SMS Demag is one of the leading manufacturers of machinery, plants and systems in the iron, steel and non-ferrous metal industries. Based on extensive know-how and longstanding experience, SMS Demag has proved a reliable partner to a great variety of users in all parts of the world.

SMS Demag renders consulting services objectively from a basis of the most diversified experience and helps to materialise iron and steel mill projects through active partnership.

SMS Demag stands for plant construction against the background of extensive process and operation engineering know-how in the manufacture and processing of steel.

Problem solutions in the metallurgical and plant engineering sectors, feasibility calculations and studies, requirements to existing new material sources using economical methods of manufacture and modern metallurgical technology.

Process engineering know-how, delegation of teams and training operating personnel.

Planning
- Requirements forecasts
- Feasibility studies
- Basic engineering
- Design of plant concepts
- Design of modernisation concepts

Implementation
- Project engineering
- Construction of steel plant logistics
- Drawing up bidding documents
- Project implementation for the customer
- Quality control
- Repairs
- Programming assisted by electronic data processing
- Details engineering
- Design of plants and machinery
- Planning and complete execution including calculations, drawing, storage, assembly
- Supply of plant, systems, machinery and components
- Erection and on-site supervision including site management

Commissionsing
- Technical assistance prior to and subsequent to commissioning
- Delegation of personnel
- On-site training
- Training and certification of personnel
- Preparation of specific commissioning programmes
- Completion of expert opinions (noise and dust emissions)
- Technical assistance prior to and subsequent to commissioning

Active around the world
Everywhere in the world where the production and processing of iron, steel and other metallic materials play an important economic role, SMS Demag and its closely linked suppliers and engineering companies enjoy a decisive edge in the design and definition of tailored solutions.

The international scope of our sales and technical support organisation is one of the strategic and logistic advantages we enjoy when it comes to offering engineering services tailored to the individual requirements of the country concerned.

Precise knowledge of the expectations, conditions and standards which apply in each country and our presence close to the customer provide us with an effective edge to the design and definition of tailored solutions.

Our product range and services include:
- Integrated steel plant solutions
- Complete steel plant furnaces and systems
- Oxygen steelmaking shop
- Smelting and direct reductions plants
- Steel plants for stainless steel
- Electric steel plants for carbon steel
- Scrap preheating facilities
- Steel plant vehicles and other steelworks equipment
- Air pollution control systems
- Process computer applications (automatisation)

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1968-1970

GISC – Georgetown Steel Corp.

Georgetown, S.C., USA

E-steelworks 250,000 tpy C-steel billets

2 x 50-t EAF, 2 x 4-strand CDP

1968-1980

BVM Edelstahl Stahlwerke GmbH

Kohl, Germany

E-steelworks 300,000 tpy C-steel billets

2 x 50-t EAF, 2 x 4-strand CDP
Steelworks extension and modernization
CELSA, Compania Española de Laminación S. L., Spain, Castellbisbal (Barcelona)

2 x 140-t AC electric arc furnace
Type 140-t EBT
Shell diameter 7,300 mm
Max. melt-down rating 115 MVA
Connecting voltage 26.8 kV
3 x COJET-Burner 3 x 4.5 MW
1 x Doorburner 4.5 MW
Water-cooled sidewall panels and water-cooled roof

2 x 140-t ladle furnace
Transformer rating 20 MVA
Connecting voltage 26.8 kV

1 x Water treatment plant

1 x Substation

Production
Total capacity 2,400,000 t/y C-grades

Scope of supply and services
Engineering
Supply of main and auxiliary components
Training of customer’s personnel
Erection- and commissioning supervision

Agreement concluded 2001
Commissioning 2004 (Phase 1)
2005 (Phase 2)
Steelworks for stainless steel
SBGC Shanghai No. 1 Iron & Steel Co. Ltd., PR China

1 x 120-t AC electric arc furnace
Type 100/120-t, spout
Shell diameter 6,500 mm
Max. melt-down rating 80 MVA
Connecting voltage 35 kV
Water-cooled sidewall panels and water-cooled roof

1 x 120/135-t AOD-L converter with exchange vessel
Shell diameter 5,000 mm
Overall height 7,430 mm
Volume inside plate shell 109 m³
Volume inside new lining 68 m³

2 x Dedusting systems

1 x 120/135-t VOD unit
Production rate 750,000 tpy stainless steel

1 x 1strand vertical bending continuous caster for stainless steel slabs
Caster type Vertical bending
Main casting radius 8,636 mm
Slab thickness 200, 180 mm
Slab width 750 to 1,600 mm
Slab length 8,000 to 13,600 mm
Max. casting speed 1.5 m/min
Special features Dynamic soft-reduction system
Product mix AISI 304, 304-L, 316-316-L 409, 410, 420, 430
Production rate 720,000 tpy slabs

2 x 1strand vertical bending continuous casters for carbon steel
Caster type Vertical bending
No. of strands 2 x 1
Main casting radius 8,636 mm
Slab thickness 200, 150 mm
Slab width 750 to 1,650 mm
Slab length 8,000 to 13,600 mm
Max. casting speed 2.2 m/min (150 mm), 2.0 m/min (200 mm)
Special features Dynamic soft-reduction system
Product mix Low-C-grades, peritectic grades
micro-alloyed grades, pipe grades, structural grades
Production rate 2,166,000 tpy slabs

Extension of stainless steel meltshop
At the end of 2003 SMS Demag as a consortium leader was awarded another contract for a stainless steel meltshop with downstream slab caster. The new process line consists of a 120-t electric arc furnace, a 135-t AOD converter, a 135-t ladle furnace and a single-strand slab caster as vertical bending plant.
The new meltshop will produce stainless steels of highest quality for example, AISE 201, AISE 304, AISE 316 (austenitic grades) as well as AISE 430 (ferritic grades).
The annual capacity is 720,000 tpy. Commissioning is scheduled to take place in August 2005.

Scope of supply and services
Engineering, steelmaking technology, supply of main and auxiliary components, training of customer’s personnel, supervision of erection and commissioning
Agreement concluded 2001
Commissioning 2004
Steelworks for stainless steel (STS III)
Posco, Pohang, Rep. Korea

1 x 95-t AC electric arc furnace
- Type: 95-t, spout
- Shell diameter: 6,100 mm/6,300 mm
- Max. melt-down rating: 85 MVA
- Connecting voltage: 22 kV
- Burners: 10 MW
- Water-cooled sidewall panels and water-cooled roof

1 x Ladle treatment stand

1 x 100-t AOD-L converter with exchange vessel
- Shell diameter: 5,100 mm
- Overall height: 7,050 mm
- Volume inside plate shell: 104 m³
- Volume inside new lining: 59 m³

1 x Dedusting system

Production
- Total capacity: 625,000 tpy

Scope of supply and services
- Engineering
- Supply of main and auxiliary components
- Training of customer’s personnel
- Erection and commissioning supervision

Agreement concluded: 2001
Commissioning: 2003
Steelworks for stainless steel
North American Stainless, Ghent, KY, USA

1 x 140-t AC electric arc furnace
Type 140-t, spout
Shell diameter 7,650/7,500 mm
Max. melt-down rating 140 MVA
Connecting voltage 34,5 kV
Burner 3 MW
Water-cooled sidewall panels and water-cooled roof

1 x Ladle treatment station

1 x 150-t AOD-L converter
Shell diameter 5,280 mm
Overall height 7,700 mm
Volume inside new lining 82,3 m³

2 x Dedusting systems

1 x 1-strand vertical bending
continuous caster for slabs
Heat weight 150 t
Casting radius 8,636 mm
Number of strands 2
Slab size 155 to 240 mm, 600 to 1,600 mm
Specialities Resonance mould

Production
Total capacity 800,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1999
Commissioning 2001
Steelworks for special steel for the automobile industry
Sidenor S.A., Basauri (Vizcaya), Spain

1 x 130-t AC electric arc furnace
Type 130-t EBT
Shell diameter 7,100 mm
Max. melt-down rating 110 MVA
Connecting voltage 30 kV
Burners 24 MW
Split shell design
Water-cooled sidewall panels and water-cooled roof

1 x 6-strand bow-type continuous caster for billets
Heat weight 130 t
Casting radii Multi-point bending
Number of strands 6
Billet size 155 mm sq and 185 mm sq
Specialities Resonance mould
for high-speed operation

Production
Total capacity 750,000 tpy

1 x 130-t ladle furnace
Transformer rating 25 MVA
Connecting voltage 30 kV

1 x Dedusting system

1 x 100-t VD unit

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1998
Commissioning 2000
Electric steelworks
Qualitech Steel Corp., Pittsboro, IN, USA

1 x 90/110-t AC electric arc furnace
Type 90/110-t EBT
Shell diameter 6,100 mm
Max. melt-down rating 80 MVA
Connecting voltage 34.5 kV
Water-cooled sidewall panels and water-cooled roof

1 x 90-t ladle furnace
Transformer rating 18 MVA
Connecting voltage 34.5 kV

1 x 100-t VD unit
Degassing vessel dia. 5.8 m

1 x 3-strand bow-type continuous caster for blooms
Heat weight 90 t
Casting radii Multi-point bending
Number of strands 3
Specialities Resonance mould, soft reduction

Production
Total capacity 500,000 tpy

Scope of supply and services
Engineering
Steelmaking technology

Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1996
Commissioning 1998
Electric steelworks for carbon-, low- and medium-alloyed steel

Siam Strip Mill Public Co. Ltd., Rayong, Thailand

2 x 135/155-t AC electric arc furnace
Type: 135/155-t EBT
Shell diameter: 7,000 mm/7,300 mm
Max. melt-down rating: 110 MVA
Connecting voltage: 33 kV
Water-cooled sidewall panels and water-cooled roof

2 x 135-t ladle furnace
Transformer rating: 22 MVA
Connecting voltage: 33 kV

1 x Gas cleaning system

Liquid material transport equipment

Production
Total capacity: 1,700,000 tpy

Scope of supply and services
Engineering
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded: 1996
Commissioning: 1998
Electric steelworks for hot rolled coil
Saldanha Steel Pty., Ltd., Saldanha Bay,
Republic of South Africa

1 x 170/200-t CONARC
Process line Corex, EAF, LF, VOD, ISP
Type 170/200-t EBT
Holding capacity 2 x 200 t
Tap-to-tap time min. 44 min
Inside diameter lower shell 7,400 mm
Transformer rating 115 MVA

Speeds:
+ tapping 1°/s
– tapping 3.5°/s
+ slagging 1°/s
Roof slewing 90° (3°/s)
Electrode slewing 85° (4°/s)

Water-cooled sidewall panels and water-cooled roof
CONARC system comprising two furnace shells, which combine EAF and BOF operating via slewable electrodes and slewable oxygen top lance

Thin slab caster
Casting width 900 to 1,560 mm
Casting thickness 90 mm at mould exit
Casting thickness 75 mm after soft reduction

Roller hearth furnace
Length 182 m

Roughing mill
No. of stands 2 (4-high)
Motor rating 1 x 9,000 kW, 1 x 12,000 kW
Thickness 20 to 40 mm

Coilbox

Hot strip mill
No. of stands 5 (4-high)
Motor rating 2 x 7,000 kW, 3 x 9,000 kW
Thickness 1.0 to 8.5 mm

Laminar cooling
Downcoiler
Coil weight 20 kg/mm

Production
Total capacity 1,350,000 tpy hot rolled coils

1 x 170-t ladle furnace
Heat size 170 t
Transformer rating 33 MVA

Gas cleaning system

Liquid material transport equipment

Scope of supply and services
Engineering
Supply of all equipment
Supervision of erection
Supervision of commissioning
Training of customer’s personnel
Coordination of all site activities

Agreement concluded 1996
Commissioning 1998
Electric steelworks for hot rolled coil
Megasteel Sdn. Bhd., Banting, Selangor, Malaysia

2 x 160-t DC electric arc furnace
- Type: 160-t EBT
- Transformer rating: 150 MVA
- Electrode DC voltage: 750 V
- Electrode current: 140 kA
- Top electrode diameter: 800 mm

2 x 160-t ladle furnace
- Heating rate: 4 °C/min
- Transformer rating: 28 MVA
- Electrode diameter: 450 mm

2 x 160-t VD unit
- VD tank-type with oxygen blowing capability

2 x 1-strand CSP caster
- Thin slab: thickness 50/60 mm
- Width: 790 to 1,575 mm
- Casting speed: max. 6 m/min

CSP furnace
- Roller-hearth furnace
- Length: 226 m
- Gas-fired

CSP hot-rolling mill
- 6 four-high stands
- 2 downcoilers with hydraulically actuated wrapper rolls and Step Control
- Final gauges: 1.2 to 21 mm

Auxiliary equipment for meltshop and rolling mill

Production
- Total capacity: 2,000,000 tpy

Scope of supply and services
- Engineering
- Supply of all equipment
- Supervision of erection and commissioning
- Training of customer’s personnel
- Coordination of site activities

Agreement concluded: 1996
Commissioning: 1998
Electric steelworks for hot rolled coil
Nakornthai Strip Mill Public Co. Ltd. (NSM), Chonburi, Thailand

1 x 180/330-t AC electric arc furnace
Type 180/330-t EBT
Shell diameter 8,500/8,700 mm
Max. melt-down rating 130 MVA
Connecting voltage 33 kV
Split shell design
Water-cooled sidewall and roof
PCA power-conducting aluminium electrode arms
Eccentric bottom tapping system
Designed for CONSTEEL continuous scrap feeding

2 x 180-t ladle furnaces
Transformer rating 30 MVA
Connecting voltage 33 kV

Secondary metallurgical equipment
1 twin-shell VD plant
Heat size 180 t
2 travelling vessels, 1 movable cover

1 x 1-strand CSP caster
Thin slab thickness 45/50/60 (70) mm
Width 1,130 to 1,600 mm
Casting speed 2.8 to 5.5 m/min

CSP furnace
Roller-hearth furnace
Length 206 m
Gas-fired

CSP hot-rolling mill
6 four-high stands
2 downcoilers with hydraulically actuated wrapper rolls and Step Control
Final gauges 1.12 to 25 mm

Automation system

Various auxiliary equipment

Production
Total capacity 1,500,000 tpy
Steel grades Low carbon and carbon grades for strip production

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer's personnel
Erection and commissioning supervision

Agreement concluded 1995
Commissioning 1997
Electric steel melting shop

Alexandria National Iron & Steel Co. (ANSDK), El-Dikheila, Alexandria, Egypt

4 x 81-t AC electric arc furnace
Type 81-t EBT
Shell diameter 5,500/5,800 mm
Max. melt-down rating 46 MVA

2 x 81-t ladle furnace
Transformator rating 15 MVA

2 x Dedusting systems

1 x Automation system

Production
Total capacity 1,500,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxilliary components
Training of customer’s personel
Supervision of erection and commissioning

Agreement concluded 1995
Commissioning 1997
Steelworks with bloom caster for carbon, alloyed, spring, rail and fish-plate steel

Jiang Yin Xing Chen Co. Ltd., Jiang Yin, PR China

1 x 100-t DC electric arc furnace
Type: 100-t EBT
Shell diameter: 6,600 mm
Max. melt-down rating: 90 MVA
Connecting voltage: 33 kV
Water-cooled sidewall panels and water-cooled roof

1 x 100-t ladle furnace
Transformer rating: 16 MVA
Connecting voltage: 33 kV

1 x 100-t VD unit
Degassing vessel dia.: 5,400 mm
Height with cover: 7,800 mm

1 x Gas cleaning system

1 x 5-strand bloom caster
Type: Curved mould, multipoint unbending, segmented design
Heat weight: 100 t
Casting radii: 12/23.5 m
Number of strands: 5
EMS: 5
Bloom size: 180 mm x 180 mm to 300 mm x 300 mm

Production
Total capacity: 780,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded: 1995
Commissioning: 1997

Liquid material transport equipment
Electric steelworks for beam blanks
ProfilARBED S.A., Esch-Belval, Luxembourg

1 x 155-t DC electric arc furnace
Type 155-t EBT
Twin-shell concept
Shell diameter 7,600 mm
Max. melt-down rating 140 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and water-cooled roof
Eccentric bottom tapping system

1 x 155-t ladle furnace
Transformer rating 25 MVA
Connecting voltage 33 kV
Liquid material transport equipment
Alloying system

Scope of supply and services
Turnkey supply incl.
Engineering
Supply of main and auxiliary components
Civil and steel structure
Training of customer’s personnel
Erection and commissioning
Agreement concluded 1995
Commissioning 1996

Production
Total capacity 950,000 tpy
with one shell
Electric steelworks
Nippon Denro Ispat Ltd., Dolvi, India

2 x 180-t twin-shell AC electric arc furnace
Type CONARC – 180-t EBT
Shell diameter 7,600 mm
Max. melt-down rating 137 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and water-cooled roof
Aluminium power conductor arms
Oxygen top lance

1 x 180-t ladle furnace
Transformer rating 33 MVA
Connecting voltage 33 kV

1 x 180-t VD unit
Degassing vessel dia. 6,200 mm
Height with cover 10,600 mm

1 x Gas cleaning system

2 x 1-strand CSP caster
Thin slab thickness 50 to 60 mm
Width 900 to 1,560 mm
Casting speed max. 6.5 m/min

CSP furnace
Roller-hearth furnace
Length 185 m
LDO-fired

CSP hot-rolling mill
6 four-high stands
2 downcoilers with hydraulically actuated wrapper rolls and Step Control
Final gauges 1.2 to 12.7 mm

Production
Total capacity 2,500,000 tpy

Scope of supply and services
Engineering
Steelmaking, casting and rolling technology
Supply of main and auxiliary equipment
Process automation system
Training of customer’s personnel
Supervision of erection and commissioning

Agreement concluded 1994
Commissioning 1996/2002

Liquid material transport equipment

Production steelmaking
Total capacity up to 4,500,000 tpy
Electric steel melting shop (executed in three phases)
Kia Steel Co., Ltd., Kusan City, Rep. Korea

2 x 60-t AC electric arc furnaces
Type: 60-t EBT
Shell diameter: 5,200 mm
Max. melt-down rating: 48 MVA

1 x 40-t AC electric arc furnace
Type: 40-t EAF 4.8 - 25
Shell diameter: 4,800 mm
Max. melt-down rating: 25 MVA

2 x 60-t ladle furnace
Transformer rating: 13 MVA

1 x 60-t ladle furnace
Heat size: 40 to 60 t
Transformer rating: 13 MVA

Secondary metallurgical equipment
1 x VD plant, 1 x VOD plant

3 x Scrap preheating plants

1 x 2-strand bow-type bloom caster
Casting radii: 16.5 m/28 m
Bloom size: 370 x 480 mm

1 x Ingot casting facility

Various auxiliary equipment

Process computer application
Hardware: DEC 1 x u VAX 3,100-95
Software: Basic application software
for process optimisation:
Temperature calculation
Energy balance
Charge material calculation
Alloy calculation
Analysis calculation
Carbon/oxygen calculation (EAF)
Desulphurisation calculation (LF)
Secondary Metallurgy
Energy demand control

Steel grades
C-grades, low-alloyed grades,
spring steels, tool steels,
bearing steels, high-alloy grades

Production (phase 1, 2 and 3)
Total capacity:
Liquid steel: 732,960 tpy
Blooms: 490,000 tpy
Ingots: 220,000 tpy

3 x Dust collecting plants
suction capacity approx. 660,000 m3/h
Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded:
1990 (phase 1), 1992 (phase 2), 1994 (phase 3)
Commissioning:
1992 (phase 1), 1994 (phase 2), 1996 (phase 3)
Steelworks
Huta Batory S.A., Chorzów, Poland

1 x 25-t AC electric arc furnace
Type 25/30-t EBT
Shell diameter 3,800 mm
Max. melt-down rating 20 MVA
Connecting voltage 20 kV
Water-cooled sidewall and roof

1 x 25-t ladle furnace
Transformer rating 5.5 MVA
Connecting voltage 20 kV

1 x Gas cleaning system

1 x Alloy and addition handling system for EAF and LF

Process automation level 1 and 2

Liquid material transport equipment

Production
Total capacity 145,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1994
Commissioning 1996
Steelworks and steckel mill
IPSCO Inc., Montpelier, IO, USA

1 x 136-t* twin-shell DC electric arc furnace
Type 136-t EBT
Shell diameter 7,600 mm
Max. melt-down rating 140 MVA
Connecting voltage 34.5 kV
Water-cooled sidewall panels and water-cooled roof
*metric tons

1 x 136-t ladle furnace
Transformer rating 25 MVA
Connecting voltage 34.5 kV

1 x Gas cleaning system

Liquid material transport equipment

1 x 1-strand caster
Type Vertical bending, multipoint unbending, segmented design
Heat weight 136 t
Main radii 3.6/6.6/24 m
Number of strands 1
EMBR 1
Slab thickness 152 mm
Slab width 3,000 mm
Steel grades Carbon steel

1 x Walking beam furnace, 1 x Steckel mill
Coil weight 34 t
Strip dimension 2.3 to 19 mm x 1,220 to 2,440 mm
Plate dimension 38 mm x 3,050 mm
Plate handling facility 1

Production
Total capacity 910,000 tpy

Scope of supply and services
Turnkey supply
Engineering
Steelmaking, casting and rolling
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning

Agreement concluded 1994
Commissioning 1996
Conversion of oxygen steelworks to electrometallurgy
Salzgitter AG, Peine, Germany

**100-t DC UNARC electric arc furnace, EBT**
- Shell diameter: 7,100/7,300 mm
- Electrode diameter: 700 to 800 mm
- Transformer capacity: 2 x 70 MVA
- Active power: 95 MW
- Maximum DC voltage: 750 V
- Direct current: 140 kA

**100-t ladle furnace**
- Transformer capacity: 24 MVA
- Primary voltage: 30 kV
- Secondary voltage: 190 to 350 V

**Scope of supply and services**
- Turnkey supply
- Engineering
- Supply of main- and auxiliary equipment
- Training of customer’s personnel
- Erection and commissioning
- Technical assistance

Agreement concluded: 1994
Commissioning: 1996
Steelworks extension for stainless steel production
ACESITA S.A. (Aços Especiais Itabira), Timóteo, Brazil

1 x 75 t-MRP-L converter
Shell diameter  5,020 mm
Overall height    7,600 mm
Volume inside plate shell  110 m³
Volume inside new lining  45 m³

Sublance system

1 x 75 t-VOD unit
Degassing vessel dia.  5,000 mm
Height with cover       6,750 mm

Liquid material transport equipment

Flux and ferro alloy transport system

Production
Total capacity  340,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Process automation
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded  1994
Commissioning         1996
Steelworks for stainless steel and C-steel (stage 1 and 2)
Yieh United Steel Corporation, Kaohsiung, Taiwan

1 x 85-t electric arc furnace
Type 85-t EBT
Shell diameter 6,150 mm
Max. melt-down rating 77 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and water-cooled roof

2 x 100-t MRP-L converter
Shell diameter 5,500 mm
Overall height 7,190 mm
Volume inside plate shell 133 m³
Volume inside new lining 63 m³

1 x 85-t ladle furnace
Transformer rating 15 MVA
Connecting voltage 33 kV

2 x 100-t VOD unit
Degassing vessel dia. 5,600 mm
Height with cover 8,200 mm

Liquid material transport equipment

1 x 1-strand slab caster
Type Curved mould, multipoint unbending, segmented design
Heat weight 100 t
Casting radii 10.5/27 m
Number of strands 1
EMS 1
Slab thickness 150, 175, 200 mm
Slab width 800 – 1,600 mm
Steel grades Stainless 300/400 series (austenitic ferritic, martensitic)

1 x 5-strand billet caster
Type Curved mould, multipoint unbending, rigid dummy bar
Heat weight 100 t
Casting radii 9/18 m
Number of strands 5
EMS 5
Billet size 120 to 160 mm
Steel grades Stainless 300/400 series (austenitic ferritic, martensitic), carbon steel

Production
Total capacity 800,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning

Commissioning 1995/1996
Electric steelworks with billet caster
ELSTAL-ŁABĘDY Sp. z o.o., Gliwice, Poland

1 x 60-t electric arc furnace
Type 60-t EBT
Shell diameter 5,320 mm
Max. melt-down rating 48 MVA
Connecting voltage 30 kV
Water-cooled sidewall panels and water-cooled roof
Eccentric bottom tapping system

1 x 60-t ladle furnace
Transformer rating 13 MVA
Connecting voltage 30 kV
Liquid material transport equipment
Alloying system for EBT and LF

1 x 3-strand bow-type continuous caster
(cooperation with Concast, Zürich)
Casting radius 6 m
Billets 140 x 140 mm
160 x 160 mm
140 x 160 mm
Steel grades carbon steel, alloy steel

Process computer applications
Hardware Microvax 3100-80 (16 MByte)
Software EAF/LF
basic application software
charge and alloy calculation

Production
Total capacity 500,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1993
Commissioning 1995
Steelworks extension
Huta Katowice S.A., Dabrowa Górnicza, Poland

1 x 300-t ladle furnace
Transformer capacity  40 MVA
Rate of heating      3 °C/min

Secondary metallurgical equipment
Type                 6-stage steam ejector vacuum pump, SMS Mevac type RH
Heat size            300 t
Vessel/block type height  8,200 mm
Vessel/block type diameter 3,000 mm
Suction capacity     500 kg/h of air at 20 °C and 0.67 mbar

1 x 6-strand continuous casting plant
Type                 curved mould, multiple unbending
Bloom dimensions     280 x 300 mm
                     280 x 400 mm
No. of strands (radii) 6 (12.0 m and 22.0 m)
Heat size            330 t
Steel grades         St 42
                     St 52
                     Rail steel

Production
Total capacity       1,600,000 tpy

Agreement concluded 1993
Commissioning        1995
Electric steelworks
ESF Elbe-Stahlwerk Feralpi GmbH, Riesa, Germany

1 x 80-t electric arc furnace
Type 70-t EBT
Shell diameter 5,800 mm
Max. melt-down rating 60 MVA
Connecting voltage 33 kV

1 x 4-strand continuous casting plant
Heat weight 80 t
Casting radius 6,000 mm
No of strands 4
Billet dimensions 100 to 160 square

Scope of supply and services
Engineering
Supply of main equipment
Training of customer’s personnel
Supervision of erection and commissioning

Production
Total capacity 500,000 tpy

Agreement concluded 1993
Commissioning 1994
Electric steelworks
ProfilArbed S.A., Differdange, Luxembourg

1 x 155-t twin shell DC electric arc furnace
Type: 155-t EBT
Shell diameter: 7,600 mm
Max. melt-down rating: 140 MVA
Connecting voltage: 33 kV
Water-cooled sidewall panels and water-cooled roof
Eccentric bottom tapping system

1 x 155-t ladle furnace revamping
Transformer rating: 36 MVA
Connecting voltage: 33 kV
Liquid material transport equipment
Alloying system

Gas cleaning system for EAF

1 x 3-strand beam-blank continuous caster
Casting radii: 12/16.5/32 m
Beam blanks:
- 690 x 450 x 130 mm
- 696 x 440 x 115 mm
- 1,119 x 500 x 132 mm
Steel grades: Carbon steel St 42/St 52

Production
Total capacity: 1,400,000 tpy

Scope of supply and services
Turnkey supply
Steelmaking/casting technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning

Agreement concluded: 1993
Commissioning: 1994
Electric steelworks extension
LTV Steel Co. Inc., Cleveland, OH, USA

1 x 200-t ladle furnace
Heating rate  max. 5 °C/min
Transformer rating  50 MVA

1 x 2-strand continuous slab caster
Casting radii  10.5/11.7/14/27 m
Casting sizes  225 mm thick, 600 to 1,600 wide
Steel grades  Low-carbon steel
             Medium-carbon steel
             High-carbon steel
             Al-killed and Si-killed

Process computer-aided automation system
Hardware  DEC 2 x MicroVAX 4000-500A (128 MByte)
Software  LF
          Basic application software
          Process optimisation
          Functions: thermal process control, metallurgical
          process control CCM „CCC“
          Basic application software
          Process optimisation Functions: spray water, cut
          length optimisation, quality evaluation, cast control

Dust collection system
Number  1
Type  Wheelabrator reverse air
Filter area  4,100 m²
Max. gas volume  240,000 m³/h
Gas temperature  130 °C
Dust content  11 mg/m³

Agreement concluded  1992
Commissioning  1994
Steelworks for special steel
Walsin Lihwa Electric Wire & Cable Corp., Kaohsiung, Taiwan

1 x 45/50-t electric arc furnace
Type: 45/50-t EBT
Shell diameter: 4,600 mm
Max. melt-down rating: 33 MVA
Connecting voltage: 11.4 kV
Water-cooled sidewall panels and water-cooled roof

1 x 50-t MRP-L converter
Shell diameter: 3,820 mm
Overall height: 6,500 mm
Volume inside plate shell: 56 m³
Volume inside new lining: 23.4 m³

1 x 50-t VOD/VD unit
Degassing vessel dia.: 4,600 mm
Height with cover: 7,300 mm

1 x Gas cleaning system

1 x 2-strand round billet caster
Type: Circular arc caster
Heat height: 50 t
Casting radius: 10.5/21 m
Number of strands: 2
EMS: 2 per strand
Casting dimension: 200 mm round
Steel grades: Stainless 300/400 series, low-alloy steels, structural steels, tool steels, free cutting steels, spring steel, bearing steel, high alloy steels

Production
Total capacity: 180,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded: 1991
Commissioning: 1993 - 1994
Electric steelworks
Nakornthai Strip Mill Public Co. Ltd. (NSM),
Chonburi, Thailand

1 x 75-t electric arc furnace
- Shell diameter: 5,500 mm
- Connected transformer power: 72 MVA

1 x 75-t ladle furnace with water-cooled roof
- Electrode diameter: 350 mm
- Connected transformer power: 12 MVA
- Heating rate: 4 °C/min

1 x Fume extraction system
- Dry-type extraction system via bag filters
- Direct extraction of EAF and LF
- Three-part roof hood for fume extraction above the EAF

Scope of supply and services
- Engineering
- Supply of main and auxiliary equipment
- Training of customer’s personnel
- Supervision of erection and commissioning

Agreement concluded: 1990
Commissioning: 1993
Electric steelworks
Compañía Siderúrgica de California, Mexicali, Mexico

1 x 65-t electric arc furnace
Type 65-t EBT
Capacity 65 t (max. 80 t)
Inside diameter 5,500 mm
Transformer capacity 50 MVA (permanent)
Electrode diameter 550 mm
Sidewalls and roof with water cooling

1 x 65-t ladle furnace
Transformer capacity 10 MVA
Heating rate 3 to 4 °C/min

1 x 4-strand continuous casting plant
Type Curved mould, rigid dummy bar
Casting radius 6.0 m
No. of strands 4 (provided for a fifth strand)
Casting range 100 x 100 mm to 160 x 160 mm
Cut lengths 5.5 to 12.0 m

Fume cleaning/dust collection facility
Filter type APS 8/312/140/5
Chambers 8
Filter bags 312 per chamber
Specific filtration rate 119 m³/m²/h
Cleaning of filter bags by compressed-air pulse
No. of fans 2
Volume flow rate 340,000 m³/h per fan
Operation temperature 130 °C

Scope of supply and services
Engineering
Supply of main equipment
Training of customer’s personnel
Supervision of erection and commissioning

Agreement concluded 1990
Commissioning 1993
Open hearth steelworks modernization
Nová Hut as, Ostrava-Kunčice, Czech Republic

1 x 205-t ladle furnace
- Transformer capacity: 28 MVA
- Rate of heating: 3.5 °C/min

1 x 6-strand continuous casting plant
- Type: Curved mould, multiple unbending
- Capacity: 1,100,000 tpy
- Casting range: 130 x 130 mm, 180 x 180 mm, 210 mm dia. round
- No. of strands (radii): 6 (10.5 m and 21.0 m)
- Heat size: 205 t/215 t max.
- Heats/day: 19
- Tap-to-tap time: 72 min
- Casting speed: 4.5 m/min (130 x 130 mm), 2.0 m/min (180 x 180 mm), 1.9 m/min (210 mm dia. round)
- Steel grades: St 42, St 52, St 35

Scope of supply and services
- Engineering
- Supply of main equipment
- Training of customer's personnel
- Supervision of erection and commissioning

Agreement concluded: 1990
Commissioning: 1993
Electric steelworks
P.T. Jakarta Cakratunggal Steel Mills, Pulogadung, Indonesia

1 x 90-t electric arc furnace
Type 90-t EBT
Shell diameter 5,500 mm
Max. melt-down rating 50 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and water-cooled roof

1 x 60-t ladle furnace
Transformer rating 15 MVA
Connecting voltage 33 kV

Liquid material transport equipment

1 x Dedusting plant

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1990
Commissioning 1992
Electric steelworks modernization
Groupe Industriel Sider (Alfasid), Annaba, Algeria

1 x 80-t electric arc furnace (reconstruction)
Type 80-t EBT
Shell diameter 6,100 mm
Max. melt-down rating 46 MVA
Connecting voltage 15 kV
Water-cooled sidewall panels and water-cooled roof

1 x 80-t ladle furnace
Transformer rating 12.5 MVA
Connecting voltage 15 kV

Liquid material transport equipment

1 x 4-strand bow-type continuous caster
Casting radius 6.0 m
Billets 100 x 100 mm
160 x 160 mm

1 x 2-strand horizontal caster
Rounds 190 to 345 mm dia.
Steel grades Carbon steel, low-alloy steels for tube production

Production
Total capacity 400,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1990
Commissioning 1992
Electric steelworks with I.S.P. for hot rolled coil
Acciaieria I.S.P. di Cremona S.r.L., Italy

1 x 100-t electric arc furnace
Type 100-t EBT
Shell diameter 6,400 mm
Max. melt-down rating 90 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and water-cooled roof

1 x 100-t ladle furnace
Transformer rating 18 MVA
Connecting voltage 33 kV

1 x 100-t MRP-L converter (future)
with bottom tuyeres for O₂, Ar, N₂
Top lance system for O₂
1 x 100-t VOD-unit
provided for
final stage

1 x 1-strand thin slab caster with cast-rolling (I.S.P.)
Casting thickness 60 to 80 mm
Slab width 650 to 1,330 mm
Thin slab thickness 15 to 25 mm

1 x 4-stand finishing mill
Finished strip 1.7 to 12 mm
Steel grades C-grades, stainless, austenitic and ferritic steel
Production Total capacity 500,000 tpy

Scope of supply and services
Engineering
Supply of main components
Supervision of erection and commissioning
Agreement concluded 1989/1990
Commissioning 1991
Steelworks extension
WCI Steel Inc., Warren, OH, USA

1 x 170-t ladle furnace
Transformer rating 25 MVA
Connecting voltage 13.8 kV

Secondary metallurgical equipment
VD plant
Capacity 170 t

Liquid material transport facilities

1 x 2-strand bow-type continuous caster
Slabs 1,600 x 200 to 250 mm
Steel grades Low and high-alloy steel grades incl. silicon steel for transformer sheet

Production
Total capacity approx. 1,700,000 tpy

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1990
Commissioning 1991
Electric steelworks
INIsteel (formerly Kangwon Industries),
Pohang, Rep. Korea

1 x 100-t electric arc furnace
Type 100-t
Shell diameter 6,100 mm
Max. melt-down rating 95 MVA
Connecting voltage 22.9 kV
Water-cooled sidewall panels and water-cooled roof

1 x 100-t ladle furnace
Transformer rating 20 MVA
Connecting voltage 22.9 kV
Liquid material transport equipment
Alloying system

1 x 3-strand bow-type continuous caster
Casting radii 12 m/23.8 m
Beam blank 420 x 480 x 120 mm
Blooms 200 x 200 mm
250 x 250 mm
270 x 320 mm
320 x 430 mm
150 x 500 mm
Steel grades Carbon steel, alloy steel

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision
Agreement concluded 1988
Commissioning 1992

Process computer applications
Hardware DEC 1 x MicroVAX II
(8 MByte)
Software EAF/LHF
Basic application software
Process optimisation

Production
Total capacity 365,000 tpy
Electric steelworks
Tianjin Pipe Co., Tianjin City, PR China

1 x 150-t electric arc furnace
Type: 150-t EBT
Shell diameter: 7,000 mm
Max. melt-down rating: 100 MVA
Connecting voltage: 33 kV
Water-cooled sidewall panels and water-cooled roof

Process computer applications
Hardware: DEC, 1 x MicroVAX II (16 MByte)
Software: Basic application software
Production: Process optimisation

Total capacity: 610,000 tpy

1 x Dedusting plant
Bag filter capacity: 825,000 m³/h

Scope of supply and services
Engineering
Steelmaking and casting technology
Supply of main components
Training of customer’s personnel
Supervision of erection and commissioning

Agreement concluded: 1988
Commissioning: 1992

Handling and charging equipment for scrap/DRI/HBI

Liquid material transport equipment

Secondary metallurgical facilities
Ladle heating furnace
VD unit

1 x 4-strand bow-type continuous caster for rounds
Casting radii: 10.5 m, 13.5 m, 18.0 m, 30.5 m
Rounds: 210, 270, 310 mm dia.
Steel grades for pipes: 5 A, 5 AX, 5 AC, 5 L, 5 UX, (AP1)
Electric steelworks (executed in two phases)
Lloyds Steel Industries Ltd., Wardha, India

2 x 50-t electric arc furnace
Type 50-t EBT
Shell diameter 4,800 mm
Max. melt-down rating 40 MVA
Connecting voltage 33 kV
Water-cooled sidewall panels and roof

2 x 50-t ladle furnace
Transformer rating 10 MVA
Connecting voltage 33 kV

Liquid material transport facilities

Continuous caster
No. of strands 1
Type curved mould
Casting radius 8.0 m
Slabs 150/200 mm x 750/1,500 mm
Steel grades carbon steel, low-alloyed steel
DD and EDD steel grades

Production
Total capacity 450,000 tpy

Scope of supply and services
Engineering
Steelmaking and casting technology
Supply of main components
Training of customer’s personnel
Supervision of erection and commissioning

Agreement concluded 1988
Commissioning 1994
Electric steelworks
Sammi Steel Co. Ltd., Masan, Rep. Korea

1 x Scrap preheating unit
Type 2-chamber facility
Basket volume 70 m³

1 x 100-t electric arc furnace
Type 100-t EBT
Shell diameter 6,400 mm
Max. melt-down rating 80 MVA
Connecting voltage 30 kV
Water-cooled sidewall panels and water-cooled roof

1 x 100-t ladle furnace
Transformer rating 15 MVA
Connecting voltage 30 kV

Secondary metallurgical equipment
VD/VOD plant
Capacity 75/100 t

1 x Dedusting plant
Exhaust capacity 750,000 m³/h

Various auxiliary equipment
Production
Total capacity 500,000 tpy billets
Steel grades Carbon steel, low-alloy steel, spring steel, stainless steel, tool steel, bearing steel

Scope of supply and services
Engineering
Steelmaking technology
Supply of main and auxiliary components
Training of customer’s personnel
Erection and commissioning supervision

Agreement concluded 1988
Commissioning 1989

Process computer applications
Hardware DEC 2 x MicroVAX II
(16 MByte)
Software Basic application software
Process optimisation
Electric steelworks
POSCO – Pohang Iron and Steel Co. Ltd.,
Pohang City, Rep. Korea

1 x 90-t electric arc furnace
Type 90-t
Shell diameter 6,100 mm
Max. melt-down rating 70 MVA
Connecting voltage 22 kV
Water-cooled sidewall panels and water-cooled roof

1 x off-gas cooling and cleaning system for primary and secondary gas collection
Capacity 935,000 m³/h
Complete flux and ferro alloy storage, transport and feeding system · Cranes · Various auxiliary equipment

1 x twin-type argon stirring/slag skimming stand
Production
Total capacity 400,000 tpy
Steel grades Austenitic, ferritic, martensitic and heat resisting stainless steels

1 x 90/100-t UBD (KCB-S) converter
with side tuyeres for O₂, Ar, N₂, top oxygen lance equipment

Scope of supplies and services
Metallurgical technology/process know-how
Complete plant basic and detail engineering
Supply of main components
Training of customer’s personnel
Supervision of erection and commissioning

Agreement concluded 1987
Commissioning 1989
Electric steelworks
ESAC – Evergreen Superior Alloys Corp.,
Hsin Ying, Taiwan

1 x 25-t electric arc furnace
Type 25-t, spout
Shell diameter 3,800 mm
Max. melt-down rating 18 MVA
Connecting voltage 11.4 kV
Water-cooled sidewall panels and water-cooled roof

1 x Dedusting plant
Bag filter capacity 400,000 m³/h

Scrap and additions handling equipment

Secondary metallurgical equipment
Ladle furnace
VD plant
Capacity 25 t
Steel grades Carbon steel, low/medium/high-alloyed steel incl. tool steel

Production
Total capacity 60,000 tpy ingot casting in big end-up moulds

Scope of supply and services
Engineering
Supply of main components
Supervision of erection and commissioning

Agreement concluded 1988
Commissioning 1989
Electric steelworks for stainless steels
ALZ, N.V., Genk, Belgium

1 x 90-t electric arc furnace
Type 90-t EBT
Shell diameter 6,400 mm
Max. melt-down rating 96 MVA
Connecting voltage 150 kV
Water-cooled sidewall panels and water-cooled roof

1 x 100-t MRP-L converter
with
bottom tuyeres for O₂, Ar, N₂
top lance system for O₂

Secondary metallurgical equipment
VOD plant
Capacity 100 t

Dedusting unit for primary and secondary fume collection
Capacity 2 x 730,000 m³/h

Various auxiliary equipment

Production
Total capacity 500,000 tpy
Steel grades Stainless steel, high-chromium steel, ELC-steel

Scope of supply and services
Metallurgical technology
Engineering
Supply of main components
Erection and supervision of commissioning
Training of customer’s personnel
Agreement concluded 1986
Commissioning 1988
Electric steelworks
Sunflag Iron and Steel Co., Ltd., Nagpur, India

1 x 50-t electric arc furnace
- Type: 50-t EBT
- Shell diameter: 4,800 mm
- Max. melt-down rating: 40 MVA
- Connecting voltage: 33 kV
- Water-cooled sidewall panels and water-cooled roof

1 x 50-t ladle furnace

Material handling systems

1 x Dedusting plant
- Bag filter capacity: 114,000 m³/h

1 x 3-(4-)strand bow-type continuous caster for billets
- Casting radius: 6.0 m
- Casting sizes: 100 to 160 mm square

Bar and section mill
- Bars: 10 to 50 mm dia.
- Rebars: 10 to 40 mm dia.
- Flats: 30 mm x 100 mm x 5 to 20 mm
- Steel grades: Structural steel

Production
- Total capacity: 200,000 tpy

Scope of supply and services
- Engineering
- Supply of main components
- Training of customer’s personnel
- Supervision of erection and Commissioning

Agreement concluded: 1986
Commissioning: 1988
Further references
1985 - 1968

1985-1987 Siderca S.A.I.C.
Campana, Argentina
E-steelworks, 500,000 tpy C-steel rounds
80-t EAF, 2 x 80-t LF, 4-strand CCP

1984-1986 SZ Ácroni Jesenice d.o.o.
Jesenice, Slovenia
E-steelworks, 210,000 tpy Special steel
85-t EAF, VOD/TN, 1-strand CCP, slabs

1982-1984 Tamsa Tubos de Acero de Mexico S.A.
Veracruz, Mexico
E-steelworks, 425,000 tpy C-steel rounds
120-t EAF, 2 x 120-t EAF, 5-strand CCP

de Guanabara Cosigua) Rio de Janeiro, Brazil
E-steelworks, 1,000,000 tpy slabs
2 x 120-t EAF

Barra Mansa (SBM), Rio de Janeiro, Brazil
E-steelworks 360,000 tpy C-steel billets
2 x 50-t EAF, 4-strand CCP

1980-1982 Barlows Industrial Project Steel Comp. (BIPSCO)
Johannesburg, South Africa
Stainless steel plant 100,000 tpy
Stainless for castings 50-t EAF, 50-t AOD converter

1977-1979 Aceria de Santander (ACERIASA)
Nueva Montaña Quijano, Spain
E-steelworks 620,000 tpy C-steel billet
2 x 100-t EAF, 2 x 6-strand CCP

Bergamo, Italy
E-steelworks 300,000 tpy C-steel billets
2 x 60-t EAF, 2 x 4-strand CCP

1973-1975 Danish Steel Works Ltd. (formerly Det Danske
Stålvalsevaerk A/S)
Frederiksvaerk, Denmark
E-steelworks 500,000 tpy C-steel slabs/billets
2 x 100-t EAF, 1-strand CCP slabs,
6-strand CCP billets

1972-1974 Metaş, Izmir Metalurjı Fabricasi Türk AŞ
Izmir, Turkey
E-steelworks, 180,000 tpy C-steel billets
2 x 45-t EAF, 2 x 3-strand CCP

1972-1974 Halyvourgia Thessalias S.A.
Piràus, Greece
E-steelworks, 144,000 tpy C-steel billets
2 x 30-t EAF, 3-strand CCP

1972-1974 Lucchini S.p.A. (formerly Acciaieria e Ferriera
del Caleotto S.p.A.), Lecco, Italy
E-steelworks 75,000 tpy C-steel billets
35-t EAF, 3-strand CCP

1971-1975 Bihar Alloy Steel Ltd.
Bihar, India
E-steelworks 100,000 tpy special steel billets
2 x 30-t EAF, 2-strand CCP

1970-1971 F. Meyer, Stahl, - Draht- und Röhrenwerke
Dinslaken, Germany
E-steelworks 240,000 tpy C-steel billets
2 x 50-t EAF, 2 x 3-strand CCP

(formerly VEB Stahl- und Walzwerke Wilhelm Florin)
Henningsdorf, Germany
E-steelworks 300,000 tpy C-steel billets
2 x 55-t EAF, 2 x 4-strand CCP

1970-1975 Republic démocratique du Zaire
Maluku, Zaire
E-steelworks 140,000 tpy C-steel billets
50-t EAF, 4-strand CCP

1970-1971 Borsig GmbH / Walzwerk Becker AG
Berlin, Germany
E-steelworks 75,000 tpy C-steel billets
30-t EAF, 3-strand CCP

1969-1971 Krauss Maffei AG
Munich, Germany
E-steelworks 50,000 tpy special steel for castings
2 x 10-t EAF

1968-1970 Cia Siderurgica de Guadalajara S.A. de C.V.
Guadalajara, Mexico
E-steelworks 250,000 tpy C-steel billets
2 x 20-t EAF, 2-strand CCP,
60-t EAF, 3-strand CCP