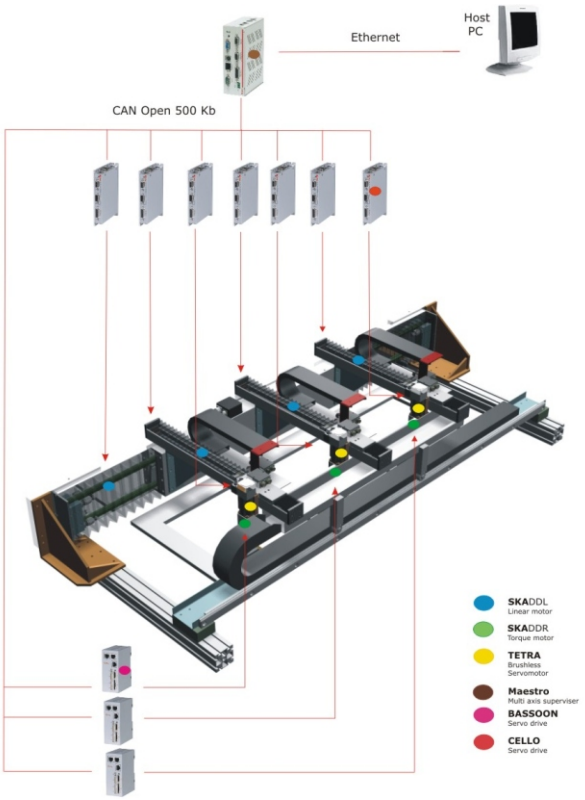
Motor Power Company s.r.l.
Via Leonardo Da Vinci, 4
I - 42024 Castelnovo Sotto (RE)
Tel. +39 0522 682710
Fax +39 0522 683552
info@motorpowerco.it
www.motorpowergroup.com

CERAMIC PLOTTER

Focus On

- Total elimination of the kinematic chain;
- Reduced maintenance;
- Distributed-intelligence" architecture, so that a flexibility in case of machine modularity is obtained ("multi-head" solution)
- Easily mechanical structure.



The need

In order to satisfy the market increasing demands and obtain better esthetical effects over the porcelain tile, Motor Power Company, after the success obtained to Tecnargilla fair and the investments increase in the R&D department, offers new technologies by employing the ***Direct Drive*** technology.

The solution

SKA DDL linear motors by Motor Power Company move a brand new conception plotter able to reproduce over three different ceramic supports (expandible), simultaneously and independently, engravings, special effects and decorations. This innovative mechanism can be set in a double filling press and in a double pressing system: it doesn't modify the system production cycle and eliminates the use of expensive Cartesian robots. In every cycle the plotter creates either repetitive and random special effects over the ceramic support by keeping the multifunctional system, thanks to its flexibility and an extremely easy size-change.

The plotter features 10 axes handled by Motor Power Company motors, driven by intelligent digital drives and controlled by a multiple-axis drive supervisor via CANopen.The main axis, X, is operated by a **SKA DDL** 55 HM direct drive linear motor, a motor of the iron core type with 550 N force and 1000 mm stroke, 170 kg capacity, 3 g acceleration and a speed of 3 m/s. The three Y axes are driven by three linear motors of the **SKA Compact** series, a plug and play linear system assembled in an extruded aluminum structure that's already complete with temperature sensor, linear guides, linear ball bearings, bellows, encoder, cables and cable carrier. Three **Tetra** brushless servomotors fixed to mechanical actuators drive the Z axes in the vertical direction. The servomotors develop 0.5 Nm torque, feature a 56x56 mm size, and operate at a speed of 3000 rpm.

The three rotational C axes, which were added to the plotter at a later stage of the project, are driven by three **SKA DDR** direct drive torque motors. These motors feature a hollow through shaft to allow the atomized colored material to flow along and create the desired effects on the tile. The axes, of which there are initially only seven, are driven by **Cello** intelligent digital drives, while the three rotational axes are handled by intelligent digital drives of the **Bassoon** series fixed straight on the axes, according to the distributed intelligence and power logic.
All the axes are controlled via CANopen by the innovative Maestro multiple-axis control which can also be monitored via web browser and that allows the various axes to be managed in synchronized mode. Moreover, it also allows the number of axes to be easily increased without limits, as confirmed by the addition of the rotational C axes which was done at a second stage of the project. Motor Power Company also produced the software used for the full installation control. It's an original visual system that automatically acquires the trajectories made on the tile, inclusive of anti-collision system and able to automatically calculate the extent to which C axis rotates. The software also synchronizes the Y axes, which are independent from each other but all driven by X axis.

Advantages

The advantages are various: thanks to the Direct Drive technology, main feature of the **SKA** linear and torque servomotor proposed by Motor Power Company for the whole mechatronic system, reduced maintenance is obtained thanks to the elimination of the kinematics chain, whose components are subjected to noisiness, backlash and usury. Reduction of machine assembling times and energetic economy derived by the energy preservation normally wasted for driving the components. Last but not least, the productive increment derived by the positioning precision, main feature of the **SKA *Direct Drive*** concept and their dynamic capacity.
The **SKA *Direct Drive*** series, **DDL** and **DDR**, allow a simplification of the machine design, a reduction of the occupied spaces for new machines or no modifies at all for already-existing machines, plus an improved overall machine design. Last but not least, the considerable energetic economy (up to 50% comparing to traditional systems), simplification of the machine design, extremely flexibility when it comes to effects reproduction and 0.1 mm precision.

Direct drive linear servomotors SKA DDL

SKA DDL servomotors provide tangible solutions and achieve performances that were previously impossible with conventional kinematic chains.

The internationally patented direct drive technology featured by **SKA DDL** linear servomotors allows the customer to obtain exceptional results in dynamics and precision positioning. Modern industry demands increasingly higher production rates, easy management and low maintenance: **SKA DDL** servomotors meet and surpass all these requirements, thanks to a precision driving unit and simple mechanics, with an improved design and and easy maintenance.

SKA DDL is available in the Frameless or Linear Stage versions.
The Frameless servomotor has a mobile coil and magnetic track, without mechanical moving parts. This structure allows the servomotor to be installed along with existing components. The Linear Stage version of the **SKA DDL** servomotor is a complete product, ready for installation in machines where it becomes a structural part. This configuration is a signature product which we think showcases Motor Power Company's skills in the electrical and mechanical spheres.

Features

- Iron core technology
- Continuous force max 2400N (Fpeak 7200N)
- Max speed 5 m/s
- Max acceleration 5g (50 m/s²)
- Different encoder models
- Dimensions: 6
- The Linear Stage version includes the already assembled SKA DDL linear motor with temperature sensor, linear ball bearings, linear guides, bellows, encoder, cables and cables carrier
- CE certified