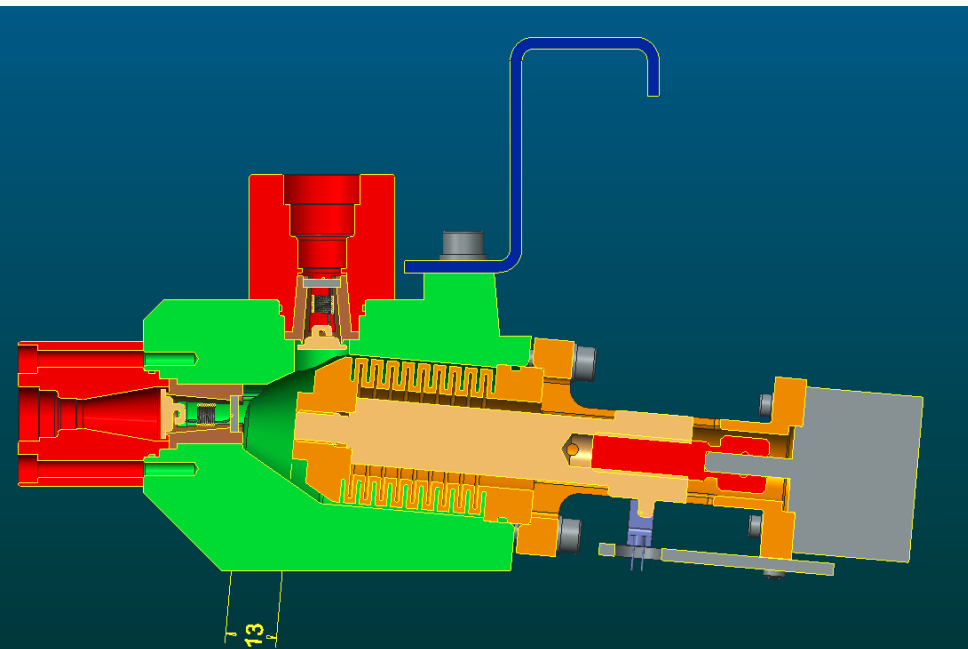
First scatch 0,05 lit/min
pump

- Seal free piston;
- 3 way valve and recirculation;
- Short dispensing pipe to avoid dead volume and increase accuracy;
- Small nozzle diameter to minimize drop size;
- Pump layout and dispensing process to avoid air influence on volume dosing.

| Delivery | | | | |
|-------------------|-------------|---------------|-------|----------------|
| Cubic capacity | 1,74 | cc | | |
| Stroke | 8 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 1100 | pps | | |
| motor turn/corsa | 5,33 | turn | | |
| motor step/corsa | 2133,33 | step | | |
| rotation speed | 5,50 | turn/sec | 330 | turn/min |
| axial speed | 8,25 | mm/sec | | |
| resolution | 0,0008 | cc | 0,816 | micro Lt (mm3) |
| Instant flow rate | 1,7944 | cc/sec | 0,108 | Lt/min |
| Delivering time | 0,9697 | sec | | |
| Loading | | | | |
| Cubic capacity | 1,74 | cc | | |
| Stroke | 8 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 2000 | pps | | |
| motor turn/corsa | 5,33 | turn | | |
| motor step/corsa | 2133,33 | step | | |
| rotation speed | 10,00 | turn/sec | 600 | turn/min |
| axial speed | 15,00 | mm/sec | | |
| resolution | 0,0008 | cc | 0,816 | micro Lt (mm3) |
| Instant flow rate | 3,2625 | cc/sec | 0,196 | Lt/min |
| Delivering time | 0,5333 | sec | | |
| Flow rate | 0,15 | Lt/min | | |

Patented Alfa dispensing technology

0,2 lit/min
For base pump or colorant pump



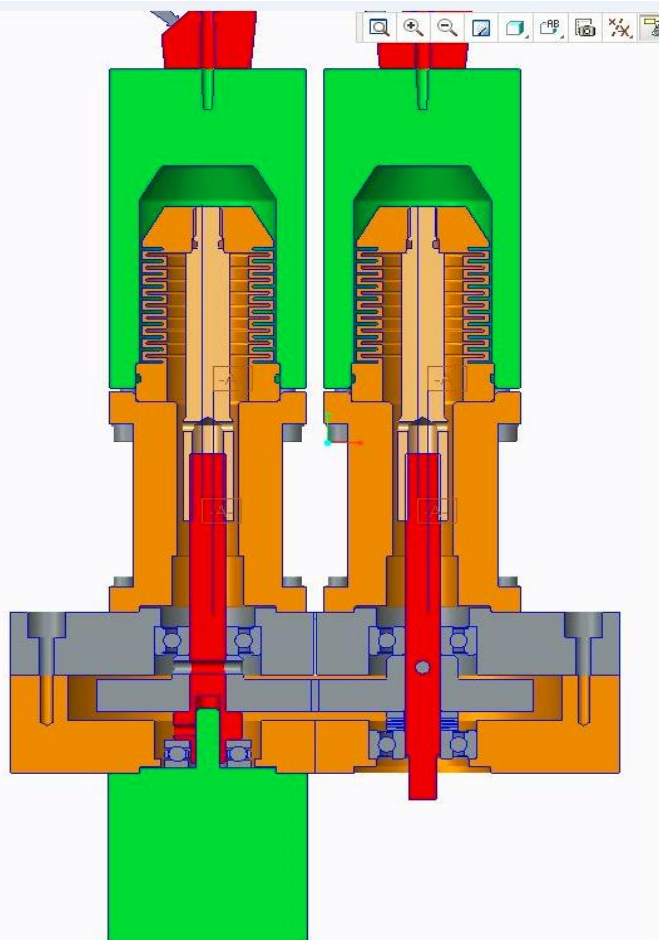
First scatch 0,2 lit/min pump

- Seal free piston;
- Directional check vale system.
- Pump layout and dispensing process to avoid air influence on volume dosing.
- To be installed stand alone or with remote 3 way valve.

| Delivery | | | | |
|-------------------|-------------|---------------|-------|----------------|
| Cubic capacity | 9,8 | cc | | |
| Stroke | 12 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 1100 | pps | | |
| motor turn/corsa | 8,00 | turn | | |
| motor step/corsa | 3200,00 | step | | |
| rotation speed | 5,50 | turn/sec | 330 | turn/min |
| axial speed | 8,25 | mm/sec | | |
| resolution | 0,0031 | cc | 3,063 | micro Lt (mm3) |
| Instant flow rate | 6,7375 | cc/sec | 0,202 | Lt/min |
| Delivering time | 1,4545 | sec | | |
| Loading | | | | |
| Cubic capacity | 9,8 | cc | | |
| Stroke | 12 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 2000 | pps | | |
| motor turn/corsa | 8,00 | turn | | |
| motor step/corsa | 3200,00 | step | | |
| rotation speed | 10,00 | turn/sec | 600 | turn/min |
| axial speed | 15,00 | mm/sec | | |
| resolution | 0,0031 | cc | 3,063 | micro Lt (mm3) |
| Instant flow rate | 12,2500 | cc/sec | 0,368 | Lt/min |
| Delivering time | 0,8000 | sec | | |
| Flow rate | 0,28 | Lt/min | | |

Patented Alfa dispensing technology

Prototipe of 0,5 lit/min
For base pump or colorant pump

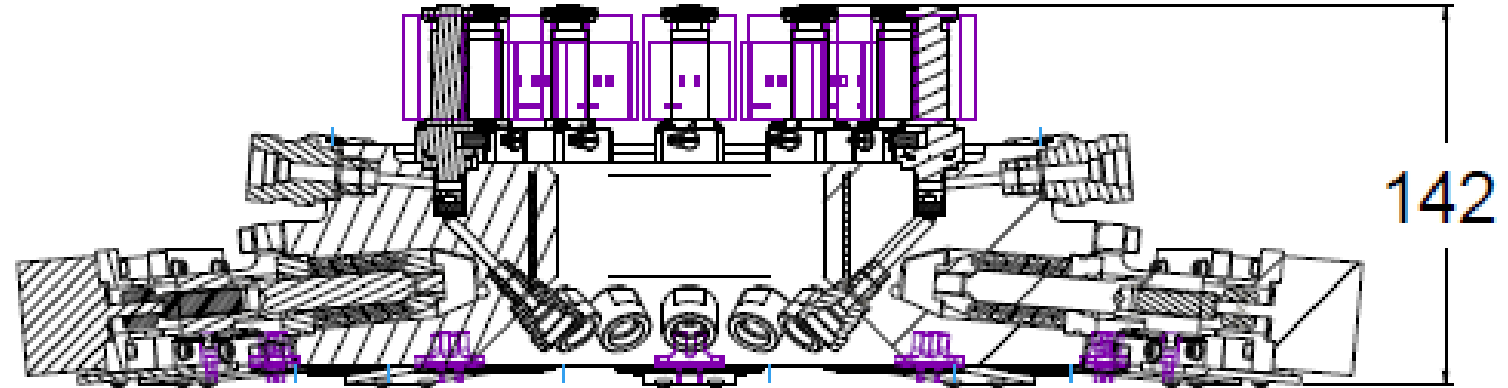
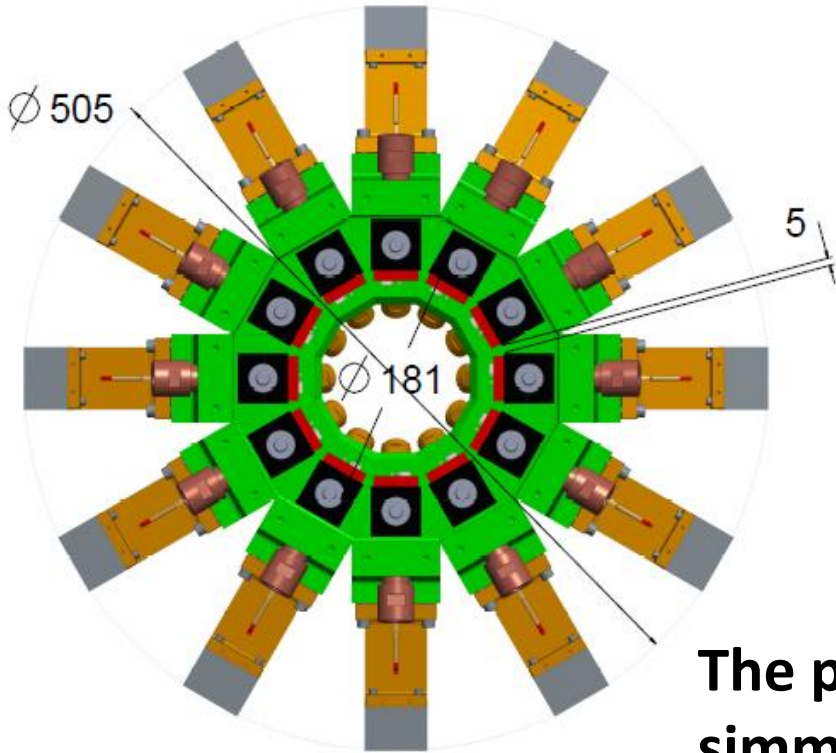


First scatch 0,5 lit/min
pump

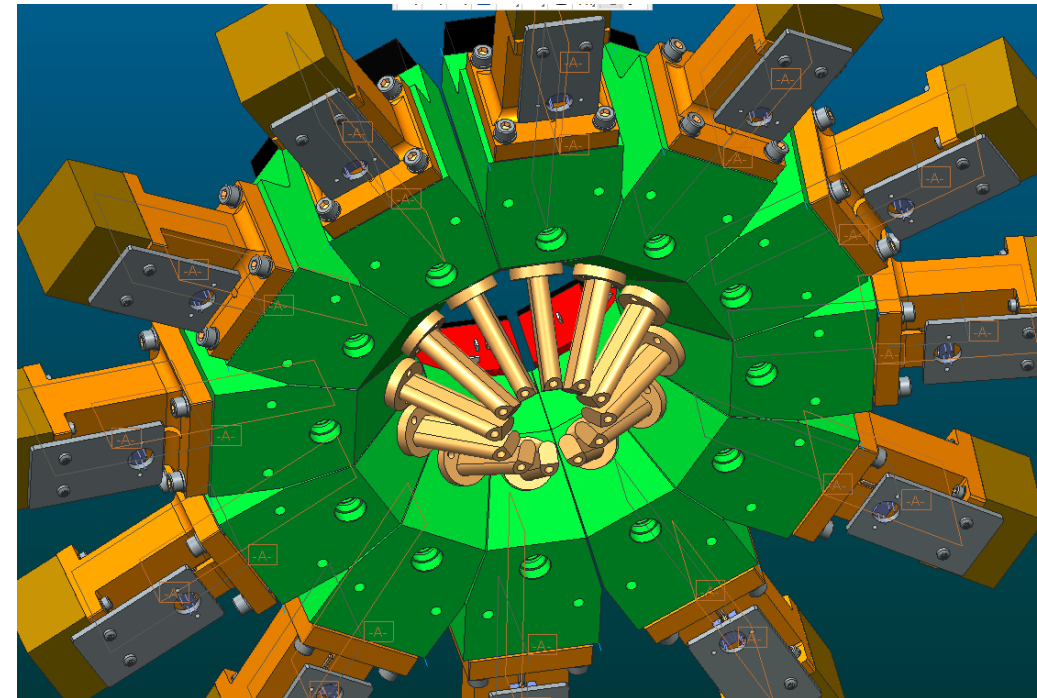
- Seal free piston;
- Directional check vale system.
- Pump layout and dispensing process to avoid air influence on volume dosing.
- To be installed with remote 3 way valve.
- Push pull piston motion to obtain continous dispensing.

| <u>Delivery</u> | | | | |
|--------------------------|---------------|---------------|--------------|----------------|
| Cubic capacity | 9,8 | cc | | |
| Stroke | 12 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 1100 | pps | | |
| motor turn/corsa | 8,00 | turn | | |
| motor step/corsa | 3200,00 | step | | |
| rotation speed | 5,50 | turn/sec | 330 | turn/min |
| axial speed | 8,25 | mm/sec | | |
| resolution | 0,0031 | cc | 3,063 | micro Lt (mm3) |
| Instant flow rate | 6,7375 | cc/sec | 0,202 | Lt/min |
| Delivering time | 1,4545 | sec | | |
| <u>Loading</u> | | | | |
| Cubic capacity | 9,8 | cc | | |
| Stroke | 12 | mm | | |
| Rotor resolution | 400 | step/turn | | |
| Screw pitch | 1,5 | mm | | |
| velocità | 1100 | pps | | |
| motor turn/corsa | 8,00 | turn | | |
| motor step/corsa | 3200,00 | step | | |
| rotation speed | 10,00 | turn/sec | 600 | turn/min |
| axial speed | 8,25 | mm/sec | | |
| resolution | 0,0031 | cc | 3,063 | micro Lt (mm3) |
| Instant flow rate | 6,7375 | cc/sec | 0,368 | Lt/min |
| Delivering time | 1,4545 | sec | | |
| Flow rate | 0,404 | Lt/min | | |

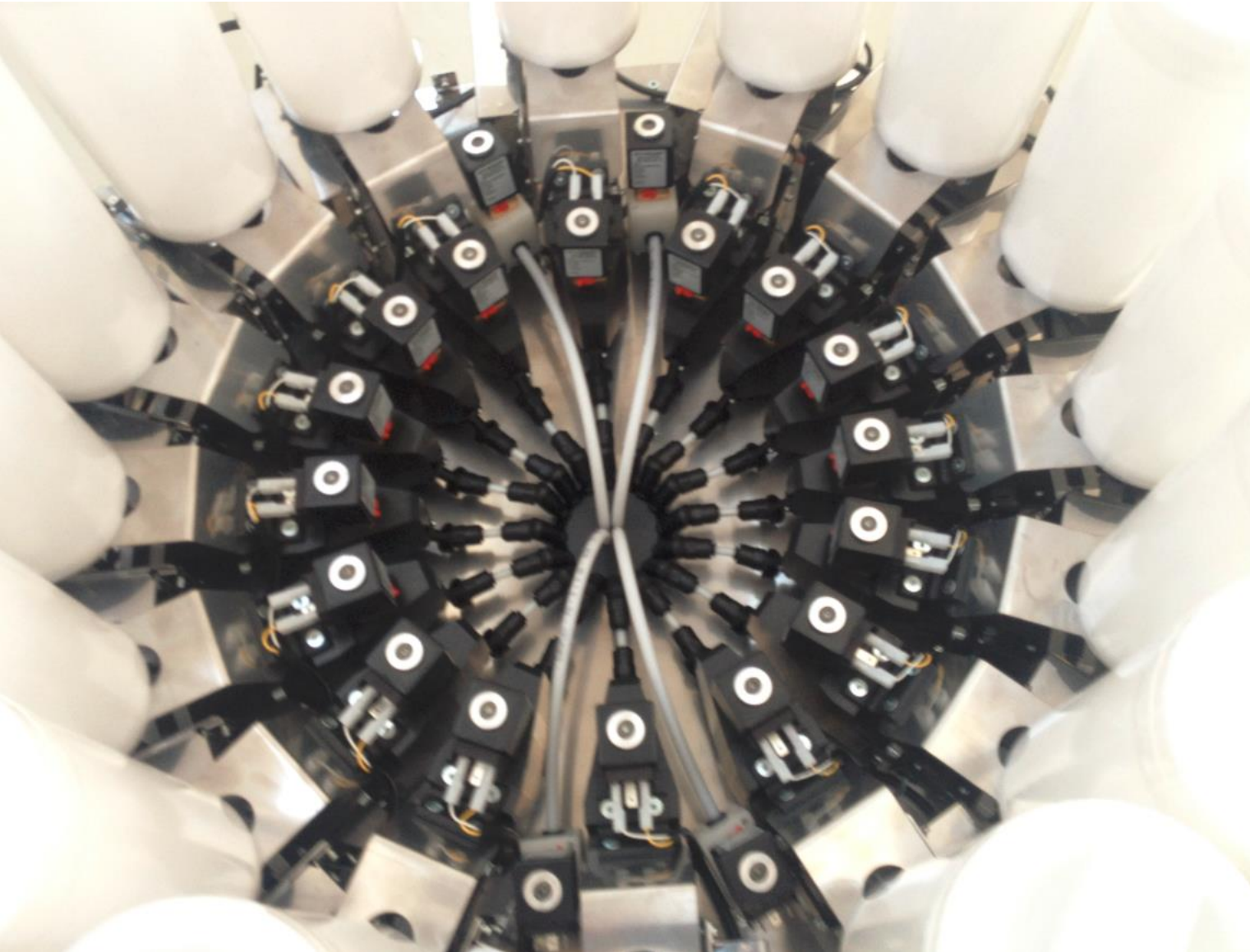
Group round distribution and nozzle



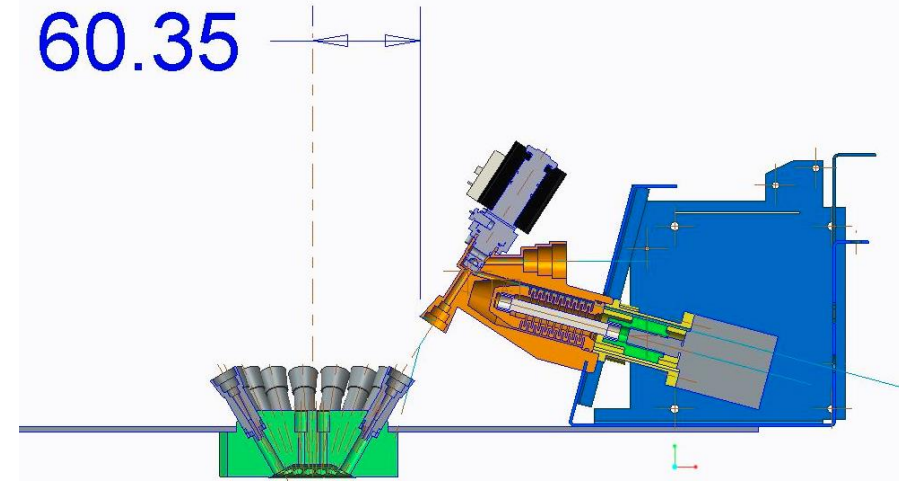
**The perfect distribution
simmetry allows identical
fluidodinamics
characteristics for all the
colorant.**



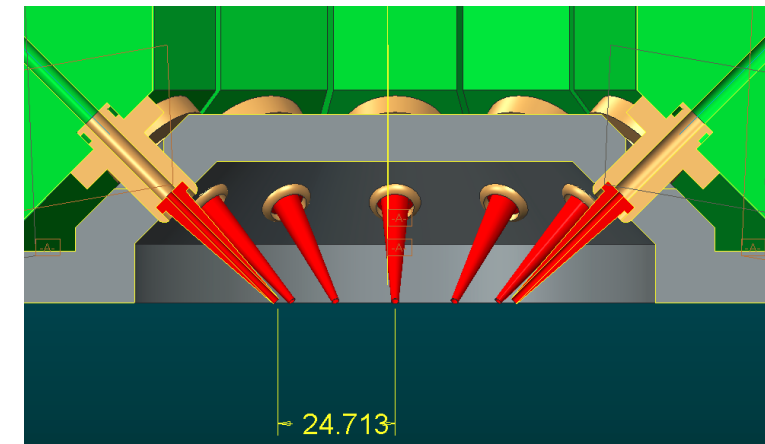
ColorLab round distribution



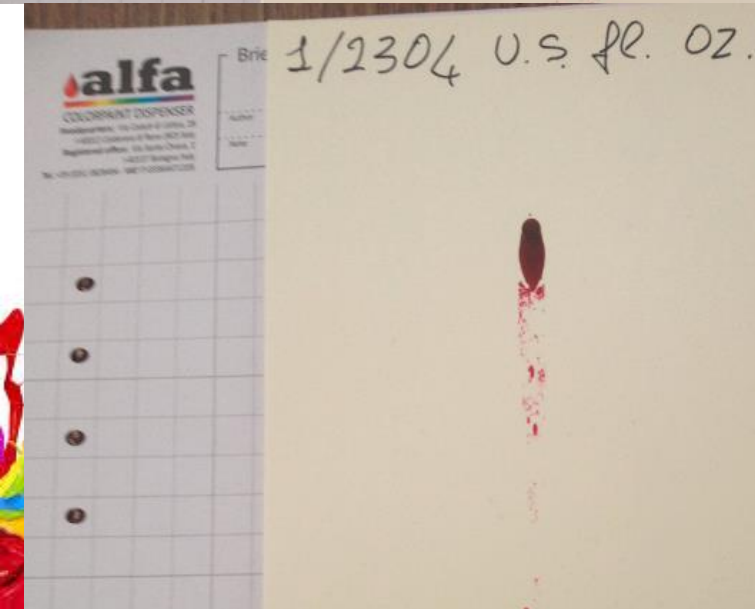
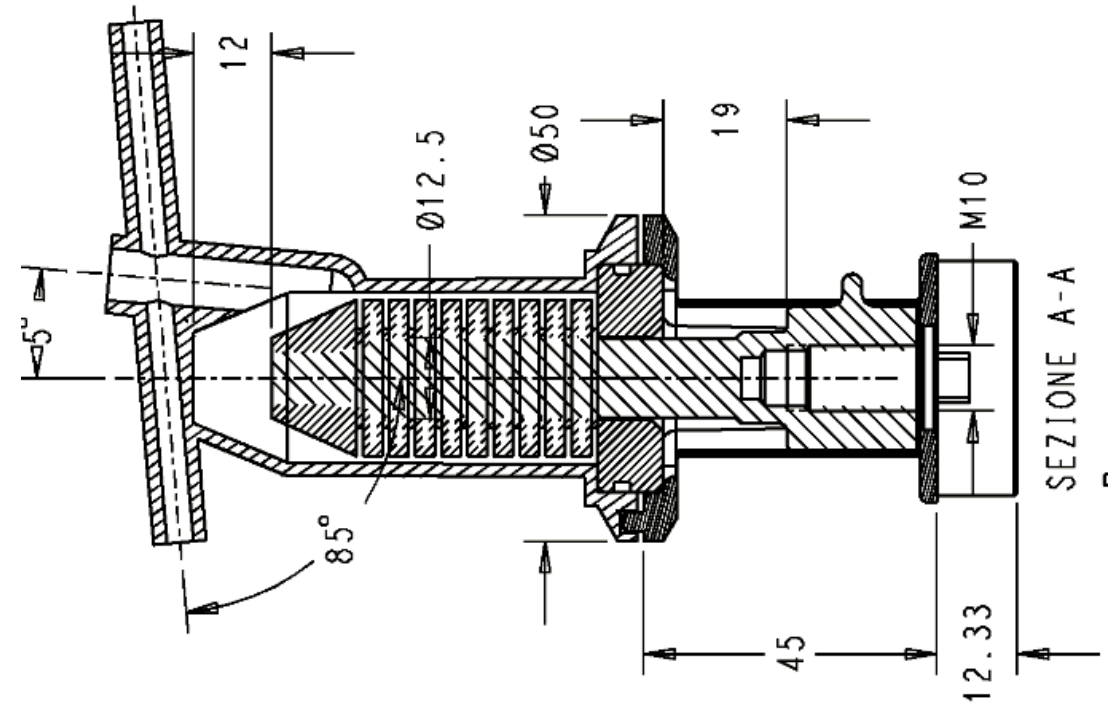
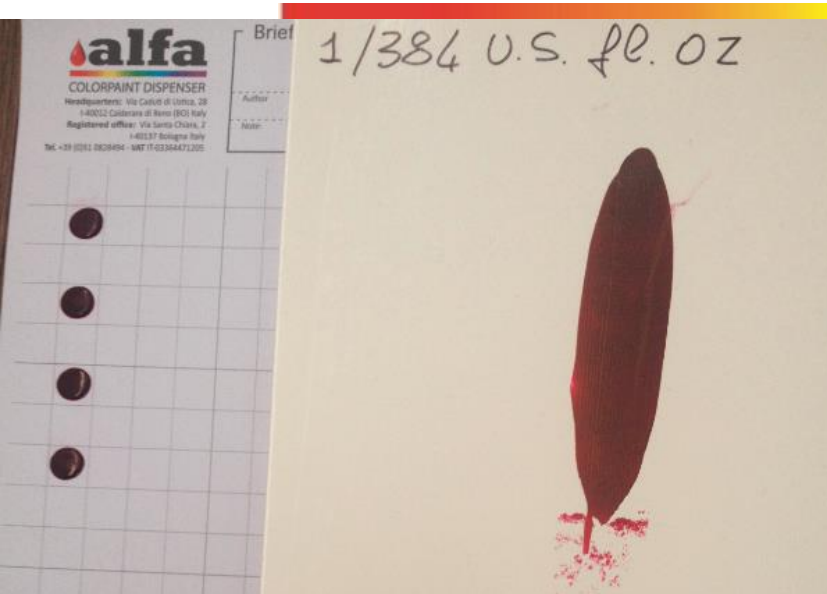
60.35



16 clorant circuits
4 base/slurry circuits



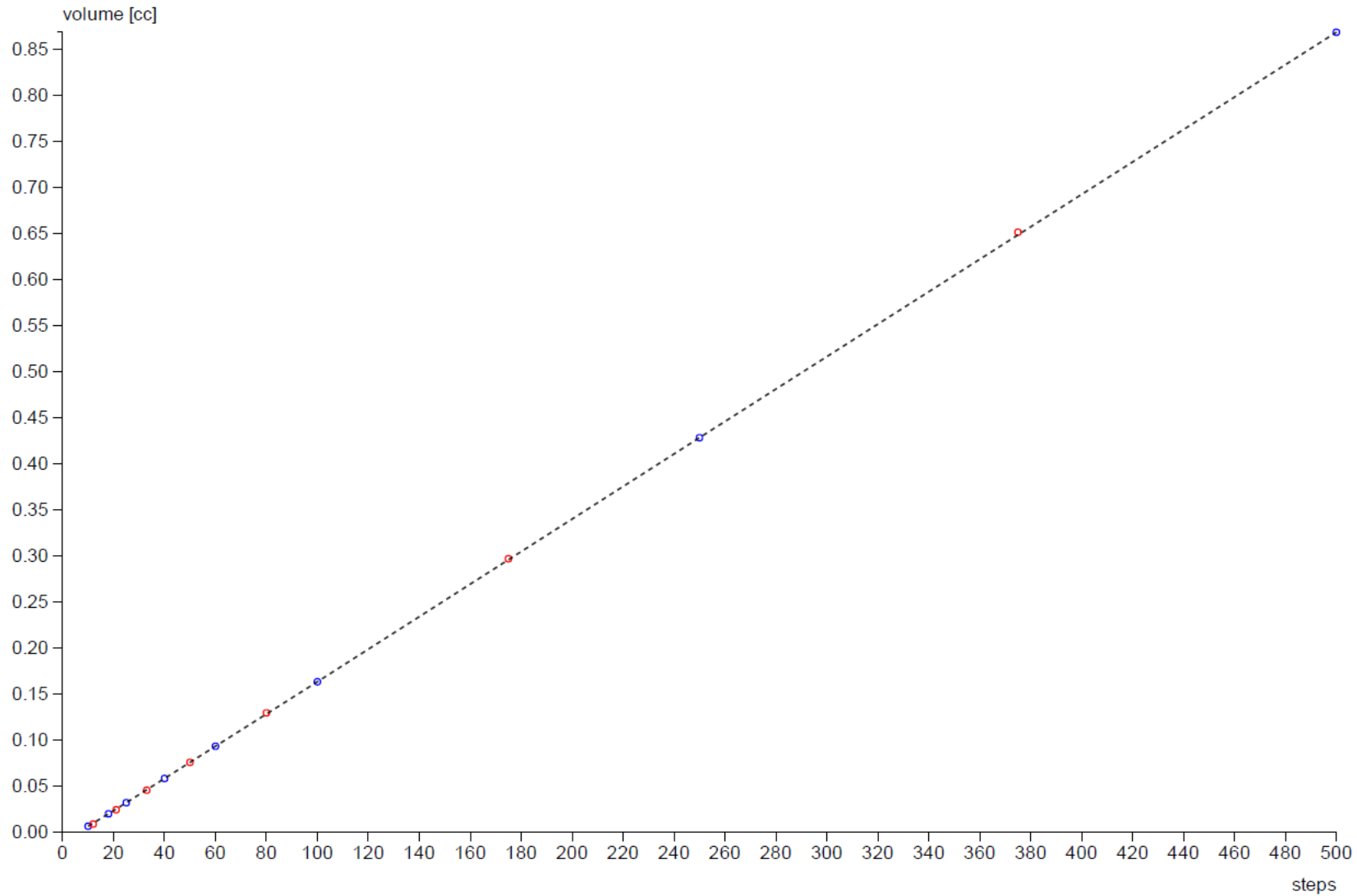
Alfa minimum drop



0,077 cc (1/384 of US fl oz)
manageable drop size today

0,012 cc (1/2304 of US fl oz) Alfa
declared drop size

Magenta drop setup graphic



Magenta drop setup numbers

Samples

| Sample | Sampled on | Iterations | Steps | Weight [g] | Volume [cc] | Std deviation (abs) | Std deviation (pct) |
|--------|----------------------------|------------|-------|------------|-------------|---------------------|---------------------|
| SP1958 | Wed 12/08/2015 13:27:22 | 3 | 500 | 0.9743 | 0.8691 | 0.0004 | 0.05 % |
| SP1959 | Wed 12/08/2015 13:28:36 | 3 | 250 | 0.4803 | 0.4284 | 0.0003 | 0.07 % |
| SP1960 | Wed 12/08/2015 13:29:43 | 3 | 100 | 0.1829 | 0.1631 | 0.0004 | 0.23 % |
| SP1961 | Wed 12/08/2015 13:31:26 | 3 | 60 | 0.1043 | 0.0930 | 0.0001 | 0.14 % |
| SP1962 | Wed 12/08/2015 13:32:56 | 3 | 40 | 0.0650 | 0.0580 | 0.0001 | 0.14 % |
| SP1963 | Wed 12/08/2015 13:34:13 | 3 | 25 | 0.0356 | 0.0317 | 0.0002 | 0.48 % |
| SP1964 | Wed 12/08/2015 13:35:21 | 3 | 18 | 0.0220 | 0.0196 | 0.0002 | 0.77 % |
| SP1965 | Fri 21/08/2015 17:31:41 | 3 | 10 | 0.0069 | 0.0061 | 0.0001 | 1.37 % |

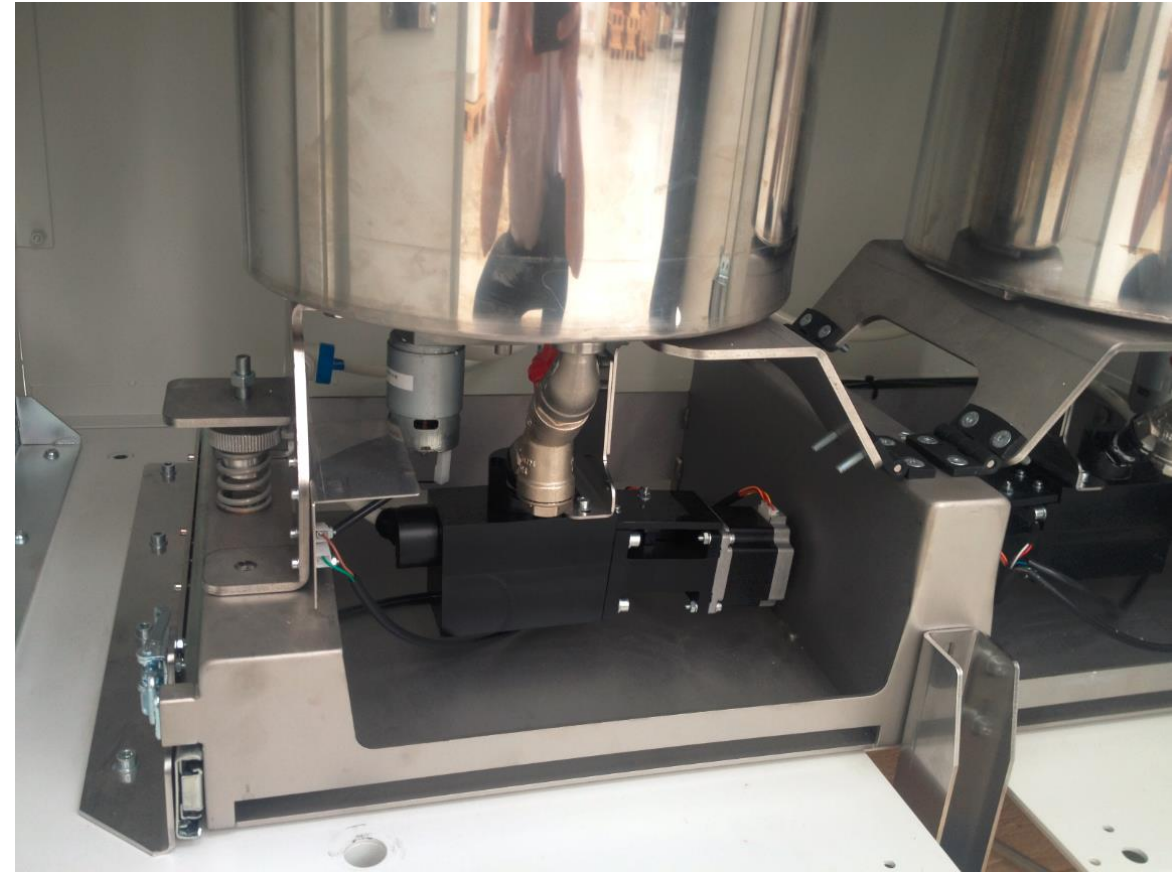
Note: 0,0061 cc = 1/4847 of US fl oz

Magenta represents the most difficult drop to cut.

Absolute std deviation in the range of 4 digit scale error

Clearly this is a lab exercise to test technology limits.

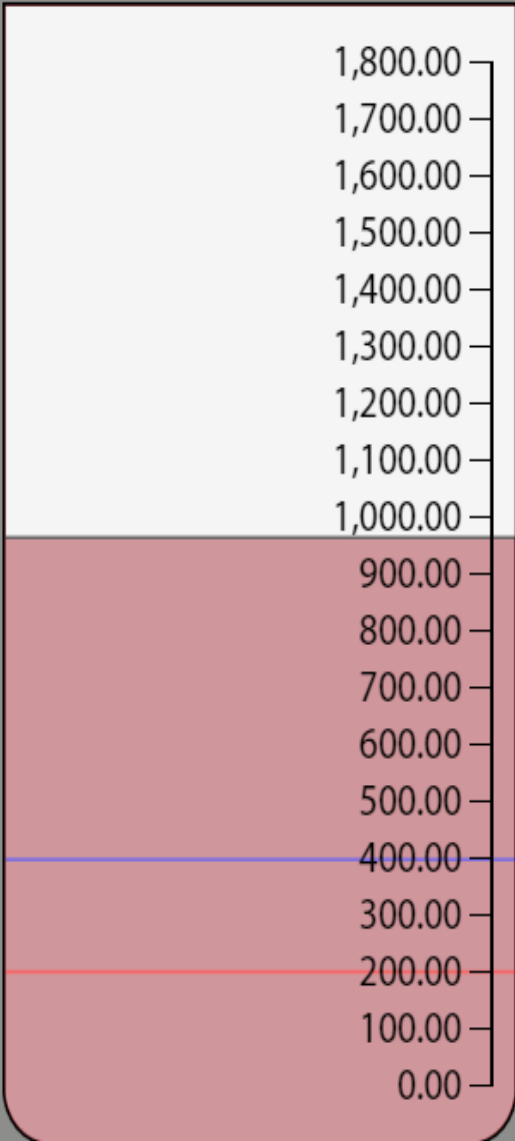
Canisters level digital sensor



All canisters are equipped with a digital allarm sensor



Canisters level digital sensor



Current volume [cc.]

963.74

Maximum volume [cc.]

1,800.00

Reserve volume [cc.]

397.77

Minimum volume [cc.]

200.00

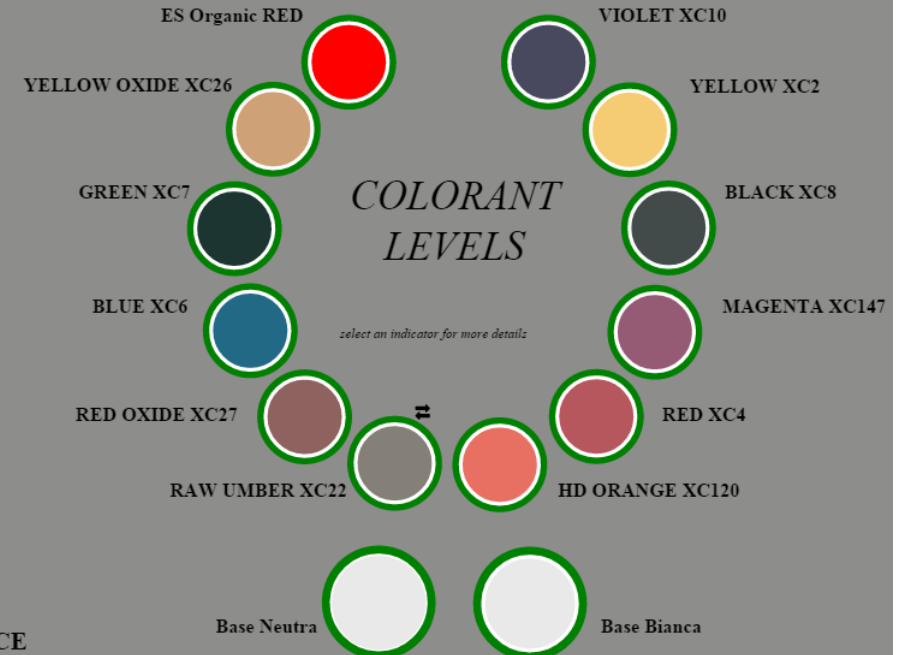
CONTAINERS

- CAN1
- CAN2
- CAN3
- CAN4

CAPS

- CAP1
- CAP2

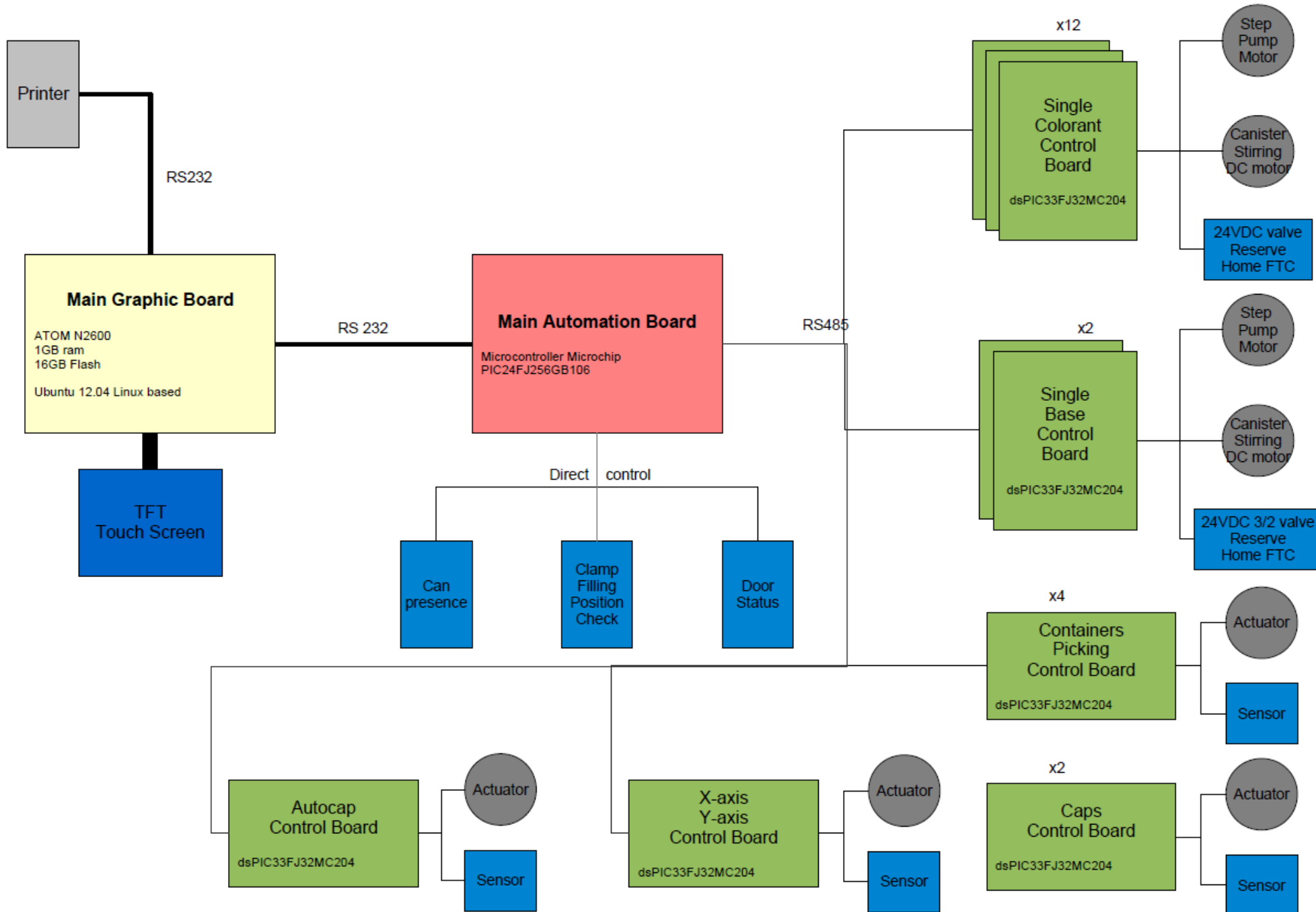
- PRESENCE



All canisters are equipped with a digital allarm sensor

Blu level is detected by sensor. This recover operators error automatically

Data available for remote control



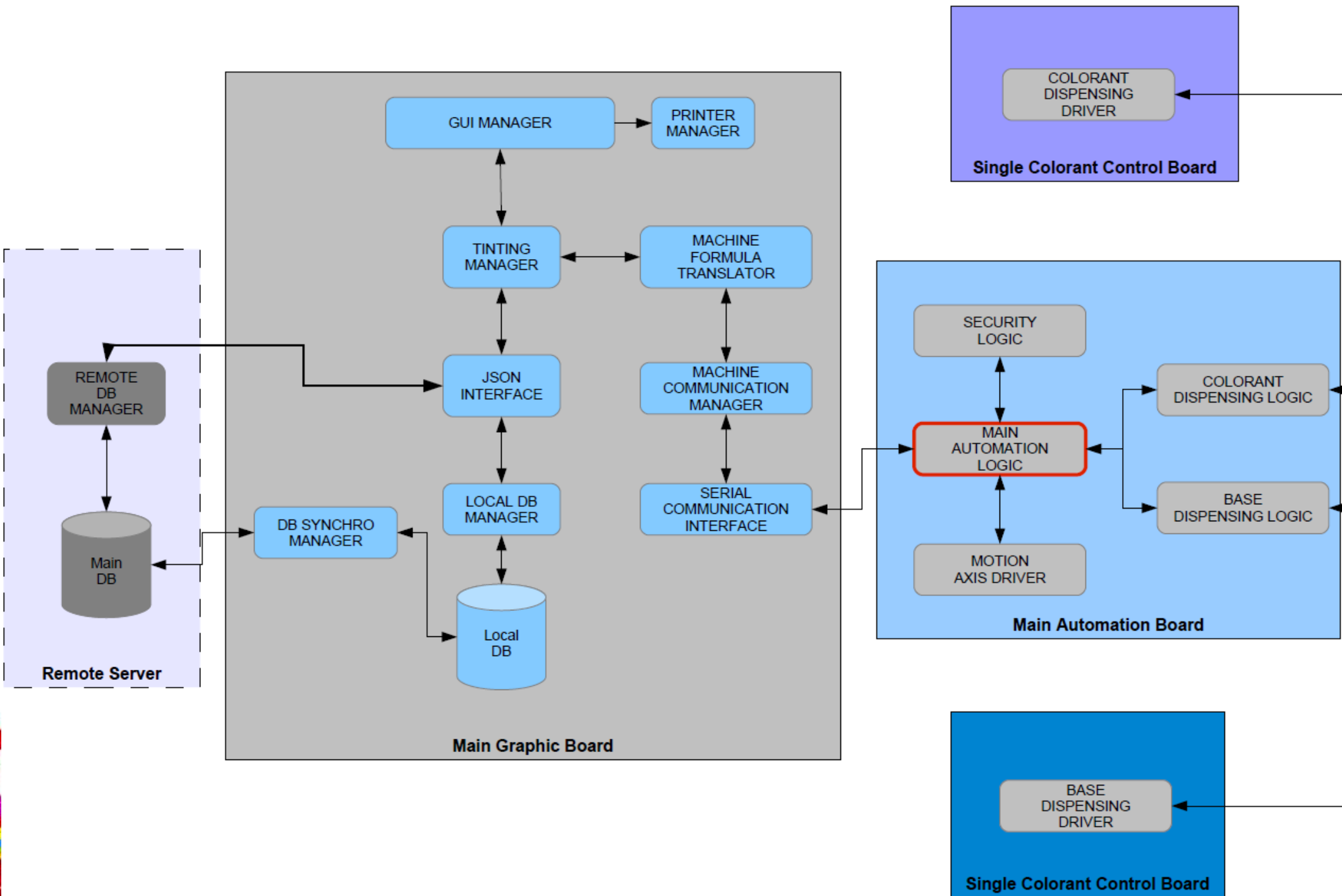
Hardware configuration

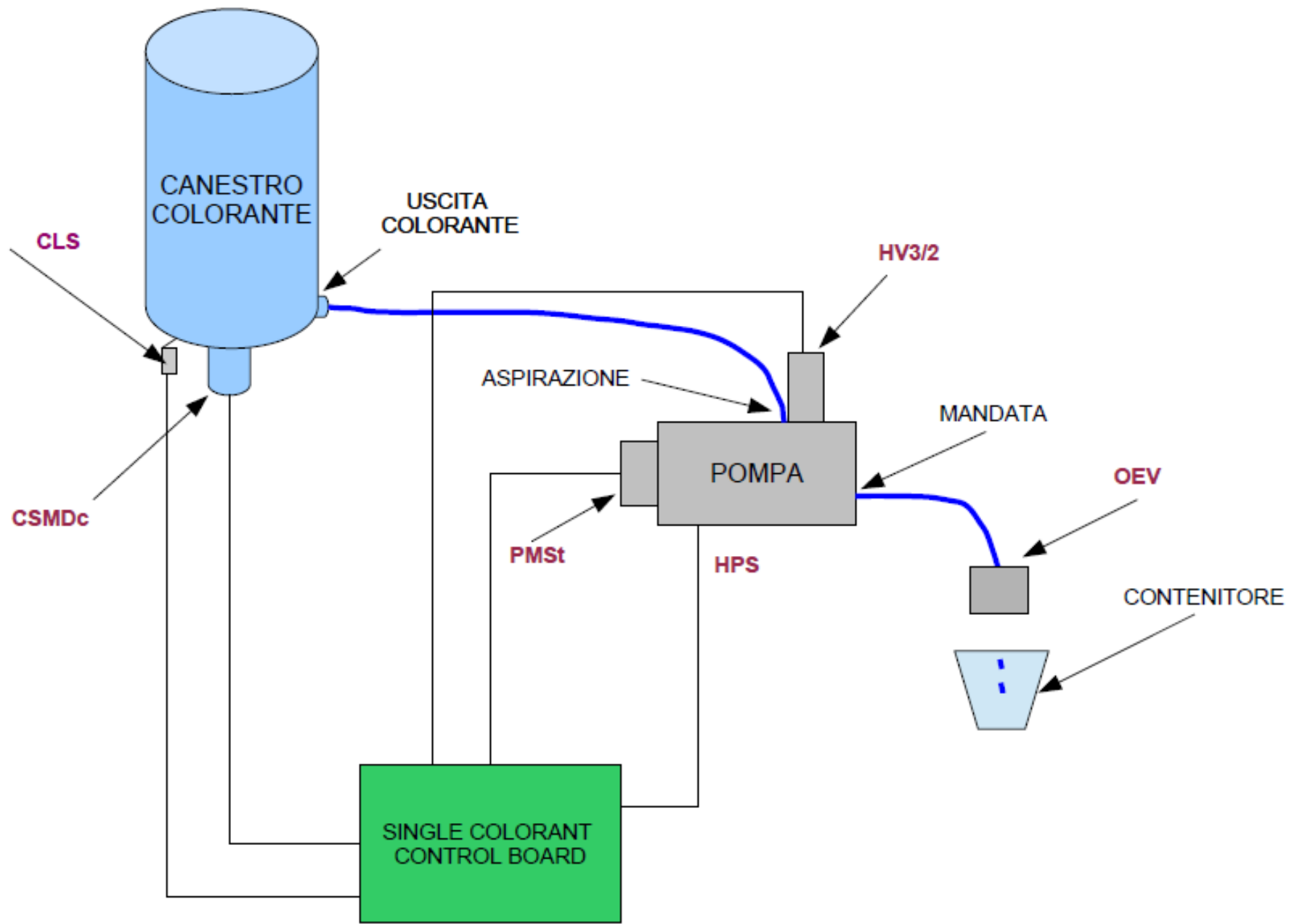
Linux based PC

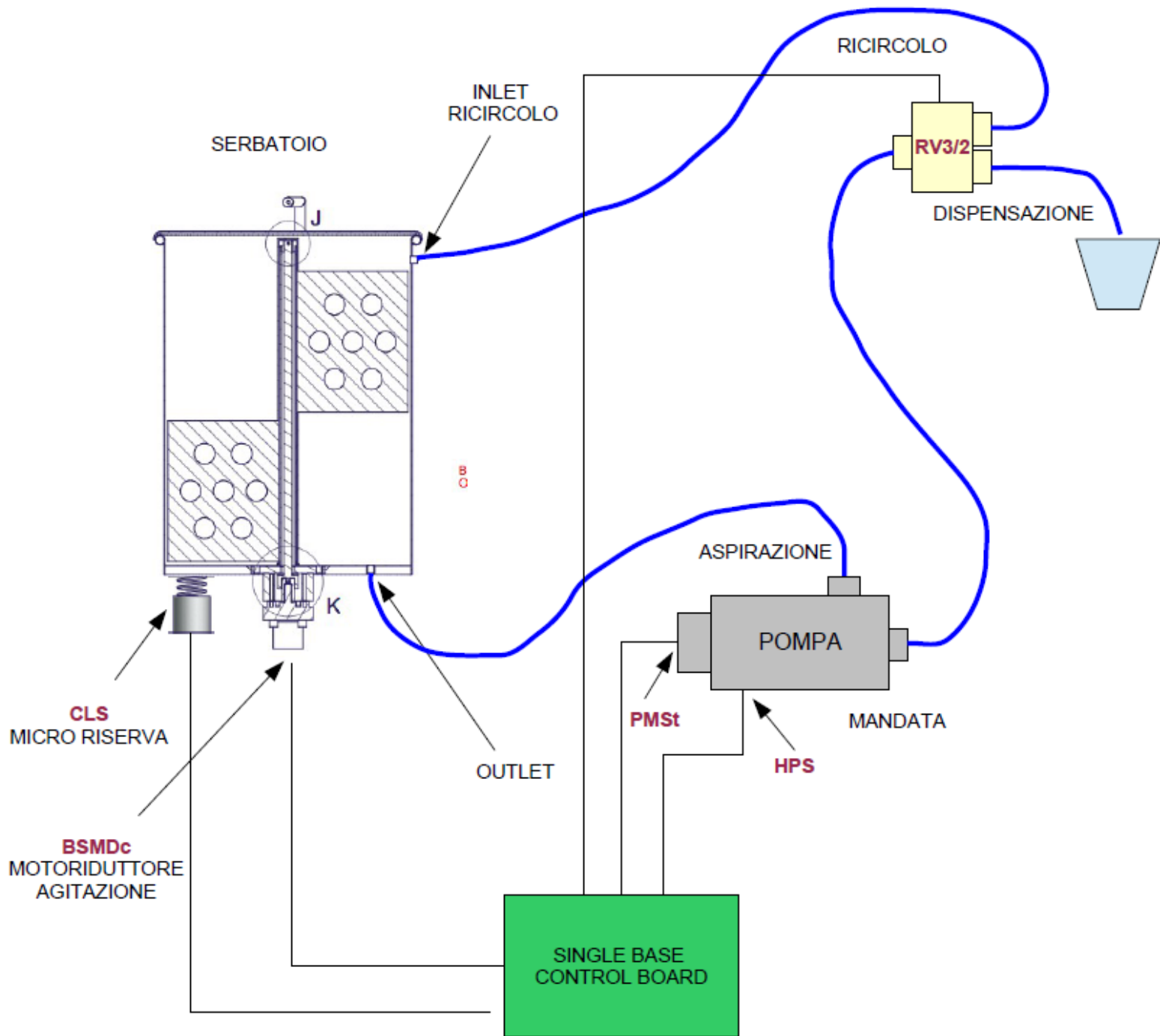
Front end to interface field control board via Can Bus

Control board. Same hardware, firmware related to function

Boot loader available for PC programming.



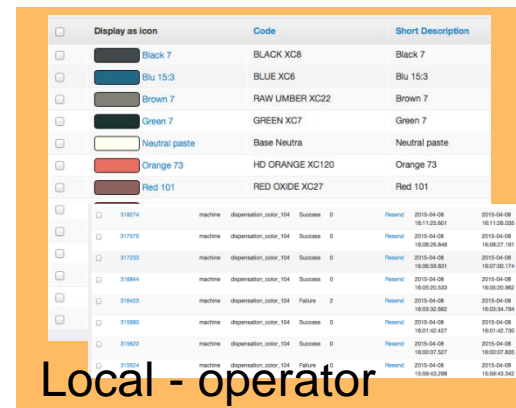
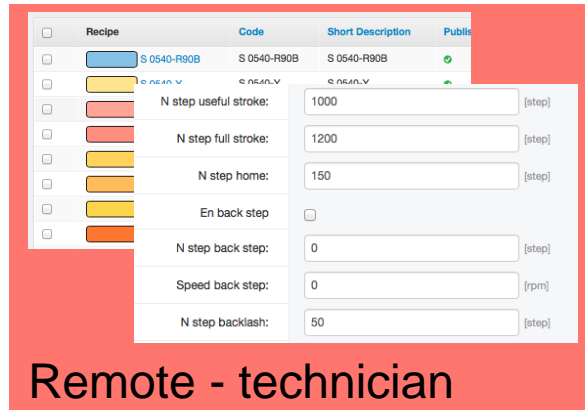
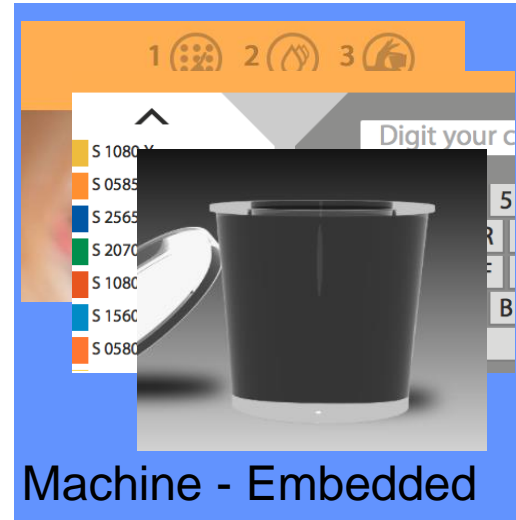




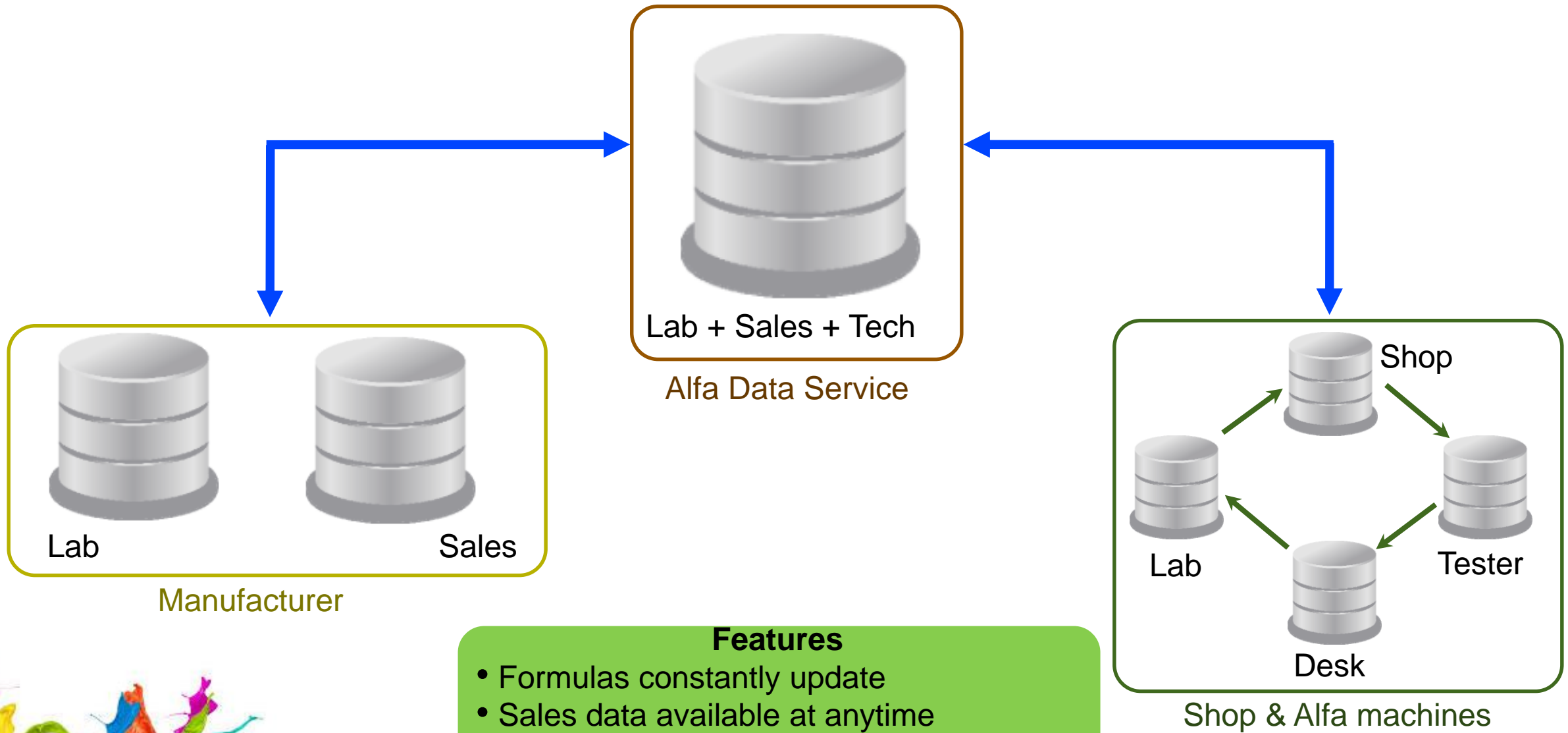
User Interface

Technologies

- Web oriented
- Truly cross platform
- Distributed
- Highly customizable
- Concurrent access
- Role dependent profile



Data Management



Manufacturer

Lab + Sales + Tech

Alfa Data Service

Lab

Sales

Shop

Lab

Tester

Desk

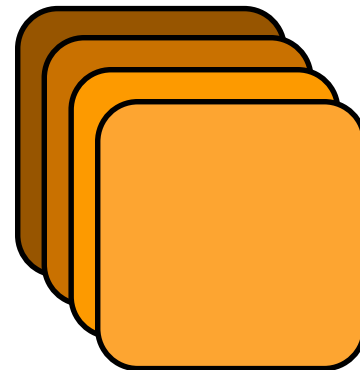
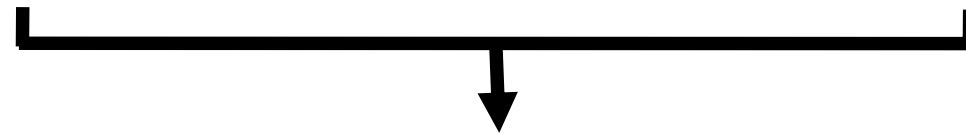
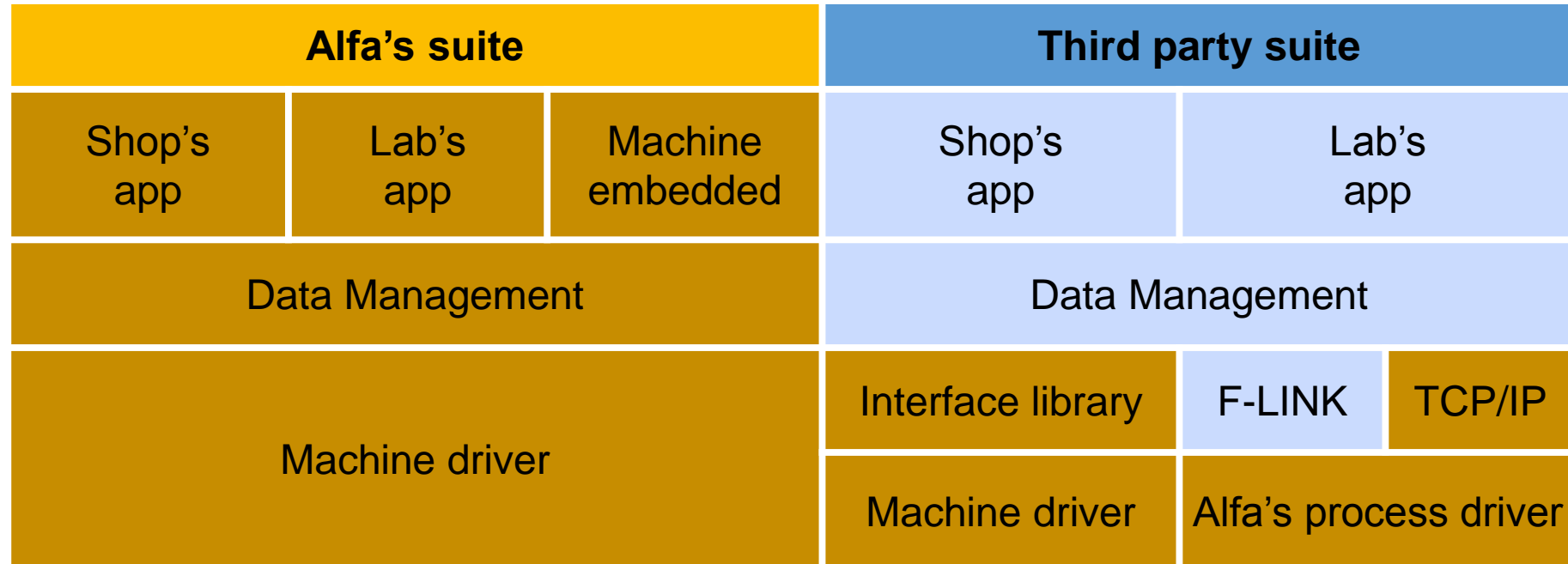
Shop & Alfa machines

Features

- Formulas constantly update
- Sales data available at anytime
- Remote access for services
- Shop's custom formulas available



SW interoperability



Alfa's dispenser







Thank you