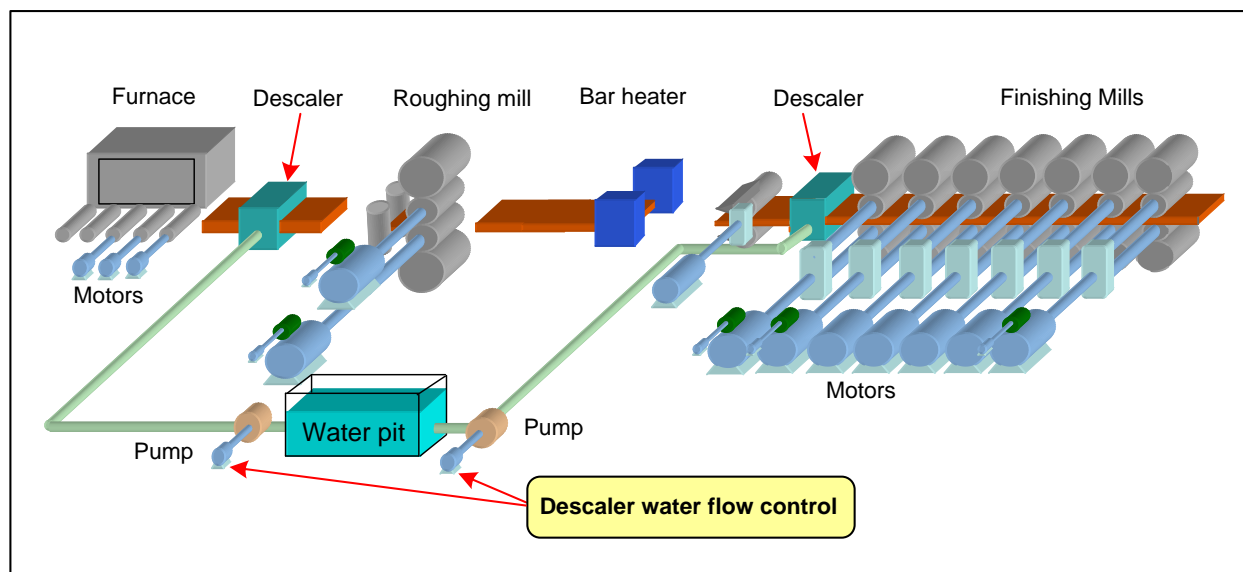


## Descaler Pump Energy Savings

High pressure water jets are used to remove scale from the steel bars before they enter the rolling mill. The descaler pump runs at constant speed, and the high pressure water is bypassed to the water pit when no bar is present. Running the pump at constant speed wastes energy and water, and heavy maintenance is required on the motor, bypass valves, and the pump. If the roughing mill is reversing, there are descale nozzles on either side, using even more energy.

A solution is to use a variable frequency drive on the pump to reduce the flow when the bar has left the descale area, thus reducing the load on the motor and the energy consumption.



Descaling System Layout

The control system allows the bypass valve to be activated at lower pump speed and pressure. During mill delays the pump speed can be reduced, and during a roll change the pump can be stopped. Because pump power is proportional to speed cubed, when pump speed is reduced to 70%, the power drops to 35%, generating large energy savings. Control system tests in a steel mill showed annual electrical savings of 1,320 MWh/year.

Other advantages of the descaler control system using variable speed pump drives are:

- When the pump speed is reduced to 70%, the water pressure is reduced to 49%. At the lower pressure the pump and valve life is dramatically increased.
- Reducing the flow when descale is not in use economizes up to 40% of the water used. Clean water that will not clog up the descale nozzles is a valuable commodity in hot strip mills.
- Variable speed drives avoid motor overloads during on-line starting, and avoid the resulting large voltage fluctuations which can affect other equipment in the plant.

For more information about our many energy saving applications, please contact [metals@tmeic.com](mailto:metals@tmeic.com), or call TMEIC at 540-283-2100.