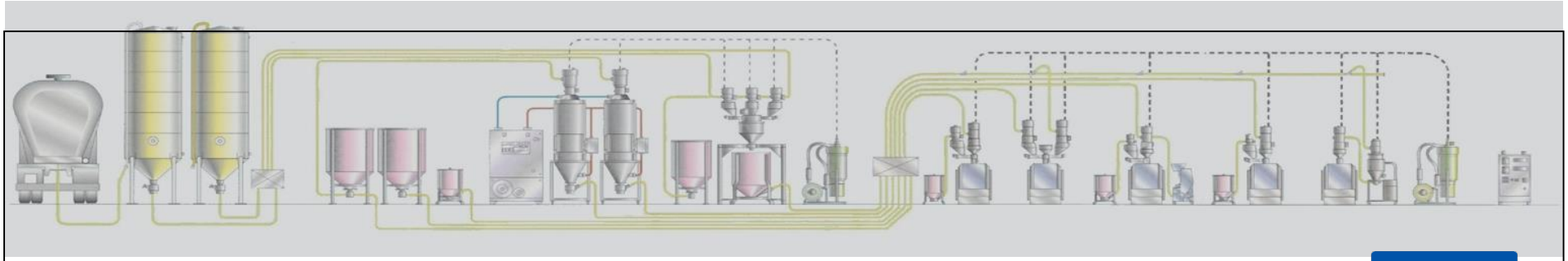
MATERIAL MANAGEMENT

Blending | Control | Analytics

AUTOMATIC MATERIAL SELECTION MANIFOLD IN CENTRALISED FEEDING SYSTEMS

CENTRALISED AUTOMATIC SYSTEMS

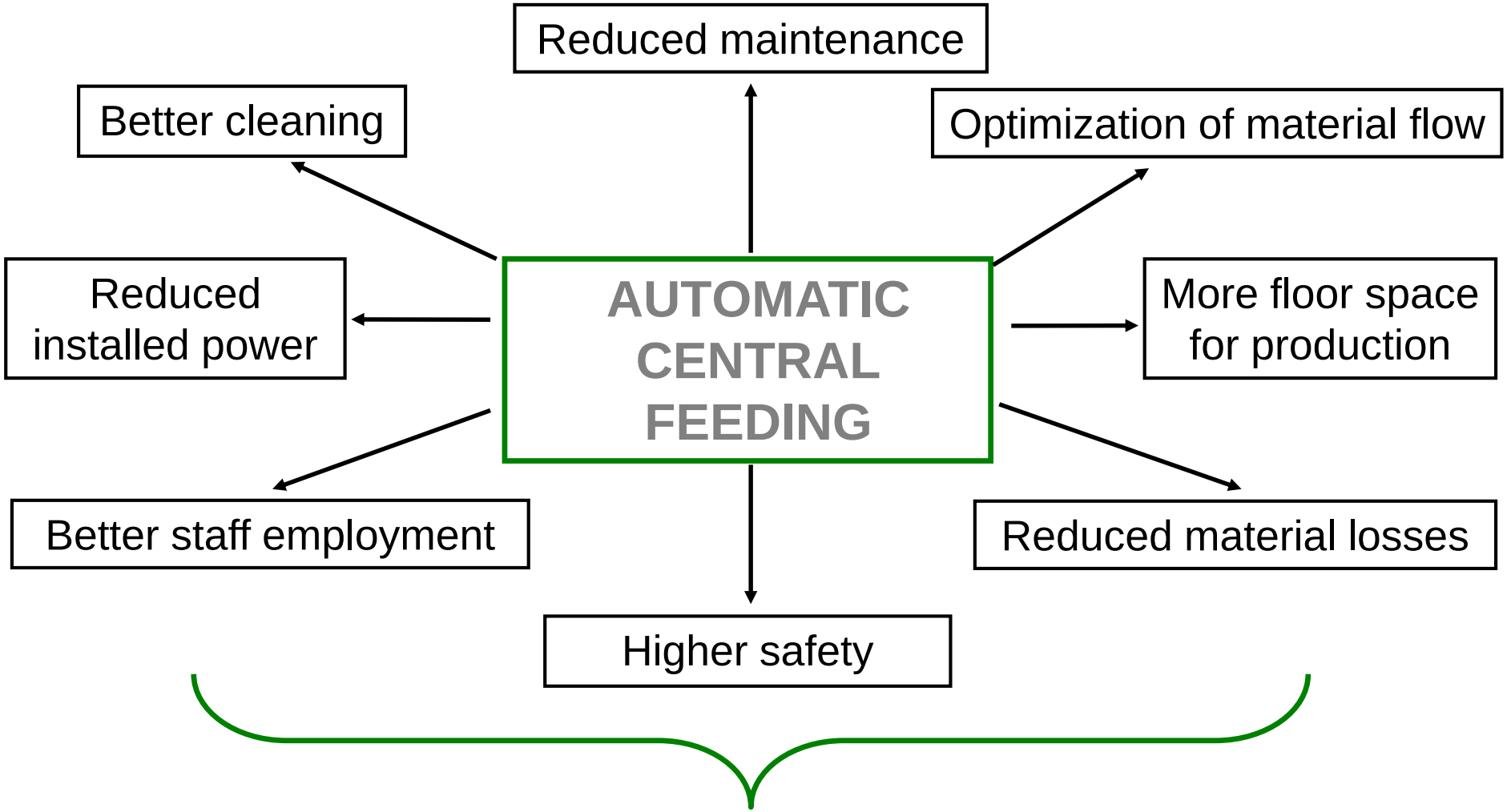
Central feeding starts to be advantageous when large number of machines or materials throughputs allows to better organize the production increasing productivity and decreasing costs



The centralization of the material feeding permits to obtain:

- Optimizing raw material flow: better logistic of material flow within the factory area, factory cleaning (no material on floor, safer environment)
- Reduced factory floor surfaces occupied by material bags beside machines or material treatment units (better exploitation of the floor surface for productivity increase)
- Personnel involved in more productivity activities once centralized and automatized the whole system (better staff employment)
- Less total installed power with one vacuum blower instead of many smaller units (even 50% less installed power)
- Less maintenance, concentrated mainly on the central filter and vacuum unit, instead of diluting it on all single loading units (less maintenance time and costs)
- Centralization of input/output data: possibility to integrate the material data consumption by automatic purchasing of material or programming maintenance operations

CENTRALISED AUTOMATIC SYSTEMS



PRODUCTIVITY INCREASE → COSTS REDUCTION

CENTRALISED AUTOMATIC SYSTEMS

CONCEPT of Central Feeding:

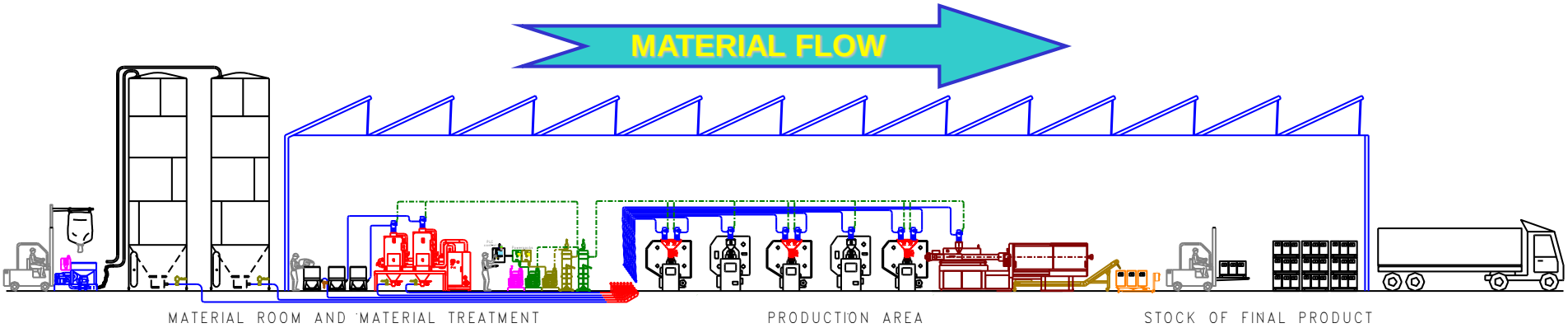
Feeding of storage bins, silos or drying hoppers by conveying the raw materials

When required, continuous and automatic treatment of materials (crystallization, drying…)

Pneumatic suction of bulk materials from material storage room (silos, bins, drying hoppers) to processing machines with logic and optimized material flow far from material storing room

Eventually dosing and mixing of materials, additives, colors on machines. Regrind of parts to be recycled beside machine (or centralized)

Belt conveyors, rotary tables, to box and pack the final product (in injection or blow molding) or other packing systems



AUTOMATIC MATERIAL SELECTION MAQNIFOLD

“ONE PIPE PER MACHINE” SYSTEM

The mayor part of the central feeding systems with several materials to be distributed is the "One Pipe per Machine" System. Each receiver has its own dedicated material pipeline.

Material pipes generally come from silo suction boxes, from bins, from drying hoppers, from gaylords, etc.. All pipes from here go directly to a **material selection table** (manual, manual with material code control, **automatic**).

To avoid operator mistakes on material selection the manual solution can be updated with a decoding system, but the safer solution is installing an **automatic material selection manifold**.

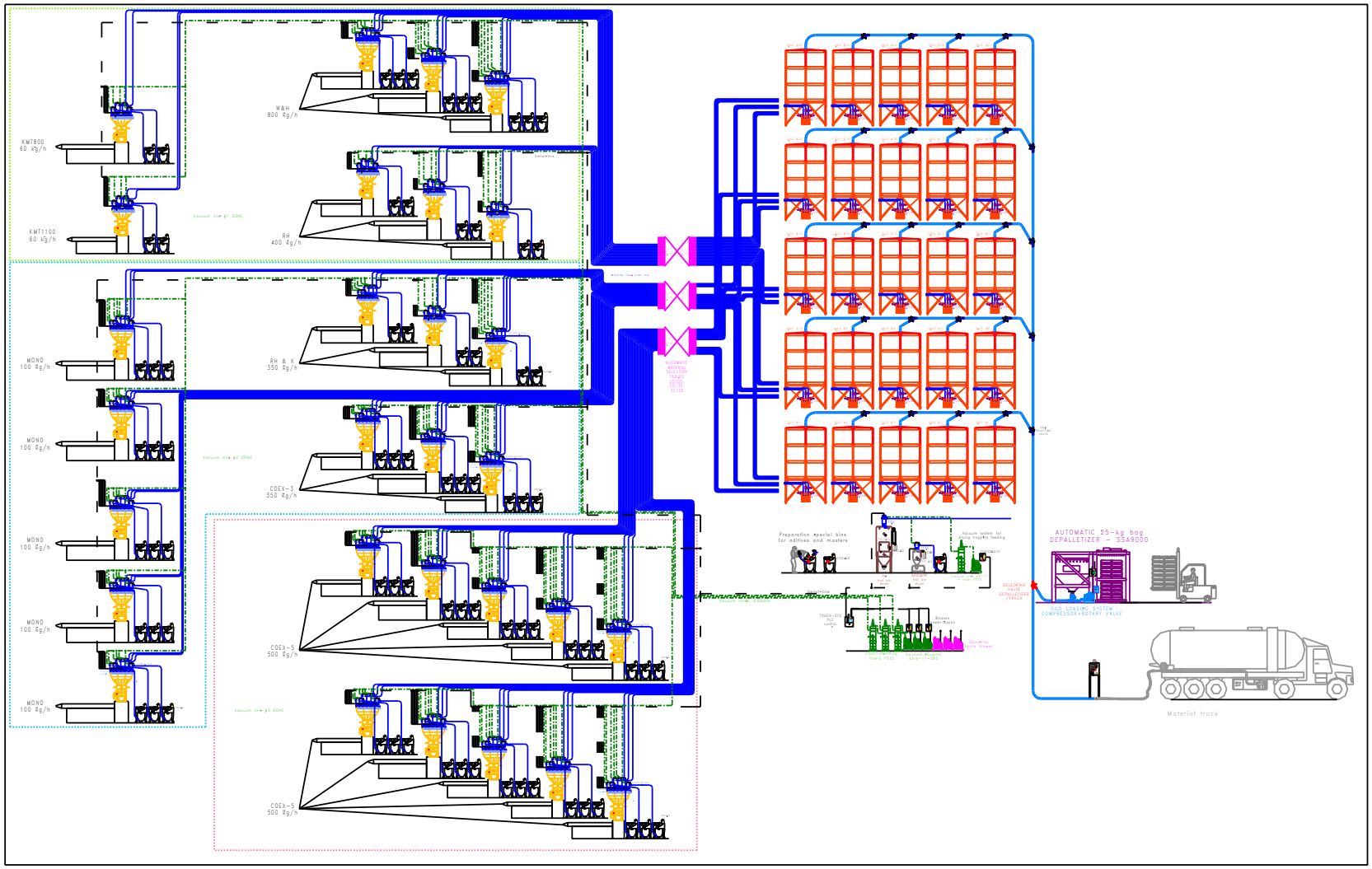
The automatic solution permits to distribute automatically all the materials to the various receiving points without mistakes of selection

From the material selection table all materials are distributed to the processing machines, each one fitted with its own pipeline connected to machine material receivers.

CENTRALISED AUTOMATIC SYSTEMS

AUTOMATIC MATERIAL SELECTION MANIFOLD

Centralized feeding: “one pipe per machine” system



AUTOMATIC MATERIAL SELECTION MAQNIFOLD

MAIN TECH "AMSM xx/xx" AUTOMATIC MATERIAL SELECTION MANIFOLD

The AMSM design allows automatic selection of different materials to be distributed to various processing machines, guaranteeing the absolute absence of materials contamination. The material/machine identification is automatic, in accordance to the set on the Main PLC feeding control together with the set program of the AMSM PLC local unit.

AUTOMATIC MATERIAL SELECTION MANIFOLD

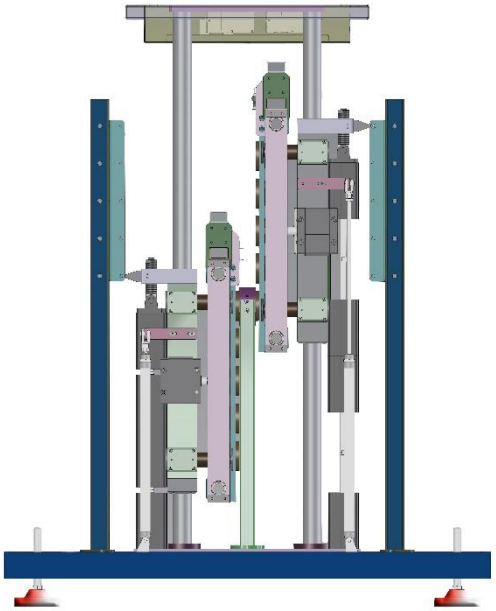
"AMSM xx/xx" AUTOMATIC MATERIAL SELECTION MANIFOLD

AMSM design is based on electro-pneumatic system of Cartesian axes for the positioning of the proper selected Material-Machine set. The connection between selected material-machine is achieved by using two sliding parallel plates with a coupling pipe (called central element). Pneumatic cylinders move the two plates. Plates position monitored and controlled to ensure perfect alignment. Once properly positioned, two pneumatic pistons push the plates to the central element and seal the central coupling. In locked position, the material convey starts. Important component of the system is the **central element** that put into connection the material lines to the machine lines.

AUTOMATIC MATERIAL SELECTION MAQNIFOLD

"AMSM xx/xx" AUTOMATIC MATERIAL SELECTION MANIFOLD

The **central element** is a very short piece of pipe designed for perfect seal when the two plates, holding the material pipes on one side and the machine pipes on the other side, are pushed against it for proper material flow by vacuum. The small central element has no material stagnation. No granules remain in this part between one feeding cycle to the next. It is equipped with an automatic internal pipe cleaning device, by compressed air shots, performed just before the opening of the two plates (after the main pipe cleaning cycle phase is over). Even the presence of dust is then avoided with this solution.



AUTOMATIC MATERIAL SELECTION MANIFOLD

"AMSM xx/xx" AUTOMATIC MATERIAL SELECTION MANIFOLD

The moving plates with hoses holders (two plates: one on the materials side the second on machines side – same number of holders on the two plates) are driven on Cartesian axes by pneumatic pistons on smooth driving bars which do not need any lubricant.

AUTOMATIC MATERIAL SELECTION MANIFOLD

"AMSM xx/xx" AUTOMATIC MATERIAL SELECTION MANIFOLD

The local PLC controls the solenoid valves to assure the correspondence of material/machine set. Plates positioning, both on vertical and horizontal axes, are precisely controlled by series of positioning sensors on the two dimensions. The design and the used pneumatic components make the unit very silent and precise. For its simplicity, it is easy to install, has low power consumption, has long-lasting life, requires low maintenance, and is easy to use. The linear sliding rails for the pipe-holder plates are ground steel bars where special self-lubricating bearings are the sliding elements of the plates. These bearings allow dry-sliding without lubrication, high resistance to wear, no sensitive to collisions and vibrations. Position sensors and photocells allows the PLC to manage and control constantly the correct position of material/machine pipe plates position and its opening/closing on the central element..

AUTOMATIC MATERIAL SELECTION MAQNIFOLD

AUTOMATIC MATERIAL SELECTION MANIFOLD

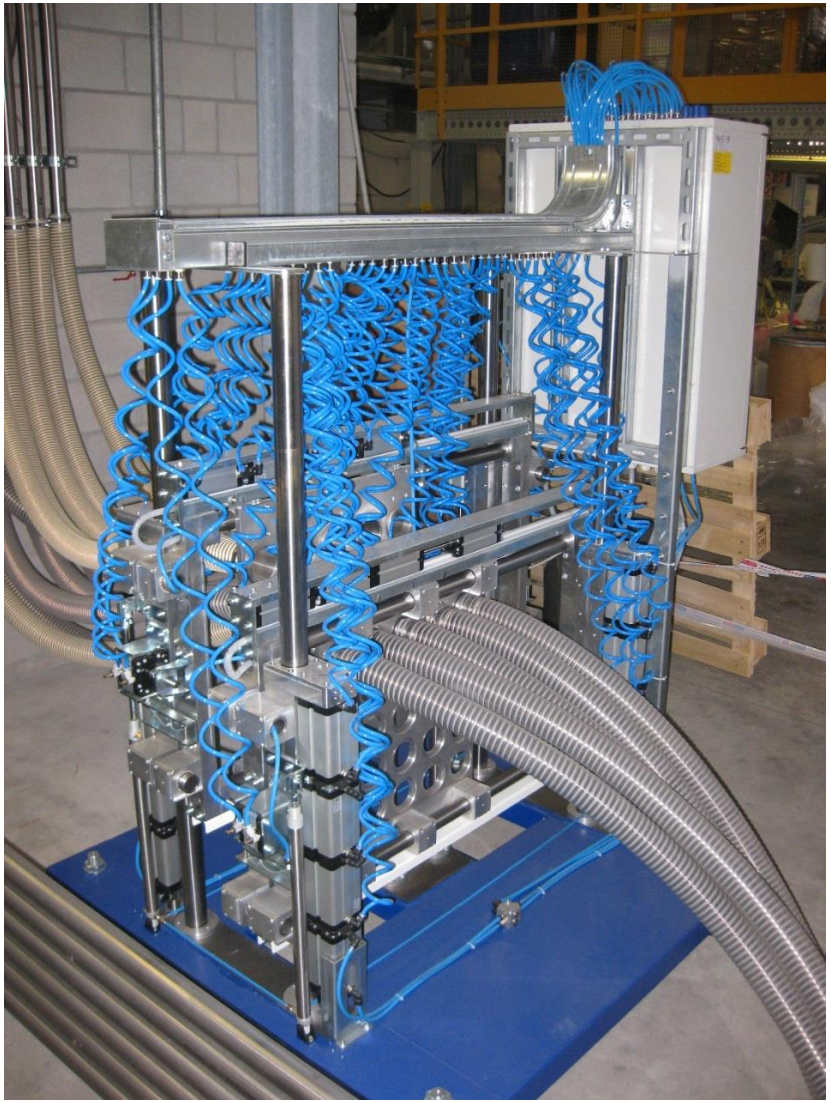
The local control unit, *Eliwell* PLC, is equipped with an active program with alarms diagnostic, to detect and reports anomalies that may occur. The phases of automatic or manual operations can be activated from the keyboard, based on point to point control, to check all the correct positioning. PLC easy to be integrated to main central feeding PLC control by data exchange table.
Side protection grid fence with inspection door with safety device are installed around the manifold.
Models available are:

- AMSM 15/15
- AMSM 25/25
- AMSM 35/35
- AMSM 49/49

With diameters 40, 50, 60, 70, 76, 88.9 mm

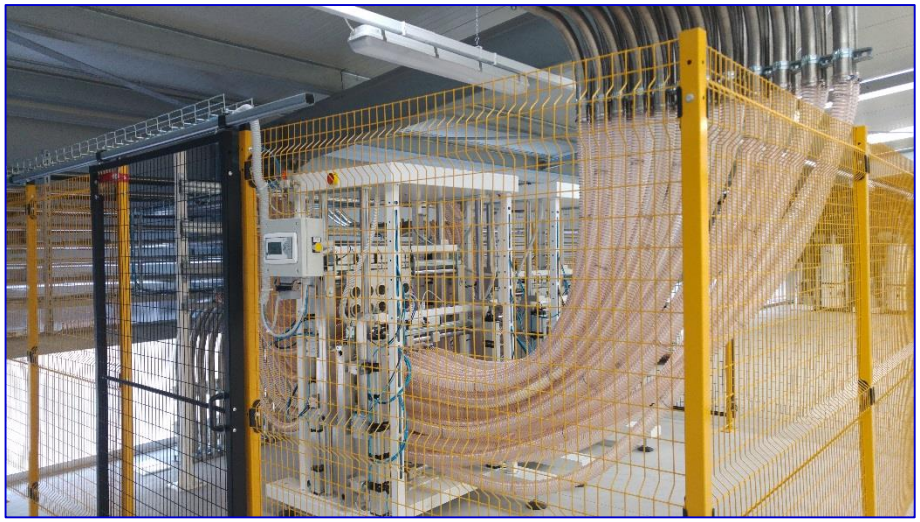
CENTRALISED AUTOMATIC SYSTEMS

AUTOMATIC MATERIAL SELECTION MANIFOLD



CENTRALISED AUTOMATIC SYSTEMS

AUTOMATIC MATERIAL SELECTION MANIFOLD



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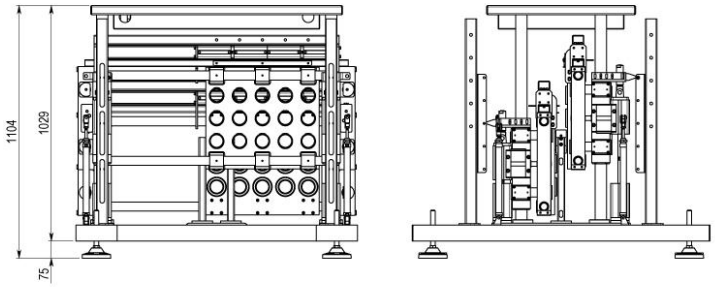

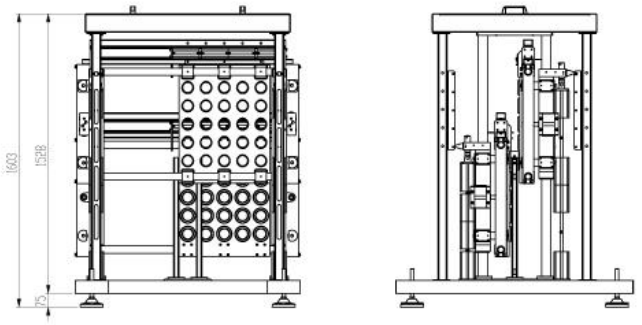

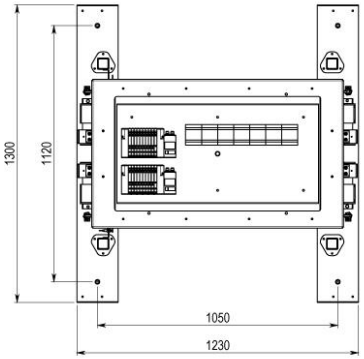

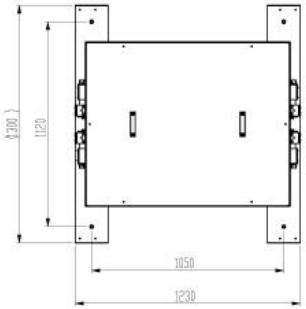

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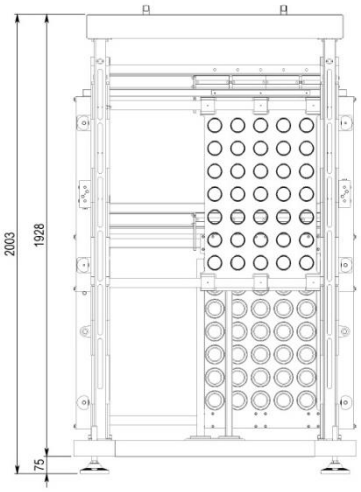

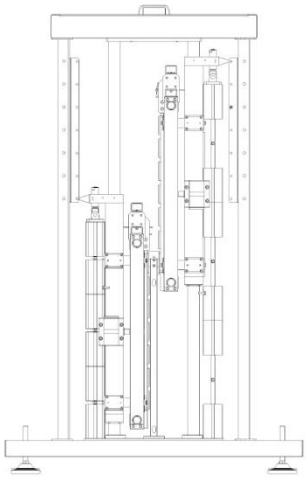

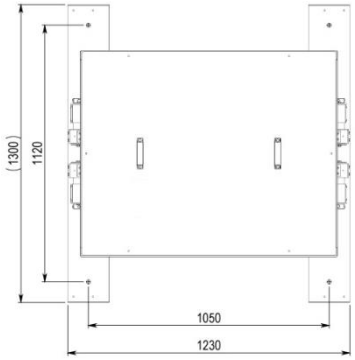

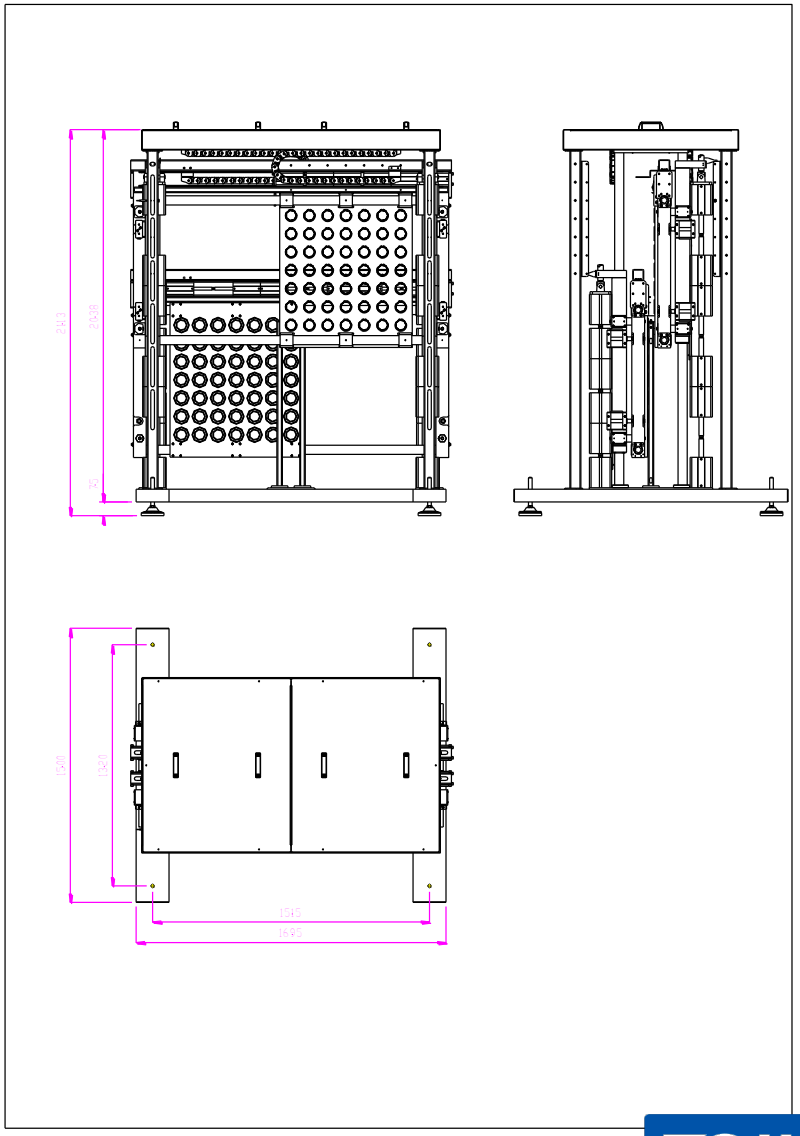

THANK YOU

FOR YOUR ATTENTION!