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Rod Mill No. 257- Niederrhein; Gears for No-Twist Finishing Mill

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TO:
Steve Ordog

FROM:
Maurice Knott

SUBJECT:
Rod Mill No. 257 - Niederrhein
Gears for No-Twist Finishing Mill

1. Single Stage Increaser

The driving motor speeds have been set at 800 to 1300 RPM with the 1300 RPM giving a roll shaft speed at Stand No. 23 of 7330 RPM. The gear ratio at the single stage increaser is 1.56 to 1.

Because the loading on the gear teeth is about 17% higher than for STELCO and because of the oversized motors, it is recommended that the Bethlehem box size be used. The gears are:

- 100 T driving 64 T
- 3 NDP
- 9" Face
- Approximately 12-1/2° Helix Angle
- Tip Relief (J&L Cutters)

Our shop and drafting departments worked out a box construction for J&L that looks simpler than STELCO's. This box can be machined on the Milwaukee-matic or on conventional machines. With no reason for going to the STELCO construction, we can use the Bethlehem box for Niederrhein.

2. Three-High Speed Increaser

The J&L unit is the one to use for Niederrhein. The three-high gears remain the same on all of the No-Twist Mills, and the argument for using the J&L box construction is the same as for the single-stage increaser.

3. Bevel - Gear Housing

The J & L bevel gears will be used. For the housing the single piece STELCO design should be used. The housing was broken

continued
into two pieces on J&L so that it could be machined on the Milwaukee-
matic.

When an 8" stand is ordered in Europe, the decision will have to be made
whether to use Bethlehem's two-piece bevel gear housing or to design
a one-piece bevel gear housing.

4. Driving Pinions and Roll Shaft Pinions

These gears for the 6" stands have never been changed. However, because
of the roll shaft thrust bearing change which starts with Bethlehem, there
is a change in the roll shaft eccentrics and a minor change in the roll shaft
itself.

On the roll shaft the fillet radius must be smaller for the new bearing.
This will just be a change on the STELCO drawing. The new roll shaft
will replace the old. The new eccentrics will not replace the old.

The thrust bearing change was necessary because of Bethlehem's speeds.
It is intended to use this bearing for all mills starting with Bethlehem.

5. Bearings

The roll shaft thrust bearing is the only bearing type change made on the
No-Twist Mills. This came out of the late realization that the 10,000 feet
per minute mills have top roll shaft speeds equivalent to about 12,000 feet
per minute.

On J&L there were minor tolerance changes on bearing housing holes and
shaft diameters. It was intended that the advantage of these changes would
be used on all mills after J&L. On Niederrhein this will affect the one-piece
STELCO bevel gear housing drawing.

Maurice Knott

MK/cac