

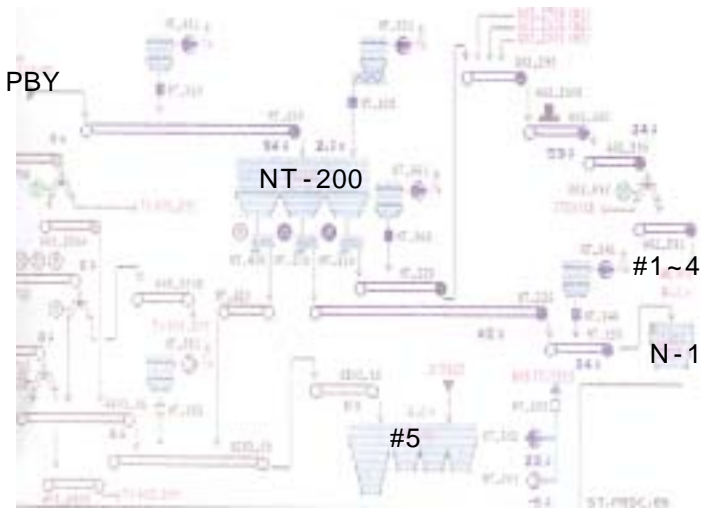
# Roller Mill

1.

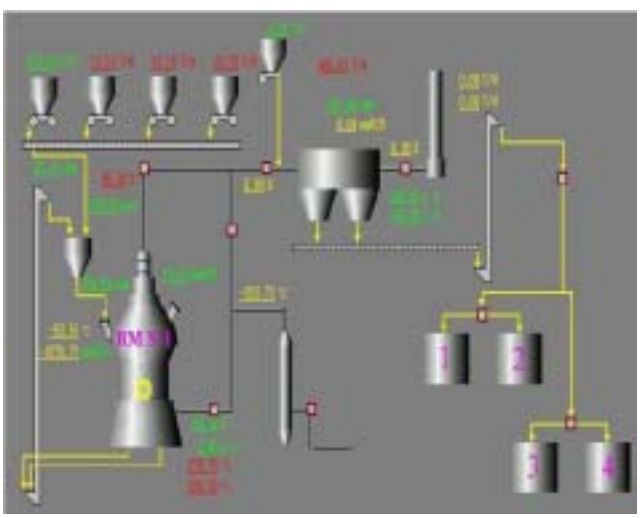
1992	#1K/L	SP Type	N-MFC Type	
K/L			Ball Mill	UBE
Roller Mill	,	.		
가		가	가	
Cement	,	가	.	
Know-how		가	10	
Loss	가	.		

2.

2-1. Flow



< #1 Line >



< #2 Roller Mill Line >

2-2. Mill Spec' < 1 >

	Type	Spec.	Capacity	Maker	
#1 4R/M	Ball Mill	4 x 10.82ML	100T/H	MHI	25mm Over10%
#5R/M	Ball Mill	4.8 x 15ML	300T/H	Polysius	25mm Over 0%
#N-1R/M	Roller Mill	LM45.40	407T/H	UBE	25mm Over 25% (Max 80mm)

2-3. < 2 >

					F/Ash	
(%)	86.4	1.0	6.0	2.7	2.9	1.1

' 03. 5

2-4. < 3 >

	(%)		(BWI)	25mm Over%	
99	46.5	53.5	9.63	30%	1.000
00	47.1	52.9	9.69	34%	0.991
01	46.6	53.4	9.65	38%	0.996
02	52.6	47.4	9.84	35%	0.973
03	70.0	30.0	10.45	37%	0.906

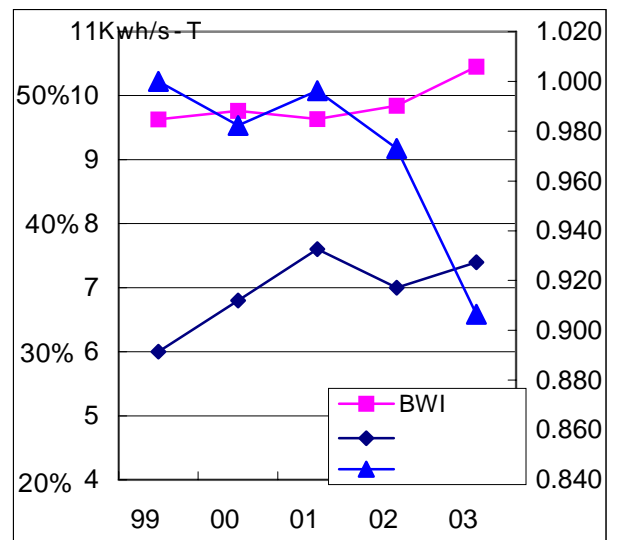
' 96

BWI : 11.5KWH/T

BWI : 8.0KWH/T

Bond ( Ep = Cbx (1/ P- 1/ F))

BWI



< #3

가

>

2-5. Roller Mill Trouble < 4 >

	' 99	' 00	' 01	' 02	
	92	77	19	13	

3.

< 5 >

1	Sep' Blade	
2	Triple Gate Cycle Over	Blade Blade
3	Drag Chain Conveyor Trouble	(Shackle)
4	Rubber Sheet (29 / )	가 Roller Upper Casing Alignment
5	Mill	Mill Spec' (LM45) Roller Size(LM48) Unbalance
6	Unbalance(Ball Mill )	NT200 Hop'

4.

90

가 [ 3 ] K/L  
 Balance가 ( )  
 Roller Mill Line Spec' Unbalance  
 Trouble

4-1. Mill

Roller Mill Mill PID Control

Guide Vane 45°

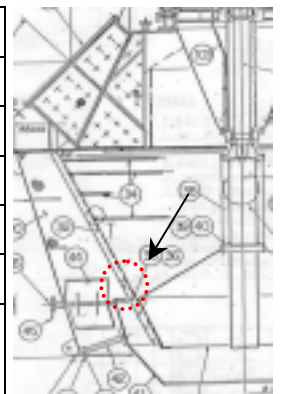
N-1R/M

Mill Roller Size

Mill

가  
 Sep'

	#3	#7	N-1R/M
Model	LM40.40	LM40.40	LM45.40
	290T/H	320T/H	407T/H
Mill	600mmAq	760mmAq	980mmAq
Sep' Type	LVT	LVT	Conventional
	6,075Nm <sup>3</sup> /Min	6,383Nm <sup>3</sup> /Min	7,946Nm <sup>3</sup> /Min
Guide Vane	10.6m/Sec	11.1m/Sec (10.2m/Sec)	13.8m/Sec



( ) : LVT

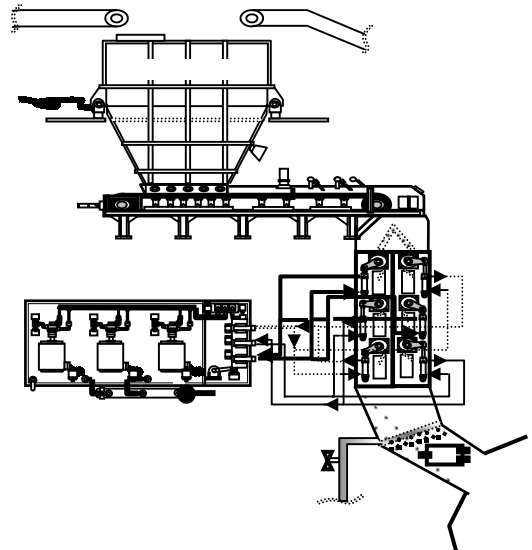
< #4 Sep' >

	Mill Sep'	Gas Sep'	Gas Blade	Guide Vane 가
	45°	30°		가
	Guide Vane	Gas	Sep' blade	Sep' blade
	16%	15%	(	)
	(T/H)	Sep' RPM		(%)
	410	780 ± 20		16 17%
	416	780 ± 20		15%

< 7 >

#### 4-2. Triple Gate Cycle Over

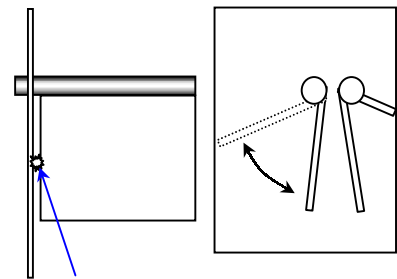
Triple Gate Mill  
Surge Bin  
Fresh Air  
30  
가  
Trouble



< 5 Mill >

Triple Gate Trouble 90%  
Cycle Over  
Gap(5mm )  
가 가  
6 8  
Trouble

Damper Plate  
Triple Gate Damper Blade

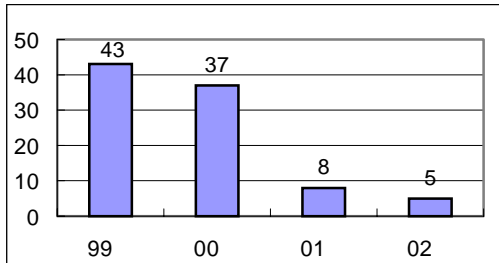


	99	00	
	43	37	

< 8 Triple Gate Cycle Over >

< 6 Trouble >

Triple Gate Close Blade  
 Gap 8 Blade  
 Gap Cover  
 Trouble 5



< 7 T/G >



< 8 Triple Gate >

Triple Gate Trouble System  
 Fresh Air

Triple Gate가

### 4-3.ECS Line Trouble

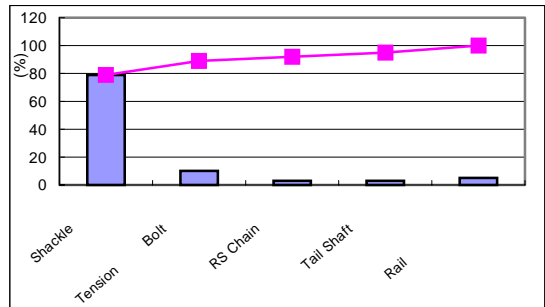
Roller Mill Roller Table Grinding  
 Size Mill 가 Roller Table 가  
 Table  
 ECS ( 70 80% ) ECS Line  
 Mill  
 ECS Line Mill DCC(Drag Chain Conveyor), B/E, Mill  
 Bin B/C 9 DCC  
 Shackles 가 20 Trouble ECS Line  
 Mill 70%

	' 99		' 00		
	Trouble		Trouble		
DCC	27	79:10	22	85:40	
B/E	12	22:50	8	46:50	
B/C	-	-	-	-	
	39	102:00	30	132:30	

< 9 ECS Line Trouble >

DCC 10 MTBF 가  
 Trouble 가

	(%)
Shackle	79
Tension Bolt	10
RS Chain	3
Tail Shaft	3
Rail	5



< 10 DCC Trouble >

9 Mill DCC  
Chute Cylinder Damper Trouble  
1 /



< 9 Chute >

10 가  
DCC Open Type B/C  
가 Air Cyclinder  
F/D Double Flap Damper



< 10 ECS Line >

ECS Line DCC  
가 DCC 16 20A  
(900 / )

Trouble 100%  
B/C 14A

	99	00	01	02	03	
	27	22	0	0	0	

< 11 DCC Trouble >

4-4. Roller Rubber Seal Fresh Air  
UBE Roller rubber Seal UP & Down Roller Fresh  
Air  
Rubber Seal Setting 12 Roller Down  
Roller Upper Casing 가  
Bed Table 40 60mm 가

- . 가 Roller Upper Casing Seal  
Fresh Air

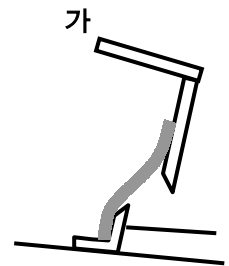
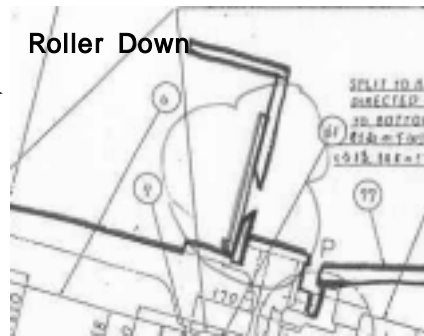
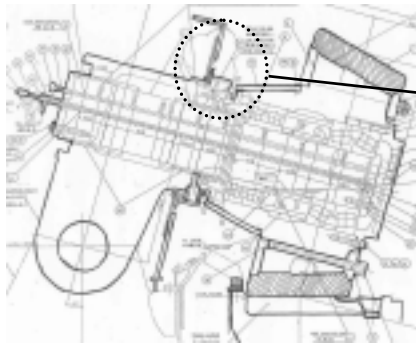
- . Mill Stop Rubber Upper Casing  
(9 Kg/ x 300 / 2.7 / )

- . 가 Roller  
Roller Rubber Seal

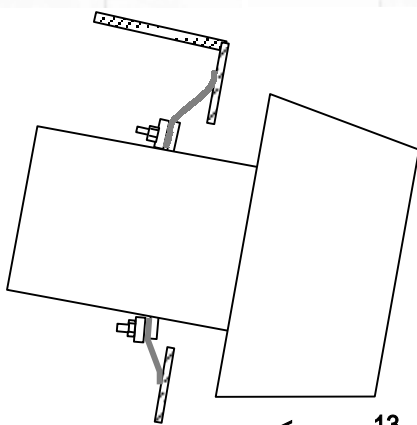
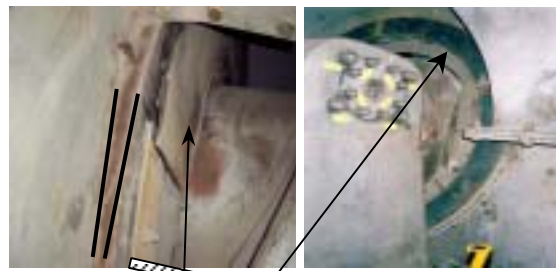
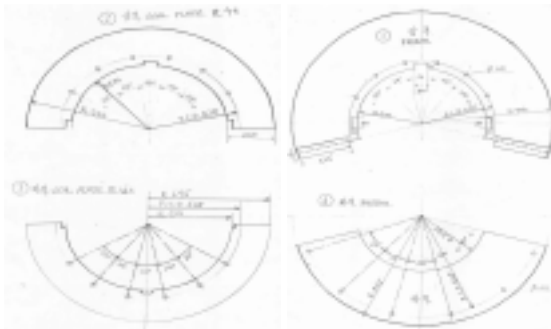


( ' 00 : 29 Set/ )

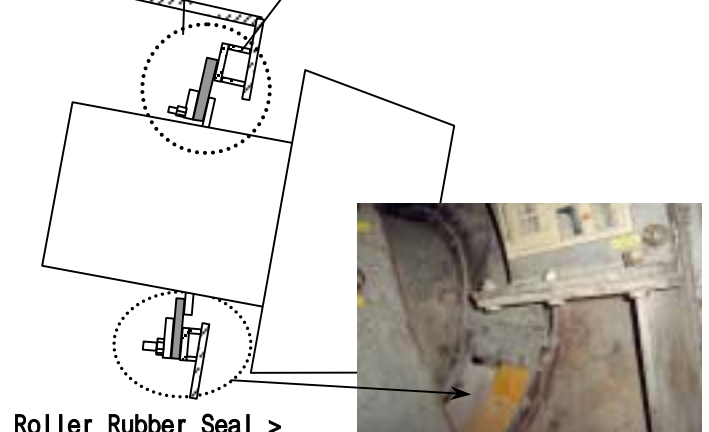
< 11 Roller Rubber >



< 12 Roller Rubber Sheet >



< 13



Roller Rubber Seal >

Rubber Seal

Upper Casing				Rubber Seal Alignment Roller Down 가 (Bed 50mm) Setting
Rubber Size		180	210	Roller Rubber
		180	150	
		Roller	Roller	Rubber Seal Upper Casing
		Roller	Body	

12 Rubber Seal

>

, Roller rubber seal Upper Casing Fresh Air  
 가 Alignment Rubber  
 Seal 3 (1.7 6 ) 가 Ceramic Ball Rubber (4  
 /Set) Rubber (20 /Set) Rubber seal  
 Upper Casing 100% .

(T/H)	416	421	5	
(Kw/T)	21.42	19.94	1.48	
( / )	116	1.6	114.4	Rubber Seal

Fresh Air 60%

1 ( ' 00.11 , ' 01.2 ) 가

< 13

>

4-5. Center Cone

Bed

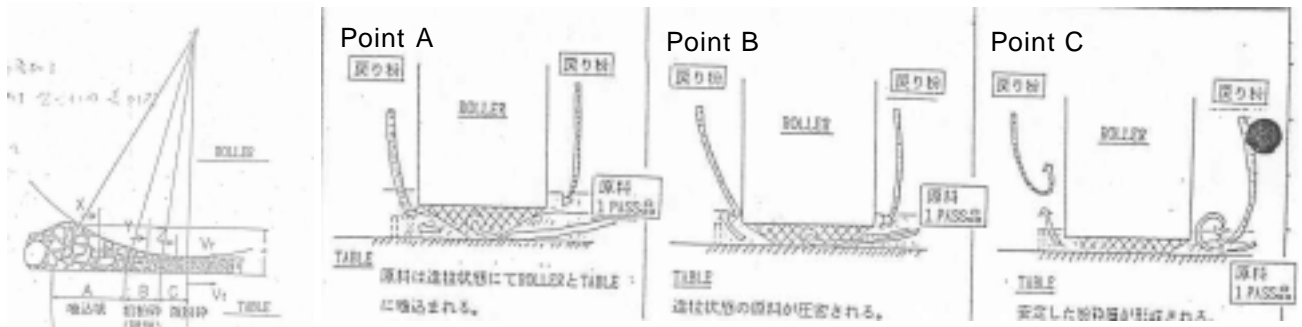
Roller Mill Roller Table Bed

가 Roller 가

Grinding

가

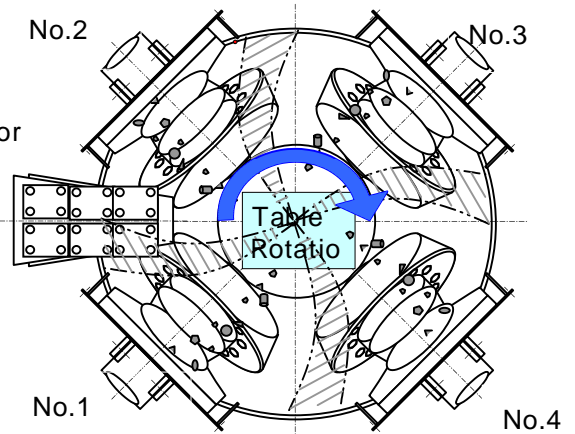
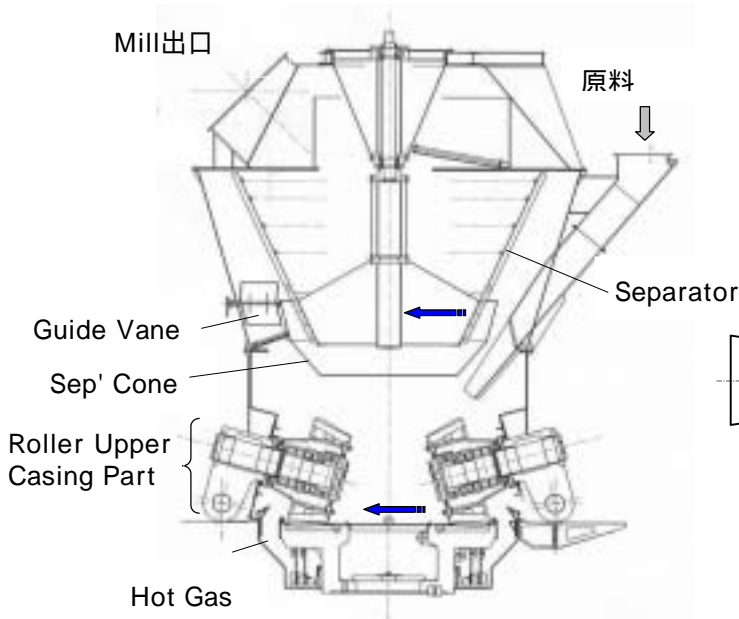




Point A : 가 Roller Table  
 Point B : 가 ,  
 Point C :

< 14 Roller Mill , UBE >

N-1R/M ' 92 NSP Mill Line LM45.40  
 Roller Tyre LM48 Model Size Mill Dimension Roller Size가  
 Cylinder Roller Up , Mill Center Cone ,  
 Center Cone



< 15 Roller Mill >

Center Cone 가 Chute 가 Table 2.8m  
 가 , ,

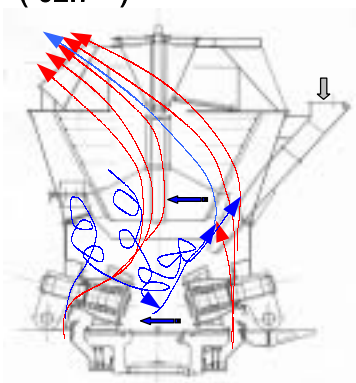


Roller, Mill, Chute, Table, Water Spray, Bed

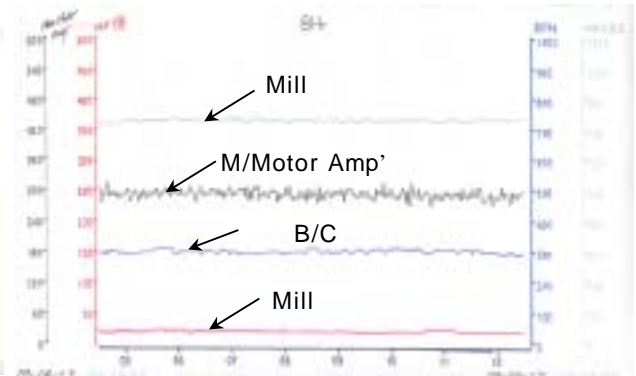
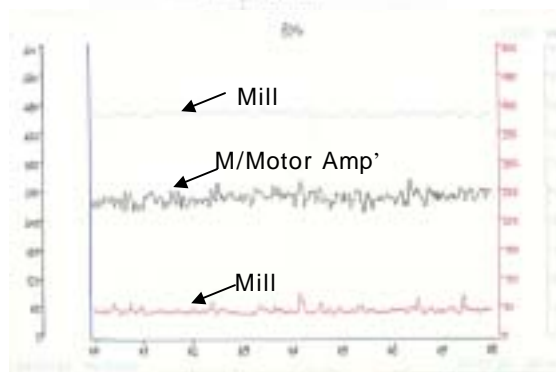
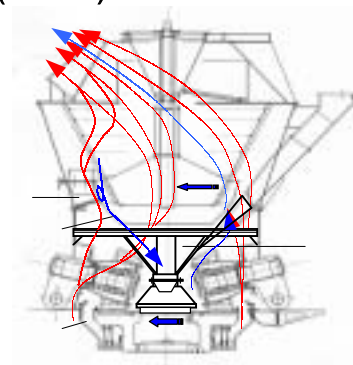
(T/H)	408	425	17	
(Kw/T)	19.20	18.94	0.26	
( $\mu\text{m}$ )	50	25	25	

1 ('02.8, '02.10) 가

('02.7)



('03.6)



< 18 Data Mill Trend >

3-1.

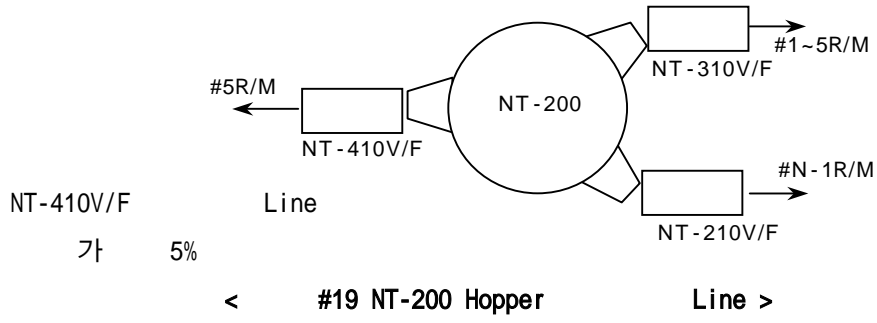
(NT-200 Hop')

[ 19]

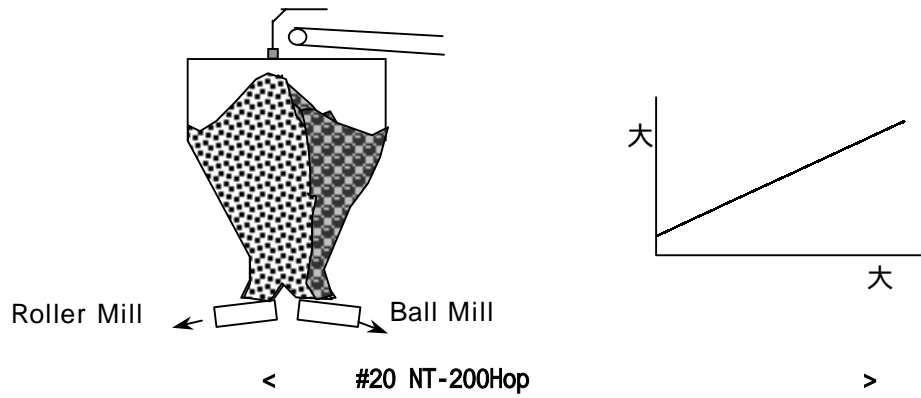
NT-200 Hopper PBY(Pre-blending yard)

R/M

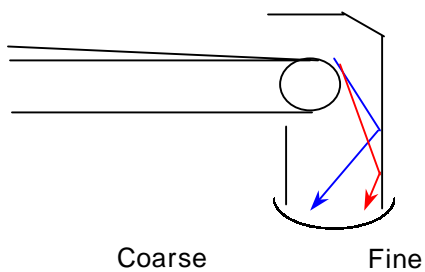
Cushion Bin



Level Hopper Ball  
 Mill Roller Mill Level  
 Oversize가 Ball  
 Mill Undersize가 Roller mill Ball Mill ,  
 Roller Mill 가 .



NT-200 Hop' B/C  
 Belt Coarse Fine 가  
 #21 NT-200Hopper .



< #21 NT-200 B/C >

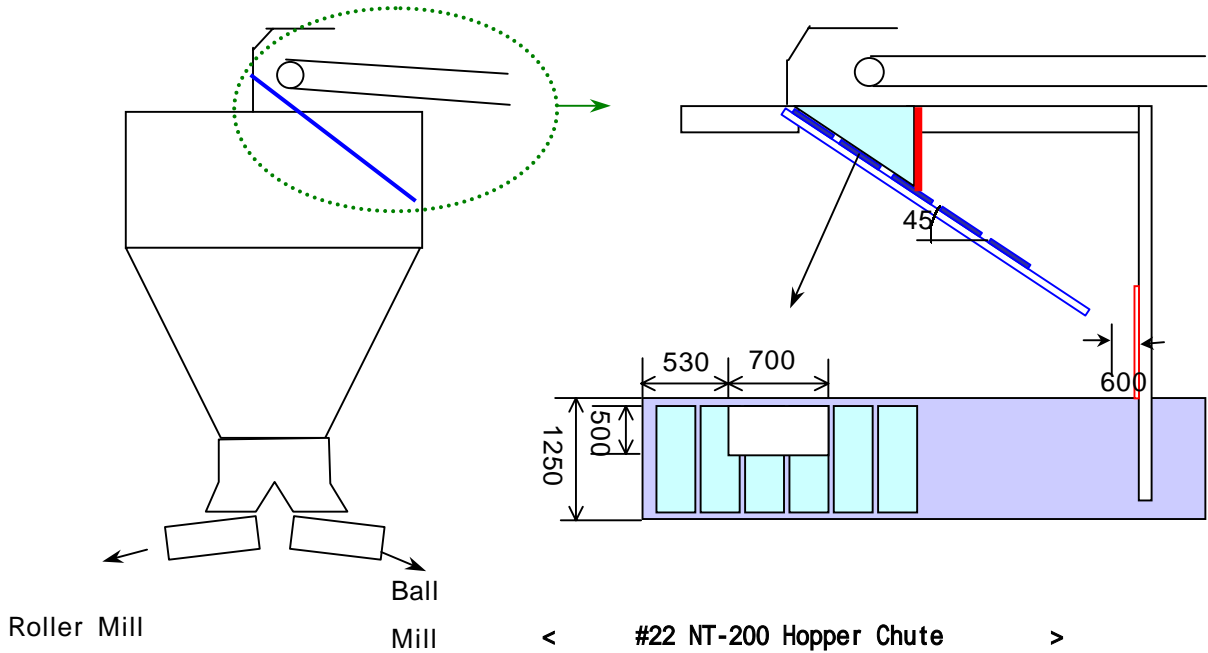
Hopper  
Ball Mill

가

Roller Mill  
가

Roller Mill	Fine Size < : Holderbank Roller Mill >	Coarse Size
Ball Mill	Over size	

< 15 Mill Type >



NT-200 Hop'

16

Mill

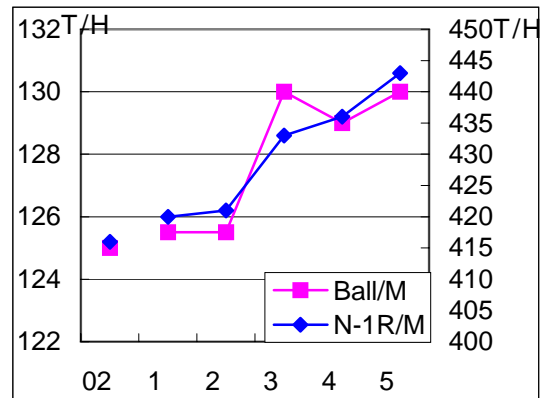
가

Ball Mill	32%	18%	14%
Roller Mill	21%	37%	16%

< 16 >

< 23 Mill >

Trend >



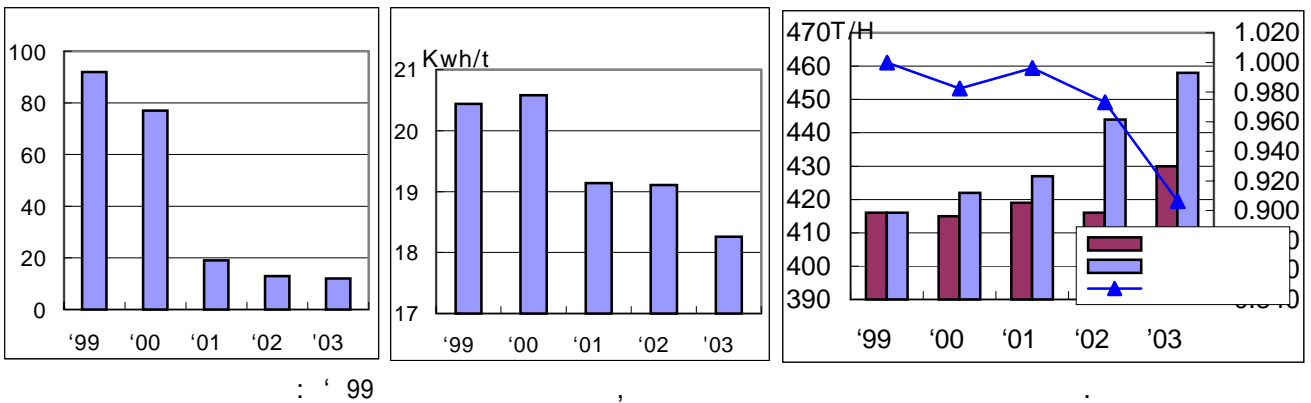
5.

' 01 Line  
 가  
 Loss K/L  
 (Ball Mill) 가

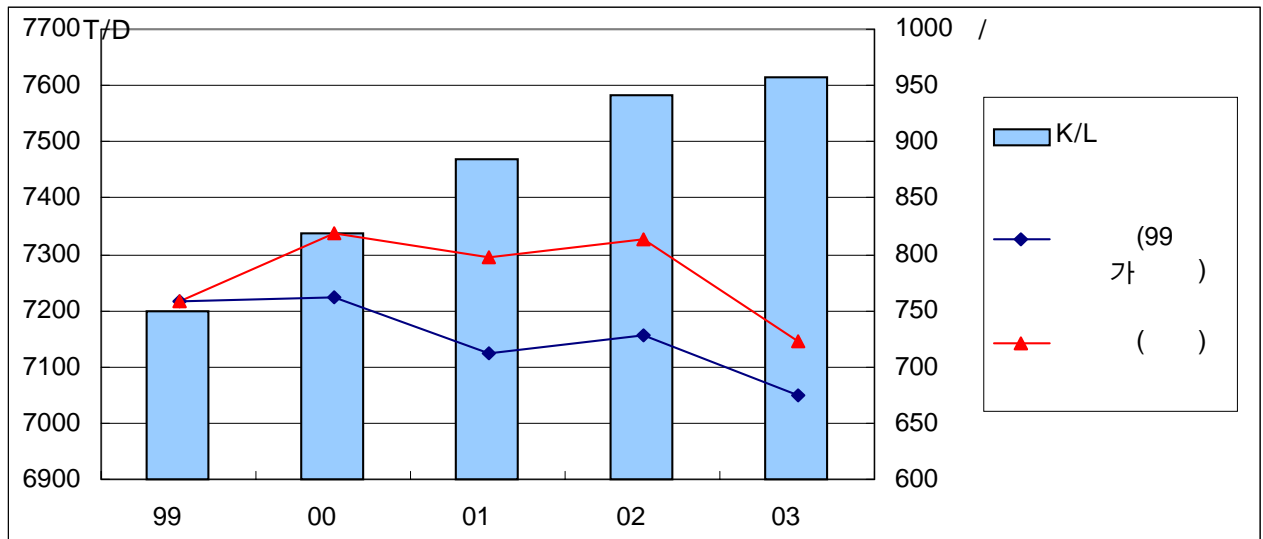
< 17/ 24 Roller Mill / >

	' 99	' 00	' 01	' 02	' 03. 1 5	' 99	' 00
	( / )	92	77	19	13	5(12)	80
(T/H)	416	415	419	416	430	14	15
(Kwh/T)	20.44	20.58	19.14	19.11	18.48	1.96	2.10

( ) : ' 03 Base



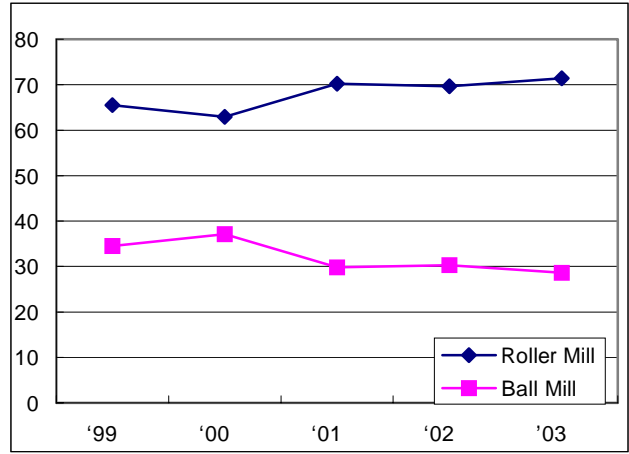
< 25 K/L vs. >



< 18 #1 K/L >

	99	00	01	02	03
Roller Mill	65.5	62.9	70.2	69.7	71.4
Ball Mill	34.5	37.1	29.8	30.3	28.6

< : % >



6.

Mill Line ,  
 Line , 가  
 가 가 , F/A,

Jarosite Recycle /