

## 100Hz WATT geared motors for galvanizing line FVZ 3

The cold-rolled strip produced in the cold rolling mill is surface-finished on the "voestalpine STAHL GMBH galvanizing line". During the process, the steel strips are annealed on a single line, before being coated with liquid zinc. This type of steel sheet galvanization ensures excellent corrosion protection, thus fulfilling the highest requirements of the automotive and household appliance industry. The various machine components are powered by the MAS gear motor program of WATT Drive Antriebstechnik GmbH.



Fig.: FVZ 3 - Discharge unit

The annual output of the galvanization line FVZ3 in Linz (Fig. 1) is 320,000 t.

As compared with current lines, treatment speed was raised by 20% to max. 180m/min. This constitutes a big challenge for the line and the used components, and is always subject to reliability and long operating life.

The line mainly consists of 3 parts:

1. Feed unit
2. Treatment unit
3. Discharge unit (see Fig. 2)

Additional equipment like a cleaning unit completes the FVZ3.

Here the following classes of WATT transmissions are used:

- Shaft mounted gear unit, A series
- Angle parallel shaft gear unit, C series
- Helical gear unit, H series



Fig. 2: Galvanizing line 3

There follows the description of a furnace motor as an application example.

### Used WATT MAS geared motor:

#### **HG 133A 161L6 KB KTY84 IG**

Power:	22 kW
Voltage/Frequency:	400 V, 100 Hz
Connection:	$\Delta\Delta$
Output speed:	54,5 rpm at 100 Hz
Output torque:	3.855 Nm

The motors are fitted with:

- KTY 84 PTC resistors for temperature recording
- HTL pulse generators with 1024 pulses/rev.
- Condensating water holes
- FPM Viton seal rings on hardened shafts

### Special specifications:

- High ambient temperature + 60°C
- High speed range - 12 up to 72 rpm with constant torque and **self-ventilated**.

### Drive power system: Frequency inverter with 100 Hz characteristic line

When operating with a characteristic line of 100 Hz (motor winding is operated at 400 V in double delta connection), constant torque and increased power up to 100 Hz are reached. The constant output torque can thus be decreased across a large speed range. Over 100 Hz, the motor gets into field weakening mode and works with reduced torque and constant power.

By using 6-pin motors, the gear unit input speed can be kept low, which results in significantly higher operating life expectancy of sealing elements and bearings. Furthermore, this solution enables the use of a smaller motor construction size (more compact dimensions), which again helps significantly reduce the drive overall weight.

Further information related to Watt's production programme is available on our website [www.wattdrive.com](http://www.wattdrive.com).