A combination of inductive material heating, continuous coating and a special drawing process reduces just the steel consumption by 124 tons a year.

The company Walzwerke Einsal produces, among other things, cold drawn profiles in different shapes such as rectangular, square bar, hexagonal, round profiles as well as a variety of special profiles on the Nachrodt site.

In order to meet the customers’ high requirements regarding accuracy of fit, the drawing process in the field of cold metal forming is of great significance. Prior to the cold drawing process, a surface coating had to be applied on the profiles as a preparatory measure. The coating agents were permanently kept in large dip tanks at a liquid temperature of 70°C. In addition to that, the profile endings were pre-machined to ensure the pushing process into the drawing device. This process causes substantial amounts of material loss.

In order to reduce the consumption of resources, Einsal decided to introduce a flexible and resource-saving new drawing line. For the first time, a combination of inductive material heating, continuous coating line and a drawing bench with a specifically adjusted drawing tool were used.

-saving resources. Strengthening the economy.
MEASURES AND ADVANTAGES

After pickling, the hot-rolled raw profiles are put on the machine at the material inlet and fed to an inductive heating device. Regarding their dimensions, the used inductors are adjusted to the respective profile dimensions. Thus, the used heating power is reduced to a minimum. Directly after that, the pre-heated profile goes into the coating chamber where it receives an even and thin drawing coating. In this way, the surfaces of the work pieces are improved and coating agents saved. For the most part, the excess coating agents are returned to the production cycle.

Resource savings at a glance

<table>
<thead>
<tr>
<th>OMISSION OF COATING TANK</th>
<th>AVOIDANCE OF PRE-MACHINING STEPS</th>
<th>ENERGY CONSUMPTION DRAWING PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary energy during the coating process approx. 140,600 m³/a natural gas</td>
<td>Material savings 124 t/a</td>
<td>Old (natural gas, electricity) 120,97 kWh/t</td>
</tr>
<tr>
<td>Coating agent (lime and salt) 3,504 kg/a (90 %)</td>
<td>Energy savings 59,824 kWh/a electricity</td>
<td>New (electricity) 120,97 kWh/t</td>
</tr>
<tr>
<td>Rinse water of the coating tank 2,688 m³/a (99 %)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THE WAY TO FINANCING

In June 2009 EFA carried out provided financial advice prior to the implementation. As a result, the company applied for subsidies from the environmental innovation programme of the Federal Ministry for the Environment in October 2009. After the approval of the project by the KfW Bank in December 2009, EFA was assigned with the conduction of a measuring programme. The results of the project, which was completed in October 2011, were recorded in a final report created by all parties involved. The costs for the measure amounted to approx. € 2.5 million. The project was funded with subsidies worth € 750,000 from the environmental innovation programme of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety.

The project partners

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