The Sovema fast curing system maximises production by means of its well proven time-saving approach to the curing process.
Evolution in plate formation, especially with expanded metal, involves increasingly higher percentages of active material, offset by a decrease in the percentage of alloy lead, and this envisages that future strategies will always take the same direction.

Plates having this composition require a significant increase in the internal cohesion of the paste and the adhesion between paste and grid. The only method for ensuring good cohesion and adhesion of the paste is to enhance related production ambient conditions through a sequence of curing cycles capable of forcing the plate to assume the physical state required.

This cannot be achieved with natural cycles, but only with ovens ensuring maximum environmental conditions acceptable for the plates, that in turn also ensure a reduction of cycle time and consequent additional operating savings.

- A plate highly “loaded” with paste demands good cohesion and thus a thermal cycle of between 65 °C and 80 °C, with humidity 90% - 95%, and controlled duration will ensure the correct quantity of the tetra-basic sulphate necessary for this purpose.

- A plate with a high percentage of active material requires low electrical resistance and thus good adhesion to the grid. This is achieved by ensuring complete oxidation of the free lead, but at the same time, since it brings forth the formation of tri-basic sulphate (very useful in battery charging - discharging stages), you need a controlled cycle between 50 °C and 60 °C at humidity of 80% - 90%.

- When all the free lead has reacted, humidity must be eliminated from the plates to allow the electrolyte to penetrate the entire surface porosity; it will thus be necessary to dry the plates with high efficiency.

To attain this, the curing chamber must ensure a series of characteristics as listed hereafter:

- a force-feed chamber humidifying system by means of steam injectors, in order to rapidly achieve humidity values greater than 90%, that protect the sulphation reaction;

- a heating system at controlled temperature of the curing chambers, in order to initiate the reaction process on the plates and production of tetra-basic and tri-basic sulphate;

- a cycle closed chamber cooling system, to extract the reaction heat generated by the plates reaction;

- correct air flow over the product to be treated, in order to ensure the same ambient conditions for all plates;

- O2 control system of the air inside the chamber, to ensure the proper oxidation progress;

- variation of the air flow in the curing chamber in the various process stages, in order to maintain a minimum equalisation flow during the reaction and maximum ventilation in the drying stage;

- intelligent control panel for automatic management and storage of the various work cycles, for the various plate types to be treated.

The curing chamber manufactured by Sovema is the only system capable of performing all these operations, by means of:

- a) separate steam generator, supplying free steam for rapid attainment of any humidity percentage and re-circulated steam for heating the air in the drying stage;

- b) heat exchangers included in the process air circuit capable of heating/cooling the process air and then maintaining it at a perfectly controlled temperature range;

- c) ducting of the process air to supply a symmetrical air flow over the plates to ensure that curing conditions are similar in all curing chamber zones (see fig. 1);

- d) special device to detect the percentage of oxygen in the process air, as to keep the set level, either acting on the oxygen injection, or controlling the fresh air inlet;

- e) inverter piloting of the two main ventilators, to ensure different deliveries in the various process stages;

- f) main control panel equipped with a PLC, to manage all curing cycle stages for a group of n° 4 chambers; the PLC can store all the Programs used and recall them for implementation in each chamber in the group. Curing chamber operating cycles can be stored and catalogued to ensure traceability for every plate.
OVERALL DIMENSIONS

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