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

Maurice Knott

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**MORGAN CONSTRUCTION CO.
ROLLING MILL DEPT. MEMORANDUM**

DATE: 26 October 1965

TO: Steve Ordog
FROM: Maurice Knott
SUBJECT: Rod Mill No. 257 - Niederrhein
Gears for No-Twist Finishing Mill

	ACT	INF
KNIGHT		X
LONGNECKER		X
MARSTERS		X
MERCER		X
MORGAN, P. M.		X
MORGAN, PA. S.		X
MURRAH		X
GEN. FILE		X
Morgan, W.		✓
Smola, R.		✓
BAILEY		
BJORK		
BRUCE		
BURNS		
CHITTICK		
CONTOIS		✓
ERICKSON, A.		
FALCONER		
FONTAINE, H.		
FONTAINE, R.		
Rich, A.		✓
GILVAR		✓
HITCHCOCK		
HERMES		✓
HILL		
HOLBROOK		
KINNICUTT		
KNOTT		✓
McMILLEN		
MORGAN, M.		✓
MURRAY		
NEELY		
NYGARD		
ORDOG		✓
POOLE		
PRENTICE		
RANDALL		
REARDON		
SIEURIN		✓
WASHEURN		
WIGINGTON		
WILSON		✓
WINTERS		
WOOD		
WRIGHTSON		✓
WYKES		
YOUNG		
ZELTMAN		
ENGLAND		
PITTS.		
COMB. CONT.		
MORGAN		
WIRE DRWG.		

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