Publication

Compact OTTO JUNKER finishing brushing machine for limited floor space

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Otto Junker’s Finish Brushing Machine (FBM) is used in heat treatment lines for strip of copper and its alloys, typically downstream of the pickling section. Its purpose is to remove oxides which have been dislodged in the recirculating pickling bath by brushing them off the continuously advancing strip surface with water. Moreover, the FBM is employed to impart particular surface finishes (abrasive patterns) to the metal, Fig. 1. Due to its outstanding technical performance, even strip de-greasing is carried out with this brushing machine.

Fig. 1: Otto Junker's finish brushing machine

The brushing action is provided by two rotating brushes, one of which is arranged above the strip while the other is mounted below. Back-up rollers ensure that the necessary brushing pressure for an abrasive brushing operation can be applied. The FBM marketed by Otto Junker today has evolved through many years of development, fuelled by a brisk technical exchange with industrial customers. Such an exchange requires a rapid feedback on operating parameters and results. This is ensured by fitting both the brushing machine and the strip flotation furnace, as core components of the strip processing line, with proprietary software which is then commissioned by the company’s own experts. Thanks to the extensive manufacturing experience and customer requests that went into its design, Otto Junker GmbH's finish brushing machine defines the state of the art today, not least due to the following features:

- stable, torsionally rigid design which is a necessary condition for an abrasive brushing treatment;
- bearing assemblies are arranged entirely outside the brushing chamber;
- low vibration during operation, allowing the machine to be fitted even on steel platforms (no need for filling of voids in the machine structure, e.g. with a curing grouting compound);
- drive motors are mounted on a separate motor stand;
- use of corrosion-resistant materials in the brushing chamber;
- freely selectable direction of rotation, i.e., brushing may be performed in or against the direction of strip movement;
- quick-changing device allows brushes to be rapidly replaced (max. 10 minutes per brush) even while the line is running, Fig. 2;
- oscillating brushes are available on request;
- spray tubes having nozzles with freely adjustable spraying angle;
- back-up rollers run synchronous with strip speed, preventing surface blemishes as effectively as possible;
- automatic re-adjustment of brushes ensures a uniform surface finish, even as wear and tear progresses;
- fully automatic adjustment to changes in thickness on strip change;
- brushes are automatically raised upon passage of a strip joint, irrespective of brush position setting;
- brush fill available for all surface grades;
- low water consumption due to water recycling.

Fig. 2: Brush quick-change device

Given the success of this new brushing machine, many customers have approached Otto Junker with the request to replace their current FBMs with the new "1.4" model on existing lines. However, while today's strip processing lines provide around 2100 mm in length for inserting an FBM, older lines typically had only 1400 mm available for a brushing machine replacement. Moreover, the strip passline used to be at 1000 mm back then, i.e. 200 mm below today's level.
In order to enable operators of existing strip processing lines to meet their customers’ increased surface quality demands now as before, Otto Junker GmbH has now developed a new FBM for retrofitting into older lines, Fig. 3. This FBM fits and delivers state-of-the-art brushing performance in virtually any pre-existing line.

Fig. 3: Views of the new ‘short’ FBM ‘1.4’