

## TECALEX Quenching and Cooling table for automotive and aerospace profile cooling

The cooling of the hot aluminium profile (ca. 500 °C) after extrusion has two main functions:

- The profile must be cooled down, near to room temperature, for stretching and for manual handling operations.
- In function of the cooling speed (K/s) and the total time within the cooling system, the metallurgical structure of the aluminium profile changes, which leads in general to a higher strength.

In simple applications, e.g. building industries, the first aspect is dominant. With the raising demand on the market for technical profiles (aerospace, automation) more and more companies have to study and to master the second aspect: the metallurgical point of view.

Fig. 1) explains the general working parameters of a cooling systems for technical profiles.

The cooling has to be done fast, but not too fast, because the profile may suffer distortions and loose the dimensional tolerances.

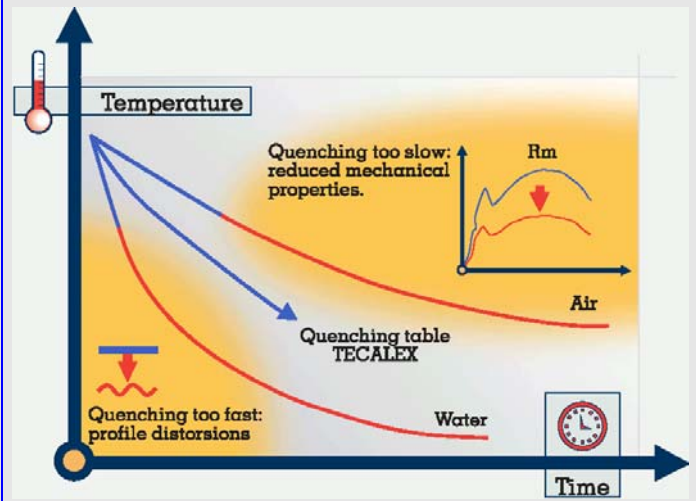


Fig. 1) Optimised cooling diagram avoiding distortions and leading to high strength

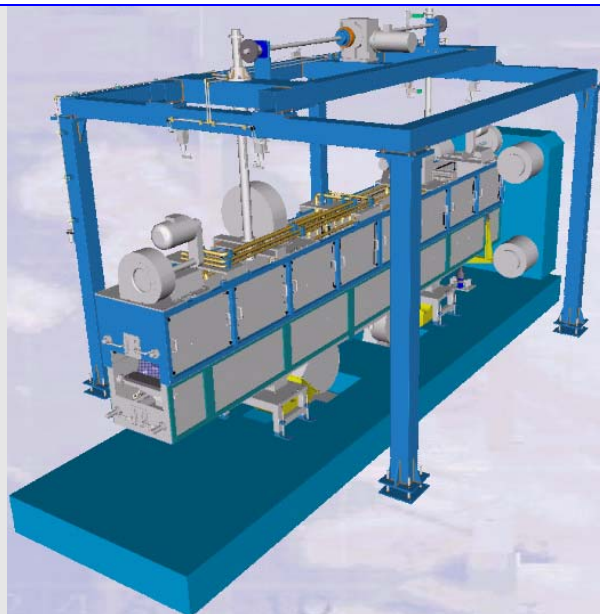


Fig. 2) 3-D-View of the Quenching Table

The TECALEX quenching table combines the use of spray water or air to control the profiles cooling curve. The system is individually designed and adapted to each customer case, and is adaptable to any type of geometric shape.

The following figure 4) shows the flow of air or water within the table.

The table is equipped with a hydraulic tray height regulation, to adjust it to the profile type.



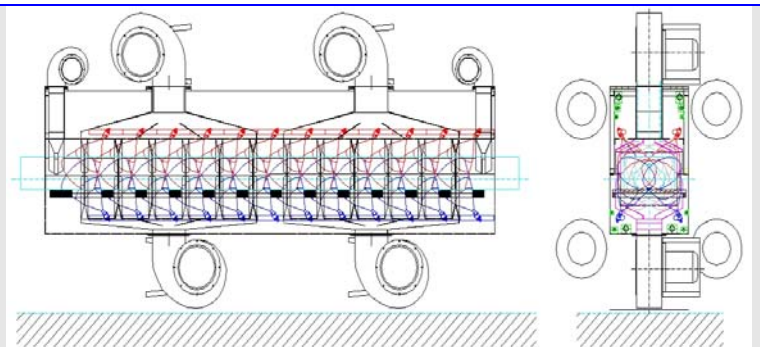
Fig. 3) Quenching table within 2200 MT extrusion plant

The lifting system of the cover allows lifting the cover so high, that the operator has easy access to all parts of the tray and press mouth.

### AIR COOLING NOZZLES

The air-cooling system consists of ventilators, which are supplying the air, at high velocity, to different sets of nozzles within the table.

The flow of air can be adapted to the individual type of profile



type of profile.

Fig. 4) Air / Water flow within the quenching table

**WATER QUENCH SYSTEM**



Fig. 5) Profile during water quench

The water nozzles are distributed all over the table's surface to guarantee homogeneous quenching operation.

**The art of cooling is the adaptation of the working parameters to different profile geometries.** The following figure 6) shows two very different profile geometries.

The left side shows a symmetrical profile. The four sprayers zones (A, B, C, D) can work with the same flow and in the same direction.

The right side shows an asymmetrical profile. The cooling effect must be higher at the area of the profile, where the wall thickness is higher. The flow of each sprayer zone and the direction of the sprayers have to be adapted.

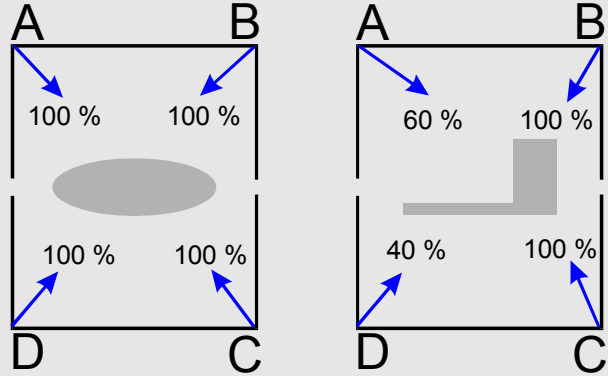


Fig. 6) Adaptation of sprayers according to the profile type.

The quenching table is no stand-alone system. It has to be designed and adapted to the plant layout, and to different puller systems like simple puller, double puller, flying cut and so on. At the same time its advisable to install additional air-cooling nozzles (see fig. 8) over and under the complete run-out table.



Fig. 7) Air and Water nozzles in the top of the quenching table



Fig. 8) Additional air nozzles for run-out tables

In addition to the above-mentioned quenching table, TECALEX produces all kind of up- and downstream extrusion equipment, adapted perfectly to the customer's requirements and any existing plant layout.

**For further information or for any enquiries regarding a specific layout for your extrusion plant, please contact:**

The adaptation, optimisation and the management of the working parameters, for the cooling system is done from the central control board.



Fig. 9) Central Control Board

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We look forward to your call.