

Efficiency up of operation

Quality up of products

Improvement of Plant environment

HIGAMS

HIGH GAUSS MAGNETIC SEPARATOR



NMD

NIPPON MAGNETIC DRESSING CO.,LTD.

**6 – 42, Bashaku, 3-chome, Kitakyushu,
Kokurakita-ku, Fukuoka, Japan 802 – 0077**

TEL : 093 – 521 – 4402 FAX : 093 – 521 – 5102

URL : <http://www.nmd.co.jp>

Characteristics

HIGH GAUSS MAGNETIC SEPARATOR.

This machine is developed for removal of iron particles from the used coolant for cold-rolling process and Alkali cleaning solution for alkali cleaning line.

Features of HIGAMS

1. High removal ratio and able to remove of fine iron particles.
2. Able to reduce the rolling oil usage because of the efficient system.
3. Fully automated and maintenance easy.

Delivery (Sales) results

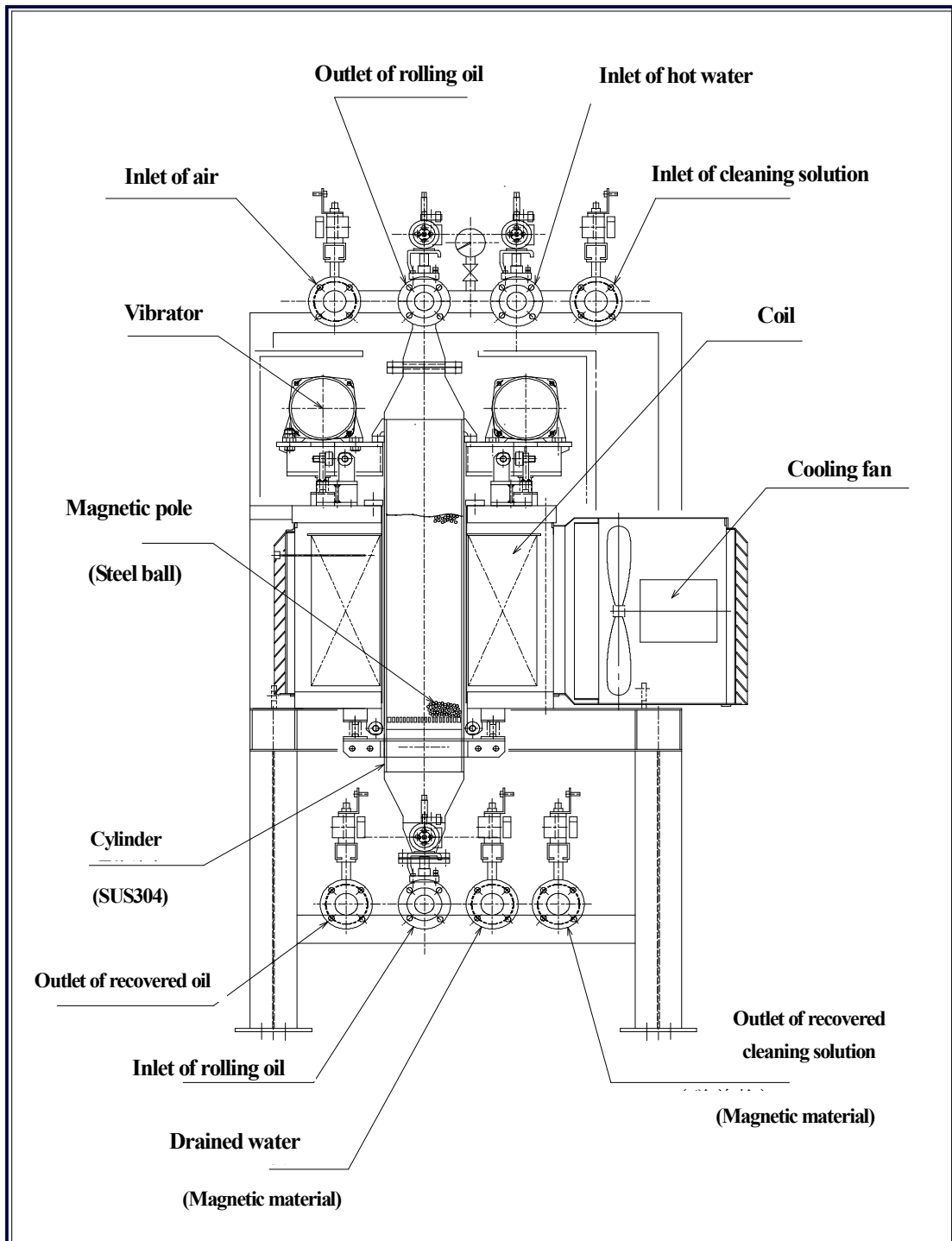
Year	Customer	Model	Nos.	Usage
1987	JFE Steel , Chiba	WSF – 280 – 18a	1 set	Alkali cleaning solution
1990	JFE Steel , Kurashiki	WSF – 280 – 18a	1 set	
1991	Nippon Steel, Yawata	WSF – 280 – 18a	1 set	
1992	JFE Steel , Kurashiki	WSF – 280 – 18aV	3 sets	Rolling oil
1996	JFE Steel , Kurashiki	WSF – 280 – 6aV	2 sets	Alkali cleaning solution
2000	JFE Steel , Kurashiki	WSF – 280 – 10aV	1 set	
2003	Nippon Steel, Hirohata	WSF – 280 – 14aV	1 set	Rolling oil
	Nippon Steel, Hirohata	WSF – 280 – 18aV	1 set	
	Nippon Steel, Hirohata	WSF – 280 – 10aV	1 set	Alkali cleaning solution
2006	Nippon Steel, Hirohata	WSF – 280 – 18aV	1 set	Rolling oil
	POSCO, Gwangyang	WSF – 280 – 18aV	1 set	
2007	Nissin Steel, Sakai	WSF – 280 – 18aV	1 set	
	Maanshan Iron & Steel	WSF – 280 – 18+14aV	2set	
	Wuhan Steel	WSF – 280 – 18aV	2 set	
	Baoshan Steel	WSF – 280 – 18aV	2 set	
2008	Nippon Steel, Hirohata	WSF – 280 – 10aV	1 set	Alkali cleaning solution
	Nippon Steel, Hirohata	WSF – 280 – 10aV	1 set	
	POSCO, Gwangyang	WSF – 280 – 18aV	2 set	Rolling oil
	Nippon Steel, Yahata	WSF – 280 – 18aV	1 set	
2009	Guangzhou JFE Steel	WSF – 280 – 18aV	3 set	Rolling oil
	Shougang Qian'an Iron & Steel	WSF – 280 – 18aV	2 set	
2010	Shougang Qian'an Iron & Steel	WSF – 280 – 18aV	1 set	

※Explanation of WSF-280-18aV

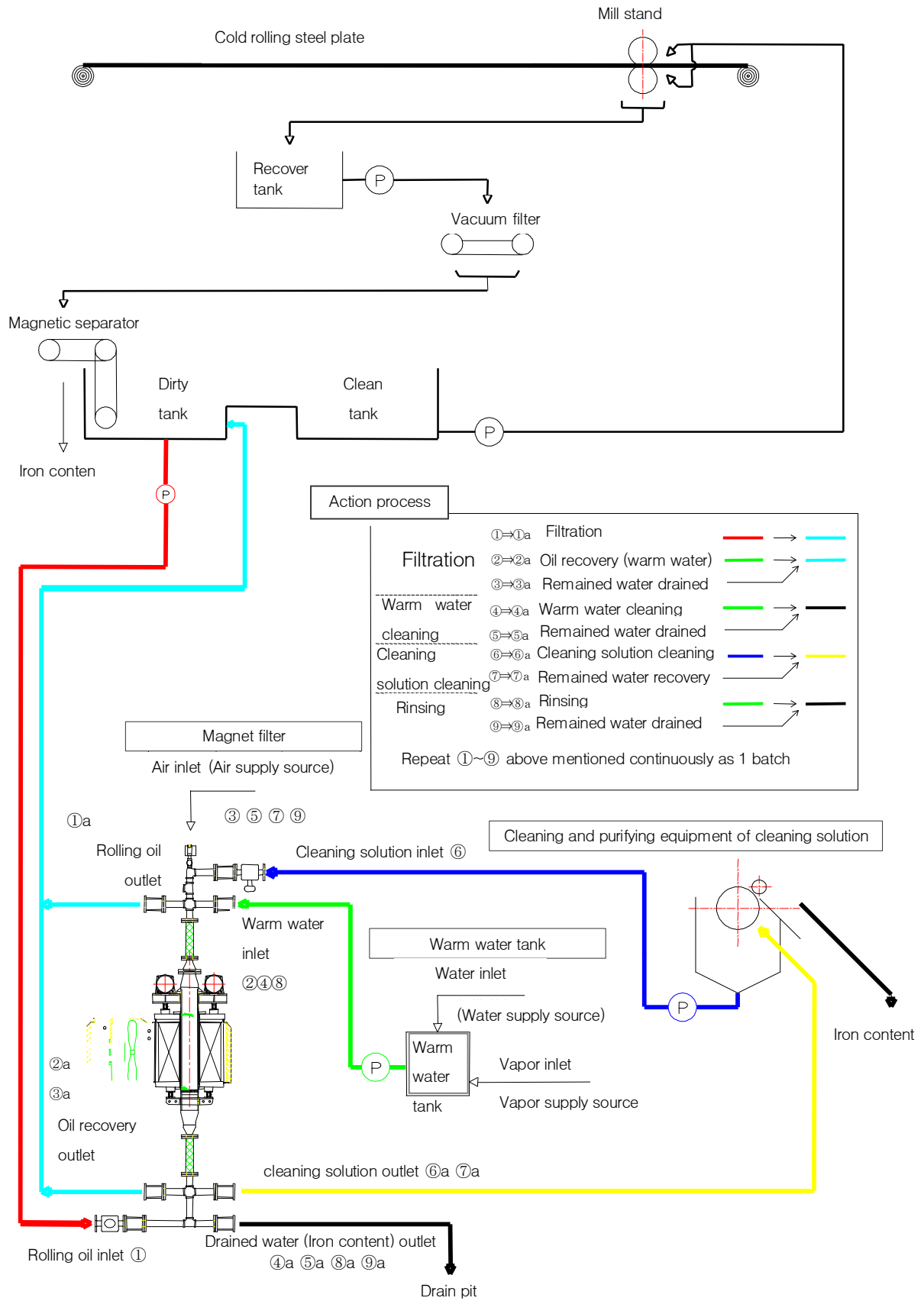
WSF:Wet Static Filter 280:Max flux density 2.8T(28,000G)

18: Diameter of liquid passing part (inch) a: Air blow V : vibrating(at cleaning)

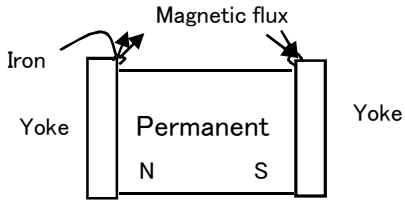
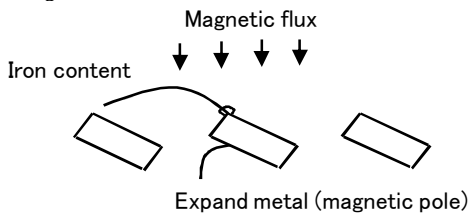
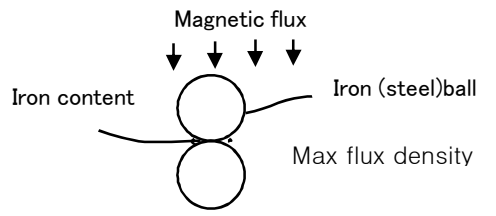
Structure



Installation Example (Cleaning of rolling oil)



Comparison of typical magnetic filters

Comparison item		Magnetic separator	Electro-magnetic filter	HIGAMS
1. Principle	1) absorption	<p>Magnetic flux is settled to the Edge of Yoke attached on N and S pole</p>  <p>Iron content is absorbed together with oil to the edge of Yoke easily to be stuck. And much oil is attached around Yoke.</p>	<p>Magnetic flux is settled to the Edge of magnetic pole of Expand metal.etc. in magnetic field</p>  <p>Iron content is stuck together with oil to the edge of Expand-metal easily to be stuck by flux</p>	<p>Magnetic flux leaded is settled to the contact point of balls in Magnetic field</p>  <p>Iron content is stuck to narrow contact points between iron balls as squeezing oil content</p>
2. Features	<p>1) Magnetic pole</p> <p>2) Removing the iron content stuck</p>	<p>There are two cases that coolant contact with Magnetic pole directly (direct contact) and contact through SUS(non contact)</p> <p>Forced discharging by Scraper</p>	<p>SUS430 or Steel to be used</p> <p>The effect to sucking force is so much by Corrosion and wearing out</p> <p>Iron content to be discharged by water, steam (vapor and compress air etc)</p>	<p>Iron(steel) ball (Bearing steel) to be used</p> <p>Less effect to sucking force by wearing out</p> <p>Iron is discharged by vibrating Magnetic pole(iron /steel ball)</p>
3. Performance	<p>1) Removing rete of iron content</p> <p>2) The rate of oil and iron dischargeed Scum</p>	<p>About 10% in the coolant for Ordinary steel</p> <p>Rate of oil and iron content is 7 ~ 20 : 1</p> <p>Quantity of oil drained is very much</p>	<p>About 20% in the coolant for Ordinary steel</p> <p>Rate of oil and iron content is 3:1</p> <p>Quantity of oil drained is much</p>	<p>About 40% in the coolant for Ordinary steel</p> <p>Rate of oil and iron content is 1:1</p> <p>Quantity of oil drained is a little</p>
4. Effect	Quantity of rolling oil drained at Q'ty of iron content of 5 kg/ hour (compare Quantity of oil drained with it of HIGAMS)	About 35~100L/hour(360L/day) (+720~2,280L/day)	About 15L/hour(360L/day) (+240L/day)	About 5L/hour(120L/day)

HIGAMS Standard specification

Model		WSF-280-6aV	WSF-280-10aV	WSF-280-14aV	WSF-280-18aV
Specification					
Main body	Current Quantity (L/min) of standard liquid	100~150	300~450	600~900	1000~1500
	Diameter of inlet and outlet	50A	65A	80A	100A
	Cooling fan	0.75 kw * 1 set	1.5 kw * 1 set	1.5 kw * 1 set	1.5 kw * 2 sets
	Vibrating motor	0.25 kw * 2 sets	1.1 kw * 2 sets	2.2 kw * 2 sets	3.7 kw * 2 sets
	Excitation power (kw)	14.7 ~ 10.5	24.7 ~ 17.6	39.9 ~ 28.5	54.0 ~ 38.5
	Weight of iron ball (kg)	80	220	550	910
	Main body weight (kg)	About 3,000	About 7,000	About 11,000	About 14,900
	Space required	3.0 m * 4.0 m	3.5 m * 4.5 m	4.0 m * 5.0 m	4.5 m * 5.5 m
Cleaning solution	Model	WDP-4020RHS	WDP-7030RHS	WDP-7060RHS	WDP-7090RHS
	Tank capacity (L)	About 600	About 1,800	About 2,400	About 3,000
	Driving motor power of Drum	0.4 kw * 1 set	0.75 kw * 1 set	1.5 kw * 1 set	1.5 kw * 1 set
	Electrical power of Pump	1.5 kw * 1 set	3.7 kw * 1 set	5.5 kw * 1 set	7.5 kw * 1 set
	Main body weight (kg)	About 1,000	About 3,000	About 3,500	About 4,100
	Space required	2.0 m * 2.5 m	3.0 m * 4.8 m	3.0 m * 5.0 m	3.5 m * 5.0 m
Hot water tank	Tank capacity (L)	-	About 1,300	About 1,700	About 2,500
	Electrical power of Pump	-	3.7 kw * 1 set	5.5 kw * 1 set	7.5 kw * 1 set
	Main body weight (kg)	-	About 1,200	About 1,300	About 1,500
	Space required	-	2.5 m * 3.5 m	2.5 m * 3.5 m	3 m * 3.5 m
Scope of supply	(1) For Rolling oil Main body, Recovering equipment of cleaning solution, Hot water tank (no need for 6aV) and control panel (2) For Alkali cleaning solution Main body and Control panel				
Out-scope of supply	(1) Primary power supply, wiring and piping materials and works between equipment (2) Foundation, Installation work, (3) Supply pump of Filtrating solution				
Customer 's scope of supplies	Utilities a. Power supply 6aV=20kVA, 10aV=40kVA, 14aV=60kVA, 18aV=85kVA b. Water. (Required quantity of water: to be discussed separately) c. Compressed air d. Vapor (no need for Alkali cleaning solution)				

Remark

* Without previous notice, above numerical values may be changed by our improvement.

* 6aV is the machine only for the test.

Design conditions for selection of Model

1. Material to be processed (Rolling oil)

1) Object of HIGAMS using

- a. Quality up of surface of steel plate
- b. Decreasing the controlling density of iron particles
- c. Cleaning of Cooler tank
- d. Prolong of dumping out cycle
- e. Others ()

2) Products.

- a. Kind of steel product
- b. Producing quantity (ton/month)

3) Coolant

- a. Kind of rolling oil ()
- b. Density of coolant (%)
- c. Temperature ()
- d. Consumption of coolant (L/month)
- e. Quantity of coolant to be taken out ()
- f. Capacity of tank (tank)
(tank)
(tank)
- g. Management value of PH (PH ~ PH)
regular (PH)

4) Dumping out

- a. Criterion of dumping out
 - Iron particles density
 - Density of iron particles in oil
 - Density of Oil
 - Dirt level of tank
 - Other standards, if any
- b. The cycle (1 time per month(s))
- c. Quantity to be charged (all or part :)

5) Iron particles

- a. Generating quantity of iron particles (kg/day)
- b. Control target of iron particles density in coolant (less than ppm)
- c. Size of iron particles (Size distribution) ()
- d. Control target of iron particles density in oil (less than ppm)

6) Existing magnetic separator

- a. Maker ()
 - b. Model ()
 - c. Type ()
 - d. Magnetic power ()
 - e. Delivery date ()
 - f. Processing flowing quantity [flow quantity of solution] (L/min)
 - g. Removing performance of iron content (Kg/day)
 - h. Efficiency of iron removing (%)
- : Difference of solution density between inlet and outlet

- * The other equipment without magnetic separator ()
- * Processing flow drawing for whole line ()

7) Investment plan

- a. Installation place of equipment (Indoor, outdoor, underground, cellar, the other [])
- b. Expected purchasing price (budget, estimated price) ()
- c. Expected installation time of equipment ()
- d. Consumption unit per ton of rolling oil ()
- e. Rolling oil price ()

8) Others

- a. Kind of line ()
- b. Problem(s) ()
- c. Is there any other iron removing equipment ? (Yes , No)

2. **Material to be processed (Alkali cleaning solution)**

1) Object of HIGAMS using

- a. Quality up of surface of steel plate
- b. Decreasing the controlling density of ferrous particles
- c. Cleaning of Alkali tank
- d. Prolong of dump out cycle
- e. Others ()

2) Products.

- a. Kind of steel product
- b. Producing quantity. (ton/month)

- 3) Alkali cleaning solution.
- a. Kind of Alkali cleaning solution ()
 - b. Density (%)
 - c. Temperature (°C)
 - d. Consumption of Alkali cleaning solution
 - e. Capacity of tank
- 4) Dumping out
- a. Criterion of dumping out
(Iron particles density, Oil density, Dirt of tank, Others)
 - b. The cycle (1 time per month(s)).
 - c. Quantity to be charged (all or part :)
- 5) Ferrous particles
- a. Generating quantity of ferrous particles (kg/day)
 - b. Control target of iron particles in Alkali cleaning solution.
(less tan ppm)
 - c. Size of iron particles (Size distribution). ()
- 6) Existing magnetic separator
- a. Maker ()
 - b. Model ()
 - c. Type ()
 - d. Magnetic power ()
 - e. Delivery date ()
 - f. Processing flowing quantity [flow quantity of solution] (L/min)
 - g. Removing performance of iron content (Kg/day)
 - h. Removing efficiency of iron (%)
:Difference of solution density between inlet and outlet
* The other equipment without magnetic separator ()
* Processing flow drawing for whole line ()
- 7) Investment plan.
- a. Installation place of equipment
(Indoor, Outdoor, Underground cellar, The others [])
 - b. Expected purchasing price (budget, estimated price) ()
 - c. Expected installation time of equipment ()
 - d. Consumption unit per ton of Alkali cleaning solution ()
 - e. Alkali cleaning solution price ()
- 8) Others (Is there rolling oil and/or Alkali cleaning solution line without this line?)
- a. Kind of line ()
 - b. Problems ()
 - c. Is there any other iron removing equipment ? (yes , no)