

WORLD STEEL DYNAMICS

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Wire Rod World Cost Curve

SAMPLE

WORLDSTEELDYNAMICS

What's Included in the WRWCC?

The material received by the Wire Rod World Cost Curve (WRWCC) subscribers includes:

- A. A printout of about 1,500 pages that contains specific cost data in the home currency and U.S. dollars for 225 wire rod plants and country reference plants, and comparative plant data.

For each plant within a country (including the reference plants), there are five pages of detailed cost data. These include:

- Our rating of the facility from good to poor in 20 categories versus the reference plant in that country.
 - A printout of key process costs in U.S. dollars.
 - A similar printout of process costs in the home currency.
 - Two pages of comparative rankings versus plants in the home country and our world universe. For 36 items, we compare each plant's derived cost figure to the average, high and low figures for all plants in the home country and in our world universe. We also give a numerical ranking for each cost item.
- B. Reference plant data. For each of the 49 countries in the system, a summary page of costs and key assumptions is presented for an integrated (BF/BOF-based) and non-integrated (EAF-based) reference plant. These contain prices of raw material inputs, input/output ratios, manhour requirements at each process step, other costs at each process, financial costs, proportion of fixed costs and share of dollar-denominated costs.
- C. Cost Matrix. This printout summarizes a number of items by plant according to country. Included are eleven tables such as at-stage and through-stage costs, major material costs, other material costs, manhours per tonne, financial costs, input/output factors and numerical rankings by country and world universe for at-stage and through-stage costs.
- D. Plant Rankings. This is a listing of all plants in our universe from lowest cost to highest cost based on 15 items. These include operating cost, pretax cost, manhours per tonne shipped, input/output ratios, prices paid for raw materials, wage rates, and average and marginal costs by stage.
- E. Cost curve charts. These charts are based on the above rankings.
- F. A summary spreadsheet version of the system on CD-ROM. The CD contains:
- Summary cost data for each plant.
 - The ability to derive new results by changing certain assumptions.
 - The ability to print out the results in ascending cost order for the world universe or within a country.

WORLDSTEELDYNAMICS

Plant Coverage

COMPANY	PLANT	COMPANY	PLANT
ALGERIA		CANADA	
ALGERIA	REFERENCE	ISPAT SIDBEC	CONTRECOEUR
ALGERIA	STD EAF	CANADA	REFERENCE
SIDER	EL HADJAR	CANADA	STD EAF
		IVACO	L'ORIGNAL
		STELCO	HILTON
ARGENTINA		CHINA	
ACEROS ZAPLA	JUJUY	ANSHAN	ANSHAN CITY
ACINDAR	V. CONSTITUCION	BAOSHAN I&S	SHANGHAI
ARGENTINA	REFERENCE	BAOTOU STEEL	BAOTOU CITY
ARGENTINA	STD EAF	BENXI SPECIAL	BENXI
SIPAR LAMINAC	PEREZ	CHANGCENG SPE	JIANGYOU CITY
		CHINA	REFERENCE
AUSTRALIA		CHINA	STD EAF
AUSTRALIA	REFERENCE	ECHENG I&S	EZHOU CITY
AUSTRALIA	STD EAF	GUANGZHOU NAN	GUANGZHOU CITY
BHP STEEL	NEWCASTLE	JIANGXI XINGU	XINGU
BHP STEEL	WHYALLA	JIUQUAN I&S	JAYUGUAN CITY
SMORGEN STEEL	LAVERTON	KUNMING I&S	KUNMING CITY
		MAANSHAN I&S	ANHUI PROVINCE
AUSTRIA		NANJING I&S	NANJING
AUSTRIA	REFERENCE	QINGDAO I&S	QINGDAO CITY
AUSTRIA	STD EAF	SANMING I&S	SANMING CITY
VOEST-ALPINE	DONAWITZ	SOUTHERN NATS	XIAMEN
		TAIYUAN I&S	SHANXI PROVINCE
BELGIUM/LUX		TIANJIN STEEL	TIANJIN CITY
BELGIUM/LUXEM	REFERENCE	WUHAN I&S	HUBEI PROVINCE
BELGIUM/LUXEM	STD EAF	XIANGTAN I&S	HUNAN PROVINCE
HOOGOVS-USI	LA LOUVIERE		
RIVA-THY MARC	CHARLEROI		
UNIMETAL	ESCH-SCHIFFLA		
		CZECH REPUBLIC	
BRAZIL		CZECH REPUBLI	REFERENCE
BARRA MANSA	SAO PAULO	CZECH REPUBLI	STD EAF
BELGO-MINERA	MENDES JUNIOR	NOVA HUT	OSTRAVA
BELGO-MINERA	MONLEVADE#1	POLDI	DRIN
BELGO-MINERA	MONLEVADE#2	POLDI	POLDI
BRAZIL	REFERENCE	TRINECKE ZELE	TRINEC
BRAZIL	STD EAF		
GERDAU	RECIFE	EGYPT	
GERDAU	SANTA CRUZ	AL EZZ	SADAT CITY
GERDAU	SIMOES FILHO	ANSDK	EL DIKHEILA
RIOGRANDENSE	ACOS FINOS PI	ARCOSTEEL	SADAT CITY
RIOGRANDENSE	RIO DOS SINOS	ARCOSTEEL	SADAT CITY
VILLARES META	SOROCABA	DELTA STEEL	SADAT CITY
VILLARES META	SUMARE	EGYPT	REFERENCE
		EGYPT	STD EAF

WORLDSTEELDYNAMICS

COMPANY	PLANT	COMPANY	PLANT
FINLAND		INDONESIA	
FINLAND	REFERENCE	INDONESIA	STD EAF
FINLAND	STD EAF	PT GUNUNG GAH	MEDAN
FUNDIA	DALSBRUK	PT GUNUNG GAR	WEST JAVA
FRANCE		PT HANIL JAYA	SURABAYA
ASCOMETAL	FOS	PT INDUSTRI G	MEDAN
FRANCE	REFERENCE	PT ISPAT INDO	SURABAYA #1
FRANCE	STD EAF	PT ISPAT INDO	SURABAYA #2
SAM	MONTREAU	PT JAKARTA KY	JAKARTA
SAM	NUEVES-MAISON	PT JAKARTA PR	JAKARTA
UNIMETAL	GANDRANGE	PT KRAKATAU	CILEGON
UNIMETAL	LONGWY	IRAN	
GERMANY		IRAN	REFERENCE
BADISCHE STAHL	KEHL/RHEIN	IRAN	STD EAF
BES	BRANDENBURG	NISCO	ESFAHAN
GERMANY	REFERENCE	ISRAEL	
GERMANY	STD EAF	ISRAEL	STD EAF
ISPAT HAMBURG	HAMBURG	UNITED STEEL	KIRYAT HAPLAD
ISPAT HOCHFEL	WALZDRAHT	ITALY	
ISPAT WALZDRA	DUISBURG	A&F DEL CALEO	COMO
SAARSTAHL AG	BURBACH	A&F STEFANA	NAVE
SAARSTAHL AG	NEUNKIRCHEN	ACC. DI BOLZA	BOLZANO
SAARSTAHL AG	SAARLAND	COGNE	AOSTA
GREECE		FERALPI SIDER	BRESCIA
GREECE	REFERENCE	FERRIERE NORD	OSOPPO
GREECE	STD EAF	ITALY	REFERENCE
HUNGARY		ITALY	STD EAF
DNM	MISKOLC	LUCCHINI	BRESCIA
HUNGARY	REFERENCE	ORI MARTIN	BRESCIA
HUNGARY	STD EAF	RIVA PRODOTTI	GALTAROSSA
OAM	OZD		
INDIA			
INDIA	REFERENCE		
INDIA	STD EAF		
INDIAN STEEL	JAMSHEDPUR		
ISHAR ALLOY S	INDORE		
KALYANI STEEL	PUNE		
MUKAND LTD	KALWE		
RINL	VISAKHAPATNAM		
SAIL	BILHAI		
SPECIAL STEEL	BORIVLI		
TISCO	JAMSHEDPUR		
USHA MARTIN	JAMSHEDPUR		

WORLDSTEELDYNAMICS

COMPANY	PLANT	COMPANY	PLANT
JAPAN		MOROCCO	
AICHI STEEL W	AICHI-KEN	SONASID	NADOR
ASAHI KOGYO CO	SAITAMA	MOROCCO	STD EAF
DAIDO STEEL CO	CHITA	N.KOREA	
DAIDO STEEL CO	HOSHIZAKI	HWANGHAI IRON	N HWANGHAI PR
DAIDO STEEL CO	KAWASAKI	KANGSON WORKS	N WHANGHAI PR
GODO STEEL LTD	OSAKA	KIMCHAEK	KIMCHAEK
JAPAN	REFERENCE	NORTH KOREA	REFERENCE
JAPAN	STD EAF	NORTH KOREA	STD EAF
KAWASAKI STEEL	MIZUSHIMA	NETHERLANDS	
KOBE STEEL	KAKOGAWA	NEDSTAAL BV	ALBLASSERDAM#
KOBE STEEL	KOBE	NEDSTAAL BV	ALBLASSERDAM#
NAKAYAMA STEEL	OSAKA	NETHERLANDS	REFERENCE
NIPPON STEEL	HIKARI	NETHERLANDS	STD EAF
NIPPON STEEL	KAMAISHI	NORWAY	
NIPPON STEEL	KIMITSU	FUNDIA	MO I RANA
NIPPON STEEL	MURORAN	NORWAY	REFERENCE
SANYO SPECIAL	HIMEJI-SHI	NORWAY	STD EAF
SUMITOMO ELECTRIC	OSAKA	PHILIPPINE	
SUMITOMO METALS	KOKURA	CATHAY PACIFI	LUZON
SUMITOMO METALS	KOKURA	PAG-ASA STEEL	PASIG
TAKUNAN SEITE	NAKAGOSUKU	PHILIPPINES	REFERENCE
TOA STEEL CO	SENDAI	PHILIPPINES	STD EAF
TOKYO STEEL MFG	TAKAMATSU	POLAND	
LIBYA		HUTA BAILDON	KATOWICE
LIBYA	STD EAF	HUTA EDMUNDA	SOSNOWIEC
LISCO	MISURATA	HUTA OSTROWIE	OSTROWIEC
MALAYSIA		HUTA ZAWIERCI	ZAWIERCIE
AMSTEEL	PORT KLANG	POLAND	REFERENCE
AMSTEEL	SELANGOR	POLAND	STD EAF
MALAYAWATA ST	PENANG	PORTUGAL	
MALAYSIA	STD EAF	PORTUGAL	REFERENCE
PERWAJA STEEL	GUNRUN	PORTUGAL	STD EAF
SARAWAK STEEL	KUCHING	SN LONGOS SA	ERMESINDE
SOUTHERN STEE	PULAU PINANG#	SN LONGOS SA	SEIXAL
SOUTHERN STEE	PULAU PINANG#	MEXICO	
MEXICO		ACEROS NACIONAL	TLALNEPANTLA
ACEROS NACIONAL	TLALNEPANTLA	ACEROS SAN LUIS	SAN LUIS POTO
ACEROS SAN LUIS	SAN LUIS POTO	AHMSA	MONCLOVA
AHMSA	MONCLOVA	DEACERO	CALAYA
DEACERO	CALAYA	DEACERO	GARZA GARCIA
DEACERO	GARZA GARCIA	HYLSA	PUEBLA
HYLSA	PUEBLA	MEXICO	REFERENCE
MEXICO	REFERENCE	MEXICO	STD EAF
MEXICO	STD EAF	SICARTSA	LAZARO CARDEN
SICARTSA	LAZARO CARDEN		

WORLDSTEELDYNAMICS

COMPANY	PLANT	COMPANY	PLANT
ROMANIA		SPAIN	
DUCTIL	BAZAU	CELSA	CELSA
HUNEDOARA	HUNEDOARA	CSI PROD LARG	GIJON
INDUSTRIA SAR	CLUJ	ESTEBAN ORBEG	ZUMARRAGA
PROMET SA	BECCLEAN	MEGASA	ZUMARRAGA
ROMANIA	REFERENCE	NUEVA MONTANA	SANTANDER
ROMANIA	STD EAF	SIDENOR	VITORIA
SILCOTUB	ZALAU	SPAIN	REFERENCE
		SPAIN	STD EAF
RUSSIA		SWEDEN	
AMURSTEEL	KOMSOMOLSK	OVAKO	HALLEFORS
BYELORUSSIAN	ZHLOBIN	SWEDEN	REFERENCE
MAGNITOGORSK	MAGNITOGORSK	SWEDEN	STD EAF
MECHEL	CHELIABINSK		
MOLDOVA STEEL	RYBNITSA	SWITZERLAND	
RUSSIA/CIS	REFERENCE	SWISS STEEL	EMMENBRUCKE
RUSSIA/CIS	STD EAF	SWISS STEEL	GERLAFINGEN
SEVERSTAL	CHEREP OVETS	SWITZERLAND	STD EAF
ZAPSIB	NOVOKUZNETSK		
SAUDI ARAB		TAIWAN	
HADEED	AL-SINAIYAH	WALSIN-CARTECH	HSIEN
SAUDI ARABIA	STD EAF	CHINA STEEL CORP	KAOHSIUNG#1
		CHINA STEEL CORP	KAOHSIUNG#2
SINGAPORE		LUNG CHIN	LUNG CHIN
NATSTEEL	SINGAPORE	TAIWAN	REFERENCE
SINGAPORE	STD EAF	TAIWAN	STD EAF
		YIEH HSING	KAOHSIUNG
SOUTH AFRICA		THAILAND	
DAVSTEEL	VANDERBIJL PA	NTS STEEL GROUP	CHONBURI
ISCOR LTD	NEWCASTLE	BANGKOK STEEL	PHRAPRADAENG#
SCAW METALS	GERMISTON	NAMHENG STEEL	LOPBURI
SOUTH AFRICA	REFERENCE	SIAM I&S CO L	TA LUANG
SOUTH AFRICA	STD EAF	THAI SPECIAL	RAYONG
		THAILAND	REFERENCE
SOUTH KOREA		THAILAND	STD EAF
CHANGWON SPEC	CHANGWON CITY	UNION METAL C	SAMUTPRAKARN
INCHON I&S	INCHON		
POSCO	POHANG #1	TRINIDAD	
POSCO	POHANG #2	CARIBBEAN ISPAT	POINT LISAS
POSCO	POHANG #3	TRINIDAD&TOBA	STD EAF
SOUTH KOREA	REFERENCE		
SOUTH KOREA	STD EAF		

WORLDSTEELDYNAMICS

COMPANY	PLANT	COMPANY	PLANT
TURKEY		VENEZUELA	
COLAKOGLU	DILISKELESI	SIDOR	PUERTO ORDAZ
CUKUROVA	ALIAGA	VENEZUELA	STD EAF
EKINCILER I&S	ISKENDERUN		
HABAS SINAI	ALIAGA		
METAS	IZMIR		
NURSAN CELIK	ISKENDERUN		
SIVAS DEMIR	ANKARA		
TDCI	ISKENDERUN		
TURKEY	REFERENCE		
TURKEY	STD EAF		
UKRAINE			
ENAKIYEVSKY	ENAKIEVO		
KRIVOI ROG	KRIVOI ROG		
MAKEYEVSKY KI	MAKEYEVKA		
UKRAINE	REFERENCE		
UKRAINE	STD EAF		
UNITED KINGDOM			
ALLIED STEEL	CARDIFF		
ALPHASTEEL	NEWPORT		
ASW SHEERNESS	SHEERNESS		
BRITISH STEEL	SCUNTHORPE		
UNITED KINGDOM	REFERENCE		
UNITED KINGDOM	STD EAF		
UNITED STATES			
AMERISTEEL	JACKSONVILLE		
BIRMINGHAM	CUYAHOGA#1		
BIRMINGHAM	CUYAHOGA#2		
BIRMINGHAM	JOLIET		
CASCADE STEEL	MCMINNVILLE,		
CHARTER ELECTRIC	SAUKVILLE, WI		
CONNECTICUT STEEL	WALLINGFORD,		
CO-STEEL RARITAN	PERTH AMBOY,		
GS INDUSTRIES	GEORGETOWN, S		
GS INDUSTRIES	KANSAS CITY,		
INLAND STEEL	EAST CHICAGO,		
KEYSTONE STEEL	PEORIA, IL		
LACLEDE STEEL	ST LOUIS, MO		
NORTH STAR STEEL	BEAUMONT, TX		
NORTH STAR STEEL	KINGMAN, AZ		
NORTHWESTERN S&W	STERLING, IL		
NUCOR CORP	NORFOLK, NE		
ROCKY MTN STEEL	PUEBLO, CO		
UNITED STATES	REFERENCE		
UNITED STATES	STD EAF		
USS/KOBE STEEL	LORAIN, OH		

WORLDSTEELDYNAMICS

A. Computer Printout

Subscribers receive a computer printout containing, for each plant, qualitative ratings in 20 categories, costs at and through each process stage in U.S. dollars and the home currency, and rankings versus all other plants in 35 cost categories. Included for each plant, at both a high and low operating rate are: employment costs, manhours at stage, raw material cost, input/output ratios at stage, costs at each stage (coke, blast furnace, BOF or EAF liquid steelmaking, billet, wire rod, overhead) and depreciation and interest expenses.

EXHIBIT #1: RATINGS OF PLANT COSTS													
COUNTRY # 2: JAPAN		CAPACITY: 150											
COMPANY: DAIDO STEEL CO		AOR T=0: 0.90											
PLANT: HOSHIZAKI		AOR T=1: 0.75											
	BEST-----COST AND EFFICIENCY RANKINGS-----WORST											POSSIBLE SWING PER TONNE	
	#1	#2	#3	#4	#5	STANDARD	#7	#8	#9	#10	#11		
COST OF KEY INPUTS													
A) DRI \$/TONNE	-25	-20	-15	-10	-5	110##	5	10	15	20	25	--	
B) COAL \$/TONNE	-50	-8	-6	-4	-2	50.0##	2	4	6	8	10	--	
C) IRON/SINTER \$/TONNE	-32	-8	-6	-4	-2	32.0##	2	4	6	8	10	--	
D) SCRAP \$/TONNE	-25	-20	-15	-10	-5	80	5	10	15##	20	25	--	
E) EMPL. COST/HOUR	-5.	-4.	-3.	-2.	-1.	40.0##	1.0	2.0	3.0	4.0	5.0	--	
F) ELEC COST MILLS/KWH	-20	-16	-12	-8	-4	65.0##	4	8	12	16	20	--	
I/O & USAGE FACTORS													
G) (SCRAP+DRI)/METALLICS	-0.15	-0.12	-0.09	-0.06	-0.03	0.21	+0.03	+0.06	+0.09	+0.12	100% ##	--	
H) DRI/(SCRAP+DRI)	+0.10	+0.20	+0.30##	+0.40	+0.50	0.00	+0.60	+0.70	+0.80	+0.90	+1.00	--	
I) METALLICS/LIQUID STEEL	-0.05	-0.04	-0.03	-0.02	-0.01	1.09	+0.01##	+0.02	+0.03	+0.04	+0.05	--	
J) LIQUID STEEL/BILLET	-0.05	-0.04	-0.03	-0.02	-0.01	1.04	+0.01	+0.02	+0.03	+0.04	+0.05##	--	
K) KWH/LIQUID STEEL	+350	+400	+450	+500	+550##	30.0	+600	+650	+700	+750	+800	--	
COSTS BY STAGE													
L) COKE PLANT COST ABOVE	-23##	-8	-6	-4	-2	23.0	2	4	6	8	10	33	
M) BLAST FURNACE COST ABOVE	-30##	-16	-12	-8	-4	30.0	4	8	12	16	20	50	
N) LIQ. STEEL COST ABOVE	-20	-16	-12	-8	-4	45.0	4##	8	12	16	20	40	
O) BILLET COST ABOVE	-5	-4	-3	-2	-1	23.0	1	2	20	25	30##	35	
P) WIRE ROD	-20	-16	-12	-8	-4	45.0	4	8	12	16	20##	X	
Q) PLANT OVERHEAD/TONNE	-10	-8	-6	-4	-2	30.0	2##	4	6	8	10	20	
R) DEPRECIATION/TONNE	-10	-8	-6	-4	-2	30.0	2	4##	6	8	10	20	
S) NET INTEREST/TONNE	-5	-4	-3	-2	-1	15.0##	1	2	3	4	5	10	
T) FREIGHT ABSORP./TONNE	-5	-4	-3	-2	-1	5.0##	1	2	3	4	5	10	
PRODUCTIVITY													
LABOR		----- MATERIALS -----											
T=0 TO T=1	TOTAL	TOTAL		SHARE TO I/O									
COKE OPER.	1.000	1.000		0.100									
BLAST FURNACE	1.000	1.000		0.100									
LIQUID STEEL	1.000	1.000		0.050									
BILLET	1.000	1.000		0.500									
WIRE ROD	1.000	1.000		0.300									
PLANT OVERHEAD	1.000	1.000											
DEPRECIATION		1.000											
NET INTEREST		1.000											

NOTE: FIGURES AT LEFT REPRESENT THE RATIO OF COST AT TIME=1 TO COSTS AT TIME=0 BEFORE THE IMPACT OF INFLATION. INFLATION FACTORS AND EXCH. RATES FOR T=1 ARE INPUT AT THE REFERENCE PLANT LEVEL.

PRODUCTS:

NOTE: BI=BILLET, BL=BLOOM, RE=REBAR, MB=MERCHANT BAR, WR=WIRE ROD, SBQ=SPECIAL BAR QUALITY, WFB=WIDE FLANGE BEAM.

WORLDSTEELDYNAMICS

EXHIBIT 2: BREAKDOWN OF COSTS BY PROCESS IN DOLLARS, A.O.R.
 COUNTRY # 2: JAPAN
 COMPANY: DAIDO STEEL CO
 PLANT: HOSHIZAKI

CURRENCY/US\$: YEN
 EXCH T=0: 114.0
 EXCH T=1: 112.0

OPERATING RANK - AOR T=0
 COUNTRY: 23 OUT OF 23
 WORLD: 310 OUT OF 313

	TIME=0	TIME=1	V. WIRE ROD COST OF BILLET / TONNE I/O FACTOR	TIME=0	TIME=1
I. COKE COST					
COST OF COAL / TONNE	50.00	50.50		255.77	268.63
I/O FACTOR	1.430	1.430		1.044	1.044
PLUS: COST ABOVE					
LABOR - COST/HOUR	40.00	40.71	40.00	40.00	40.71
MANHOURS	0.386	0.444	0.950	0.950	1.093
OTHER COST	-15.45	-16.15			27.44
TOTAL COST ABOVE	0.00	0.00			71.92
TOTAL PROCESS COST	0.00	0.00		331.15	352.29

	TIME=0	TIME=1		TIME=0	TIME=1
II. BLAST FURNACE COST					
COST OF COKE / TONNE	0.00	0.00			
I/O FACTOR	0.348	0.348			
COST OF IRON / TONNE	32.00	32.32			
I/O FACTOR	1.600	1.600			
PLUS: COST ABOVE					
LABOR - COST/HOUR	40.00	40.71			
MANHOURS	-0.075	-0.086			
OTHER COST	6.00	6.29			
TOTAL COST ABOVE	3.00	2.77			
TOTAL PROCESS COST	0.00	0.00			

	TIME=0	TIME=1	VI. PLANT OVERHEAD (W/LOCAL TAXES) COST OF WIRE ROD / TONNE	TIME=0	TIME=1
III. LIQUID STEEL COST					
COST OF BF METAL / TONNE	0.00	0.00			
I/O FACTOR	0.000	0.000			
COST OF SCRAP / TONNE	95.00	96.64			
I/O FACTOR	0.770	0.770			
COST OF DRI / TONNE	110.00	111.10			
I/O FACTOR	0.330	0.330			
PLUS: COST ABOVE					
LABOR - COST/HOUR	40.00	40.71			
MANHOURS	0.390	0.449			
ELEC. COST (MILLS)	65.00	66.16			
USAGE	560.00	565.60			
OTHER COST	33.40	34.92			
TOTAL COST ABOVE	85.40	90.61			
TOTAL PROCESS COST	194.85	201.68			

	TIME=0	TIME=1	VII. PRETAX COST WIRE ROD COST PLUS OVERHEAD	TIME=0	TIME=1
IV. BILLET COST					
COST OF LIQUID / TONNE	194.85	201.68			
I/O FACTOR	1.065	1.065			
PLUS: COST ABOVE					
LABOR - COST/HOUR	40.00	40.71			
MANHOURS	0.670	0.771			
MATERIAL COST	21.40	22.42			
TOTAL COST ABOVE	48.20	53.79			
TOTAL PROCESS COST	255.77	268.63			

	TIME=0	TIME=1	VIII. PRETAX COST TOTAL PROCESS COST	TIME=0	TIME=1
IX. OTHER ITEMS					
DRI COST	0.367	0.367			
COAL COST	0.000	0.000			
IRON/SINTER COST	0.000	0.000			
SCRAP COST	0.856	0.856			
RAW MAT. COST	121.69	123.49			
OTHER MATL COST	136.64	143.44			
LABOR COST	2.620	3.013			
MARGINAL COST	0.622	0.577			
DOLLAR COST	0.253	0.235			
I/O LS TO WIRE ROD	1.112	1.112			

WORLDSTEELDYNAMICS

EXHIBIT 4: RANKING OF AT STAGE RESULTS AT AOR AGAINST COUNTRY AND REST OF WORLD

	CAP (000 MT): 150				CURRENCY/US\$: YEN				OPERATING RANK - AOR T=0									
	AOR T=0: 0.90		EXCH T=0: 114.0		AOR T=1: 0.75		EXCH T=1: 112.0		COUNTRY: 23 OUT OF 23		WORLD: 310 OUT OF 313							
	TIME=0				TIME=1				---									
	PLANT VALUE	BEST	WORST	AVG.	PLANT VALUE	BEST	WORST	AVG.	RANK	VALUE	RANK	VALUE	BEST	WORST	AVG.			
INPUT COSTS	50.00	5	0.0	52.0	45.5	102	0.0	70.0	43.2	50.50	5	0.0	52.5	45.9	102	0.0	70.7	43.4
COAL/TONNE	32.00	5	0.0	34.0	29.2	80	0.0	44.0	30.3	32.32	5	0.0	34.3	29.5	88	0.0	44.4	30.3
IRON/TONNE	95.00	23	80.0	95.0	82.9	154	70.0	130.0	92.3	95.64	23	81.4	96.6	84.4	161	64.7	131.0	92.2
SCRAP/TONNE	40.00	8	38.0	41.0	39.7	298	0.5	41.0	17.3	40.00	8	38.7	41.7	40.4	298	0.5	41.7	16.7
WAGE/HOUR	I/O FACTOR																	
LIQ STEEL/BILL	1.065	21	1.034	1.068	1.055	299	1.032	1.103	1.049	1.065	21	1.034	1.068	1.055	299	1.032	1.103	1.049
BILLET/WIRE RO	1.044	22	1.038	1.044	1.041	198	1.033	1.060	1.043	1.044	22	1.038	1.044	1.041	198	1.033	1.060	1.043
LS/WIRE ROD	1.112	22	1.074	1.115	1.099	288	1.069	1.159	1.095	1.112	22	1.074	1.115	1.099	288	1.069	1.159	1.095
COSTS ABOVE																		
COKE	0.00	7	-1.5	27.0	13.0	62	-2.2	40.0	8.9	1.93	7	0.2	32.4	16.5	189	-3.4	43.5	9.9
BLAST FURNACE	3.00	7	2.4	36.6	17.7	105	0.0	40.8	13.8	2.77	7	2.1	40.2	19.2	164	0.0	43.2	13.9
LIQUID STEEL	85.40	16	43.0	91.7	64.3	284	29.7	117.0	58.4	90.61	16	46.4	97.4	68.8	281	27.7	118.3	58.8
BILLET	48.20	17	21.7	48.4	40.2	305	14.0	50.2	28.8	53.79	17	23.7	54.0	44.7	307	12.0	54.0	29.8
WIRE ROD	64.20	22	36.2	64.2	50.5	312	21.4	64.2	37.1	71.92	22	39.7	71.9	56.2	312	20.3	71.9	38.3
PLANT OVERHEAD	32.00	13	25.0	34.5	30.4	303	12.3	34.5	20.7	37.33	13	29.2	40.2	35.5	303	13.5	40.2	23.0
DEPRECIATION	34.00	20	26.0	34.0	30.3	310	8.0	34.0	16.2	41.53	20	31.8	41.5	37.0	310	8.8	41.5	18.8
NET INTEREST	15.00	11	14.0	17.0	15.0	158	-2.0	25.0	12.4	18.32	11	17.1	20.8	18.3	243	-2.4	28.0	14.2
MANHOURS AT STAGE																		
LIQUID STEEL	0.39	14	0.31	0.43	0.37	73	0.30	14.40	1.40	0.45	14	0.36	0.50	0.42	76	0.34	17.28	1.67
BILLET	0.67	18	0.20	0.67	0.53	199	-0.03	9.00	1.55	0.77	18	0.23	0.77	0.61	199	-0.04	10.80	1.85
WIRE ROD	0.95	22	0.38	0.95	0.67	196	-3.40	7.86	1.00	1.09	22	0.44	1.09	0.77	195	-4.08	9.44	1.18

WORLDSTEELDYNAMICS

EXHIBIT 5: RANKING OF THRU STAGE RESULTS AT AOR AGAINST COUNTRY AND REST OF WORLD

COUNTRY # 2: JAPAN	CAP(000 MT):	150	CURRENCY/US\$: YEN	OPERATING RANK - AOR T=0
COMPANY: DAIDO STEEL CO	AOR T=0:	0.90	EXCH T=0: 114.0	COUNTRY: 23 OUT OF 23
PLANT: HOSHIZAKI	AOR T=1:	0.75	EXCH T=1: 112.0	WORLD: 310 OUT OF 313

	TIME=0		---WORLD COMPARISON---		--COUNTRY COMPARISON--		TIME=1		---WORLD COMPARISON---									
	PLANT VALUE	BEST WORST AVG. RANK	VALUE	BEST WORST AVG. RANK	VALUE	BEST WORST AVG. RANK	VALUE	BEST WORST AVG. RANK	VALUE	BEST WORST AVG. RANK								
THRU STAGE COSTS																		
COKE	0.00	7	0.0	98.5	78.0	81	-1.7	130.1	70.8	0.00	7	1.9	104.6	82.2	83	-1.4	132.6	72.1
BLAST FURNACE	0.00	7	0.0	130.0	93.4	68	-1.4	154.0	88.3	0.00	7	-2382	136.4	-130	66	-2382	1253	37.5
LIQUID STEEL	194.85	21	158.8	206.8	177.5	246	127.3	262.4	173.3	201.68	21	166.9	213.9	185.4	260	119.1	264.9	174.5
BILLET	255.77	22	195.8	257.8	227.5	302	152.2	296.8	210.5	268.63	22	207.2	269.7	240.3	305	142.6	300.7	212.7
WIRE ROD	331.15	23	248.6	331.1	287.4	306	184.1	347.6	256.7	352.29	23	262.7	352.3	306.4	310	172.7	353.4	260.3
PLANT OVERHEAD	363.15	23	274.6	363.1	317.8	310	200.1	365.5	277.4	389.62	23	291.9	389.6	341.9	313	189.6	389.6	283.2
DEPRECIATION	397.15	23	300.6	397.1	348.0	313	215.1	397.1	293.6	431.15	23	323.6	431.1	378.9	313	206.1	431.1	302.1
NET INTEREST	412.15	23	314.6	412.1	363.0	313	227.1	412.1	306.0	449.47	23	340.7	449.5	397.2	313	219.2	449.5	316.3
MARGINAL COSTS	256.23	22	187.8	260.0	218.5	292	164.1	302.7	211.4	259.16	22	189.6	262.7	220.8	297	150.1	299.3	206.6
LABOR COSTS	104.82	14	56.9	120.6	97.3	304	4.4	120.6	46.4	122.69	14	66.6	141.1	113.9	304	5.2	141.1	52.2
MATERIAL COSTS	266.86	22	219.8	272.1	246.3	258	200.0	325.5	244.2	285.18	22	235.1	290.4	263.3	269	199.3	341.1	249.2
THRU STAGE MANHOURS																		
COKE	0.39	7	0.37	0.83	0.60	179	-8.33	5.50	0.94	0.44	7	0.42	0.95	0.69	176	-10.0	6.60	1.11
BLAST FURNACE	0.06	7	-477	0.72	-45.0	179	-515	1231	-12.8	0.07	7	-548	0.83	-51.8	179	-583	1477	-13.4
LIQUID STEEL	0.39	3	0.35	0.97	0.65	32	0.30	16.94	2.28	0.45	3	0.40	1.12	0.75	35	0.34	20.33	2.72
BILLET	1.09	11	0.61	1.60	1.22	96	0.55	25.88	3.96	1.25	11	0.70	1.84	1.40	92	0.60	31.06	4.73
WIRE ROD	2.08	14	1.08	2.43	1.94	126	0.92	28.58	5.15	2.40	14	1.24	2.79	2.23	123	1.10	34.29	6.13
PLANT OVERHEAD	2.62	14	1.50	2.96	2.45	126	1.24	30.58	6.18	3.01	14	1.72	3.41	2.81	118	1.32	36.69	7.36

WORLDSTEELDYNAMICS

B. Reference Plants

The reference plant summary page contains our assumptions of prices of key raw materials and inputs including coking coal, iron ore, steel scrap, DRI, electricity and wages. Standard costs for each process step (coke, blast furnace, BOF or EAF liquid steelmaking, billet, wire rod and plant overhead) are presented and include input/output ratios, manhour requirements, other costs, proportion of fixed costs and share of dollar-denominated costs. Depreciation and interest expenses are included to arrive at pretax cost. For most countries both an integrated (BF/BOF-based) and non-integrated (EAF-based) reference plant is included.

WORLD STEEL DYNAMICS WIRE ROD COST CURVE

EXHIBIT B: COSTS AND KEY ASSUMPTIONS FOR NON-INTEGRATED REFERENCE PLANT

COUNTRY # 2: JAPAN
CURRENCY:YEN

	INPUTS						OUTPUTS					
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
	STAGE COST	STAGE MAN-HOURS	I/O TO NEXT STAGE	RATIO: COST IN \$U.S.	RATIO: COST FIXED	RATIO: ELEC. USE AT STAGE	COST RANK ADJ. SHARE/MATER	SHARE OF (G) TO I/O FACTOR	YIELDED PRIOR STAGE COST	LABOR COST AT STAGE	OTHER MATL COST AT STAGE	TOTAL COST THRU STAGE
STANDARD INDUSTRY DATA PURCHASE PRICE OF												
DRI	110.00		0.000	1.00	0.05				X USAGE FACTOR OF 0.000			= 0.00
COKING COAL	50.00	(DRY)	1.430	1.00	0.05				X USAGE FACTOR OF 0.517			= 0.00
PELLETS/SINTER	32.00		1.600	1.00	0.05				X USAGE FACTOR OF 1.483			= 0.00
STEEL SCRAP	80.00		0.229	0.60	0.05				X GROSS USAGE OF 0.246			= 94.72
LABOR/HOUR	40.00			0.00	0.75 (MH/T)				X USAGE FACTOR OF 1.742			= 69.67
ELEC (MILLS/KWH)	65.00											
KWH/TONNE LIQUID STEEL			30.00									
PROCESS COST												
COKE OPER	23.00	0.76	0.390	0.150	0.150	0.00	0.350	0.000	71.50	15.45	-15.45	0.00
BLAST FURNACE	30.00	0.30	0.861	0.050	0.150	0.00	0.500	0.200	76.09	-3.00	6.00	0.00
LIQUID STEEL	45.00	0.35	1.035	0.150	0.150		0.600		88.00	17.20	35.80	141.00
PLUS ELEC	36.40										36.40	177.40
BILLET	23.00	0.22	1.040	0.050	0.150	0.400	0.400	0.400	183.61	8.80	14.20	206.61
WIRE ROD	45.00	0.55	1.000	0.050	0.150	0.600	0.200	0.200	214.87	22.00	23.00	259.87
PLANT OVERHEAD	30.00	0.50	1.000	0.100	0.700	0.00	0.250	0.00		20.00	10.00	289.87
DEPRECIATION	30.00			0.000	1.000	0.00	NMF					315.87
NET INTEREST	15.00			0.000	1.000	0.00	NMF					330.87
FREIGHT ABSORBED THROUGH OVERHEAD	5.00								COAL+IRON+SCRAP			
		1.74	1.076 (LS/WR)	0.216	0.358				94.72	69.67	125.48	289.87
									OTHER ASSUMPTIONS			
							(M)		(N)			
							DATES		INFLATION TIME=0 TO TIME=1			
									ITEM		U.S.	NON-US
KEYS - SOR = STANDARD OPERATING RATE (90%)							TIME 0: AUG 1999					
AOR = ACTUAL OPERATING RATE							TIME 1: AUG 1999		RAW MATERIALS	1.00	1.00	
PTS = PER TONNE SHIPPED									OTHER MATERIALS	1.00	1.00	
									LABOR / HOUR	1.00	1.00	
									PLANT OVERHEAD	1.00	1.00	
							(O)					
							COUNTRY					
							EXCHANGE RATES					
							TIME 0: 114.000					
							TIME 1: 112.000					

(C) METALLICS/LIQUID STEEL = SCRAP + BLAST FURN. = 1.090
 (F) EXCLUDES THE LIQ. STEEL STAGE, WHICH IS ASSESSED SEPARATELY.
 (G) PROPORTION OF THE VARIATION IN COSTS FROM STANDARD ASSIGNED TO MATERIALS. REMAINDER ASSIGNED TO MH/T.
 (H) PROPORTION OF MATERIAL COST VARIATION WHICH IMPACTS I/O FACTOR.

NOTE: SCRAP CREDIT PTS=.97(1.076-1.00)=0.074
 NET SCRAP PURCH.=0.246-0.074=0.172
 "COSTS ABOVE" IN BOF, WHEN EXCLUDING ELECTRICITY COST, ARE TYPICALLY 10% BELOW THOSE IN THE EF.
 FIGURES ARE NOT ADJUSTED FOR PRODUCT QUALITY.

WORLDSTEELDYNAMICS

C. Cost Matrix

Subscribers receive a printout listing, for all plants in alphabetical order by country, a number of cost items. Included are eleven tables such as at-stage and through-stage costs, major material costs, other material costs, manhours per tonne, financial costs, input/output factors and numerical rankings by country and world universe for at-stage and through-stage costs.

TABLE 1. - AT STAGE COSTS - TIME = AUG 1999 WSD WORLD WIRE ROD COST CURVE

WORLD PLANT POPULATION - 313

PLANT	COMPANY	COUNTRY	CAPACITY	COKE	BF	LS	BILLET	WIRE ROD	OVERHEAD
EL HADJAR	SIDER	ALGERIA	540	30.00	29.00	46.05	23.00	36.00	22.00
REFERENCE	ALGERIA	ALGERIA	1	30.00	29.00	46.05	23.00	36.00	22.00
STD EAF	ALGERIA	ALGERIA	1	0.00	2.90	72.60	23.00	36.00	22.00
JUJUY	ACEROS ZAPLA	ARGENTINA	50	24.00	32.20	49.05	24.52	36.88	22.00
PEREZ	SIPAR LAMINAC	ARGENTINA	160	0.00	2.50	63.60	22.00	34.00	22.00
REFERENCE	ARGENTINA	ARGENTINA	1	20.00	25.00	41.05	22.00	34.00	22.00
STD EAF	ARGENTINA	ARGENTINA	1	0.00	2.50	68.65	22.00	34.00	22.00
V. CONSTITUCI	ACINDAR	ARGENTINA	1300	0.00	2.50	67.60	22.00	31.12	22.00
LAVERTON	SMORGEN STEEL	AUSTRALIA	630	-0.90	2.58	58.55	23.65	36.25	21.50
NEWCASTLE	BHP STEEL	AUSTRALIA	1750	18.00	30.00	35.90	24.00	37.00	22.00
REFERENCE	AUSTRALIA	AUSTRALIA	1	18.00	30.00	35.90	24.00	37.00	22.00
STD EAF	AUSTRALIA	AUSTRALIA	1	0.00	3.00	60.70	24.00	37.00	22.00
WHYALLA	BHP STEEL	AUSTRALIA	1750	18.00	30.00	35.90	24.00	37.00	22.00
DONAWITZ	VOEST-ALPINE	AUSTRIA	700	30.00	28.00	46.50	29.36	46.00	25.00
REFERENCE	AUSTRIA	AUSTRIA	1	30.00	28.00	46.50	26.00	46.00	25.00
STD EAF	AUSTRIA	AUSTRIA	1	0.00	2.80	81.00	26.00	46.00	25.00
CHARLEROI	RIVA-THY MARC	BELGIUM/LU	800	0.00	2.40	82.80	25.00	46.00	24.00
ESCH-SCHIFFLA	UNIMETAL	BELGIUM/LU	600	0.00	2.40	82.80	26.68	46.96	24.00
LA LOUVIERE	HOOGOVENS-USI	BELGIUM/LU	500	0.00	2.40	82.80	26.68	46.00	24.00
REFERENCE	BELGIUM/LUXEM	BELGIUM/LU	1	30.00	24.00	45.65	25.00	46.00	24.00
STD EAF	BELGIUM/LUXEM	BELGIUM/LU	1	0.00	2.40	82.80	25.00	46.00	24.00
ACOS FINOS PI	RIOGRANDENSE	BRAZIL	300	0.00	2.40	60.40	19.00	40.52	20.00
MENDES JUNIOR	BELGO-MINERA	BRAZIL	1000	0.00	2.40	61.60	13.96	23.24	18.00
MONLEVADE#1	BELGO-MINERA	BRAZIL	400	18.00	24.00	31.20	19.00	26.12	20.00
MONLEVADE#2	BELGO-MINERA	BRAZIL	1000	18.00	24.00	31.20	19.00	23.24	20.00
RECIFE	GERDAU	BRAZIL	300	0.00	2.40	60.40	19.00	29.00	20.00
REFERENCE	BRAZIL	BRAZIL	1	18.00	24.00	31.20	19.00	29.00	20.00
RIO DOS SINOS	RIOGRANDENSE	BRAZIL	300	0.00	2.40	60.40	19.00	29.00	20.00
SANTA CRUZ	GERDAU	BRAZIL	400	0.00	2.40	60.40	19.00	29.00	20.00
SAO PAULO	BARRA MANSÁ	BRAZIL	220	0.00	2.40	60.40	19.00	29.00	20.00
SIMÕES FILHO	GERDAU	BRAZIL	350	0.00	2.40	60.40	19.00	29.00	20.00
SOROCABA	VILLARES META	BRAZIL	100	0.00	2.40	61.60	24.04	34.76	24.00
STD EAF	BRAZIL	BRAZIL	1	0.00	2.40	61.60	19.00	29.00	20.00
SUMARE	VILLARES META	BRAZIL	100	0.00	2.40	61.60	19.00	34.76	24.00
CONTRECOEUR	SIDBEC-DOSCO	CANADA	725	-2.20	1.96	72.28	22.13	32.63	15.50
HILTON	STELCO	CANADA	750	33.00	28.00	56.64	23.60	37.00	18.00
L'ORIGNAL	IVACO	CANADA	425	-2.20	1.96	70.48	22.13	34.55	15.50
REFERENCE	CANADA	CANADA	1	27.00	28.00	48.64	23.60	37.00	16.00
STD EAF	CANADA	CANADA	1	0.00	2.80	73.92	23.60	37.00	16.00
ANHUI PROVINC	MAANSHAN I&S	CHINA	600	15.00	24.00	42.35	20.00	32.88	18.00
ANSHAN CITY	ANSHAN	CHINA	700	15.00	24.00	34.35	36.80	27.12	18.00
BAOTOU CITY	BAOTOU STEEL	CHINA	2500	15.00	24.00	34.35	36.80	21.36	18.00
BENXI	BENXI SPECIAL	CHINA	400	0.00	2.40	67.55	20.00	35.76	18.00
EZHOU CITY	ECHENG I&S	CHINA	700	17.00	31.20	42.35	20.00	35.76	18.00
GUANGZHOU CIT	GUANGZHOU NAN	CHINA	150	0.00	2.40	59.55	20.00	32.88	18.00
HUBEI PROVINC	WUHAN I&S	CHINA	600	15.00	24.00	34.35	41.00	32.88	18.00
HUNAN PROVINC	XIANGTAN I&S	CHINA	350	15.00	24.00	46.35	41.00	30.00	18.00
JAYUGUAN CITY	JIUQUAN I&S	CHINA	400	17.00	31.20	42.35	36.80	30.00	18.00
JIANGYOU CITY	CHANGCENG SPE	CHINA	500	0.00	2.40	67.55	25.04	35.76	18.00
KUNMING CITY	KUNMING I&S	CHINA	350	19.00	24.00	34.35	20.00	32.88	18.00
NANJING	NANJING I&S	CHINA	800	15.00	24.00	34.35	20.00	27.12	18.00
QINGDAO CITY	QINGDAO I&S	CHINA	700	17.00	31.20	42.35	36.80	30.00	18.00
REFERENCE	CHINA	CHINA	1	15.00	24.00	34.35	20.00	30.00	18.00

WORLDSTEELDYNAMICS

D. Plant Rankings

This is a listing of all plants in our universe ranked from lowest cost to highest cost based on 15 items. These include:

Wire Rod Operating Cost with Overhead

Pretax Cost

Labor Costs

Manhours Per Tonne Shipped Through Overhead

Manhours Per Tonne Shipped Through Wire Rod

Wages Per Hour

Material Costs

Input/Output Ratios from Liquid Steel to Wire Rod

Wire Rod Marginal Cost

Wire Rod Cost Through Stage

Wire Rod Marginal Cost Through Stage

Billet Cost Through Stage

Billet Marginal Cost Through Stage

Liquid Steel Cost Through Stage

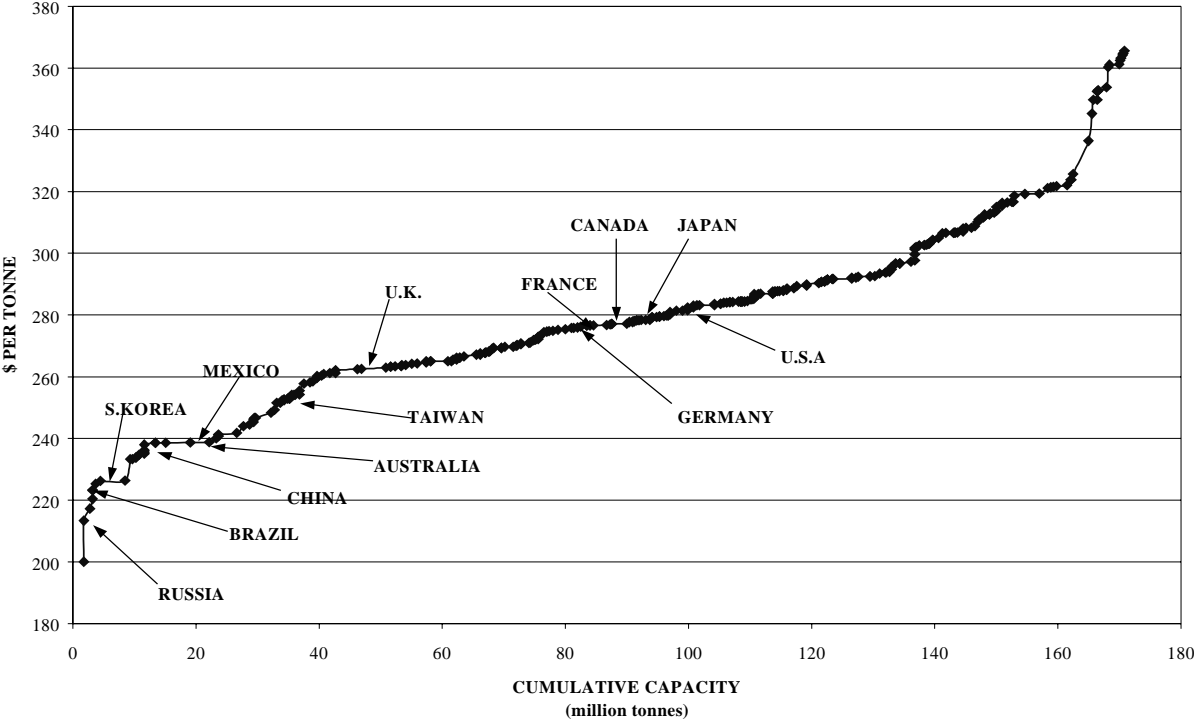
Liquid Steel Marginal Cost Through Stage

WORLDSTEELDYNAMICS

E. Cost Curve Charts

Subscribers receive a series of 10 cost curves to analyze the results, including rankings for wire rod operating cost with and without overhead, pretax cost, labor costs, marginal costs, etc.

**WSD World Wire Rod Cost Curve
Operating Cost with Plant Overhead**



F. Spreadsheet Version

Subscribers receive a spreadsheet version of the WR WCC on CD ROM that permits the user to change key assumptions in order to derive new plant cost figures and new world cost curves. The user can change currency values, operating rates, manhours per tonne, wage per hour, major material costs, other material costs, depreciation and interest expenses, share of costs fixed and share of costs in dollars.

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Wire Rod World Cost Curve

The Wire Rod World Cost Curve is offered on an annual basis — \$7,500 to World Steel Dynamics subscribers and \$12,500 to others.

WSD \$7,500 _____

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