

Questionnaire for Technical Information

To evaluate the benefits of eco-e tech (TORUS, ECOFEEDER, and remaining heat recuperation), we kindly ask you to fill-in the following questionnaire:

Steel plant: ...

Project: ...

Country: ...

Tel.: ...

Contact person: ...

e-mail: ...

a) General information:

Net working hours per year	[h/y]	7200
Daily prod. hours	[h/day]	24
Annual production:	[t/year]	800'000 T Liquid

b) Actual furnace set-up: DC AC

Tapping Weight	[t]	90
Furnace capacity (diff = heel)	[t]	120
Transformer capacity	[MVA]	100
Average active power input	[MW]	57
Electrode diam.	[mm]	600
Charging Material		
- Scrap	[%]	100
- DRI / HBI	[%]	
- Hot Metal	[%]	
'Mise au mille'	[-]	1100
Scrap Density (min / max)	[t/m ³]	0.75
Scrap preheating installed	Y/N	<input type="checkbox"/> Yes / <input checked="" type="checkbox"/> No
If yes, which one:		<input type="checkbox"/> Basket preheating <input type="checkbox"/> Shaft (Fuchs, Quantum, ShARC) <input type="checkbox"/> Conti charging (Consteel, ECS) <input type="checkbox"/> ...
Scrap basket volume	m ³	100
Max. lifting height of scrap b.	m	11.600
Number of baskets	[#]	2 (2.5)
Dust	[kg/t]	17
FeO in dust	[%]	20
Slag builder (CaO ...%, MgO ...%,%)	[kg/t] [kg/t] [kg/t]	80 20
Slag	[kg/t]	100
FeO in slag	[%]	27
Tap to Tap time – average	[min]	50
Power On time	[min]	39
Tapping temperature range	[°C]	1625
Target %C @ tapping range	[%]	0.1
Furnace diameter	[m]	6.4
Upper shell height	[m]	2.000
Tilting system		<input checked="" type="checkbox"/> cradle <input type="checkbox"/> circular <input checked="" type="checkbox"/> hydraulic
Housing		<input checked="" type="checkbox"/> Doghouse / <input type="checkbox"/> Elephant house / <input type="checkbox"/> open

c) Target set-up:

Target production	[t/y]	900'000		
Scrap preheating	Yes, which ECOFEEDER		<input type="checkbox"/> No	
DRI continuous supply	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
With DRI preheating	Yes, ... °C		<input checked="" type="checkbox"/> No	
RMH*) autonomy	[days]	DRI 40	SB 45	AM 60
DRI bin	<input checked="" type="checkbox"/> Stand alone		<input type="checkbox"/> Part of RMH*)	

*) Raw material handling (DRI / Slag builder (SB) / Alloy material)

d) Consumption:

	Unit	Av. consumption	Best value
Electrical Energy	[kWh/t _{LS}]	500	480
Oxygen	[Nm ³ /t _{LS}]	28	23
Electrodes	[kg/t _{LS}]	1.8	1.65
Fuel: NG (CH ₄)	[Nm ³ /t _{LS}]	0	
LPG	[Nm ³ /t _{LS}]	-	
Bulk carbon (>20mm)	[kg/t _{LS}]	2.5	
Coarse carbon (<20mm)	[kg/t _{LS}]	0	
Injected carbon (0-3mm)	[kg/t _{LS}]	8	
Scrap	[t/t _{LS}]	1100	
DRI / HBI	[t/t _{LS}]	0	
Pig iron	[t/t _{LS}]	0.2	
Hot metal	[t/t _{LS}]	0	

e) Secondary metallurgy:

LF:		
Heating rate	[K/min]	4.5
<input checked="" type="checkbox"/> VD/ <input type="checkbox"/> VOD: (kindly tick)		<input type="checkbox"/> Single tank / <input checked="" type="checkbox"/> double tank
Treatment time	[min]	
Vacuum production → RH		<input type="checkbox"/> Mech. pumps / <input checked="" type="checkbox"/> Steam
CCM:		
Average casting time	[min]	64
Section range	[mm/mm]	120x120 – 200-200

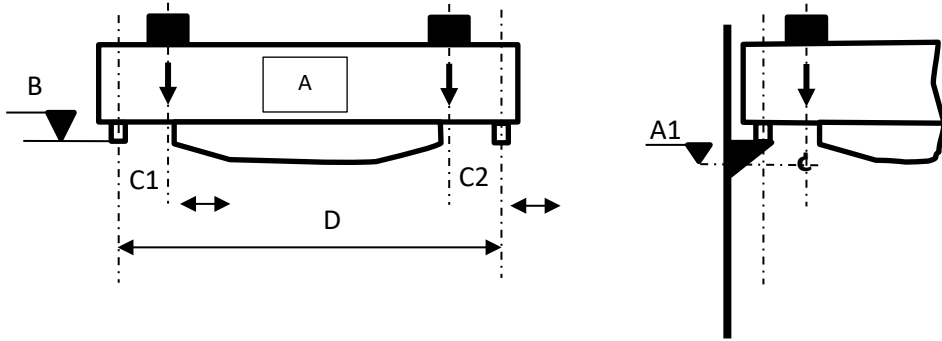
f) Dedusting System:

Primary		
Flow (approx.) @ 100 °C	[m ³ /h]	250'000
Power (booster fan)	[kW]	600
Suction pressure (max.)	[mmWC]	600@100°C
Secondary:		
Flow (approx.) @ 60 °C	[m ³ /h]	1'500'000
Filter house		
Number of filter bags / cell		5760
Number of cells		40
Bag length / active surface	[m]/[m ²]	5.800/2.92
Pressure loss	[Pa]	50
Off-gas suction		
Power / fan	[kW]	1250
Number of fans		3

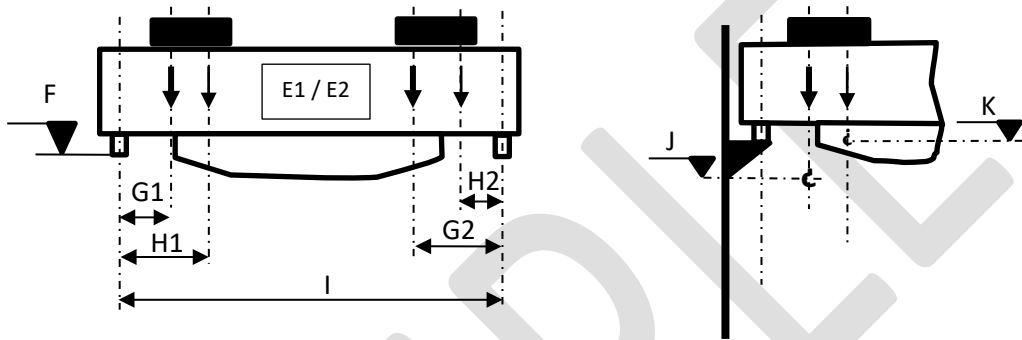
g) Auxiliary:

Cranes:		
Scrap yard:		
Number of scrap yards		3
Number of OHC / scrap yard		2
Speed (length (x)/cross (y)/lifting (z))	[m/min]	100/30/18
Lifting capacity (A)	[t]	15/10
Max. lifting height (A1)	[m]	
Rail height (B)	[m]	
Approach left / right (C1/C2)	[m]	/
Span between rails (D)	[m]	
Grab size / el. magnet (tick if avail.)	[m ³]	/ <input type="checkbox"/>
Turnaround time	[sec]	
Furnace bay (scrap charging)		
Speed (length (x)/cross (y)/lifting (z))	[m/min]	45/30/8(main)10(aux)
Capacity main hook (E1)	[t]	100
Capacity aux hook (E2)	[t]	25
Number of cranes		1
Rail height (above ground) (F)	[m]	22
Left approach main hook (G1)	[m]	4.2
Right approach main hook (G2)	[m]	2
Left approach aux hook (H1)	[m]	2
Right approach aux hook (H2)	[m]	4.2
Span between rails (I)	[m]	18.75
Max lifting height (main hook) (J)	[m]	20
Max lifting height (aux hook) (K)	[m]	22
Tapping/casting bay (liquid)		
Speed (length (x)/cross (y)/lifting (z))	[m/min]	80/40/7(main)10(aux)
Capacity main hook (L1)	[t]	150
Capacity aux hook (L2)	[t]	40
Number of cranes		1
Rail height (above ground) (M)	[m]	22
Left approach main hook (N1)	[m]	4
Right approach main hook (N2)	[m]	1.8
Left approach aux hook (O1)	[m]	1.8
Right approach aux hook (O2)	[m]	14
Span between rails (P)	[m]	18.75
Max lifting height (main hook) (Q)	[m]	17.6
Max lifting height (aux hook) (R)	[m]	21

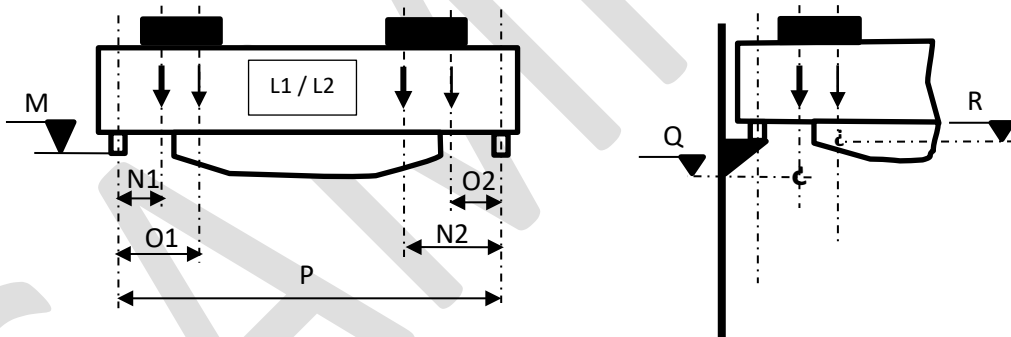
Scrap yard crane



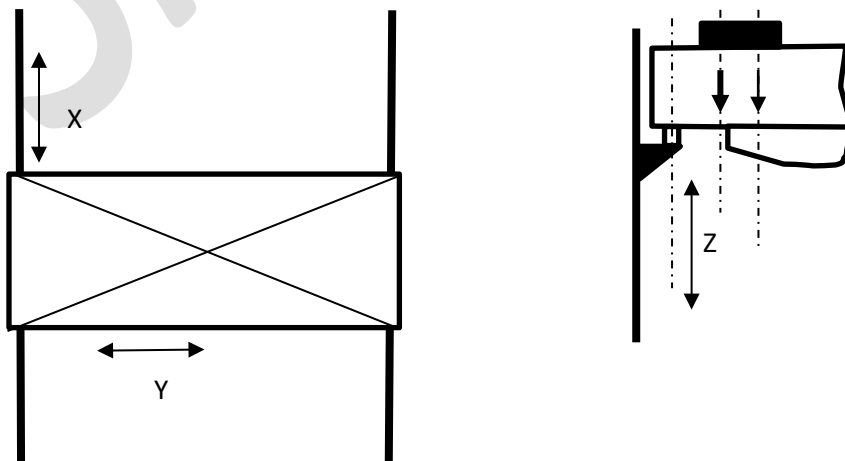
Charging cranes



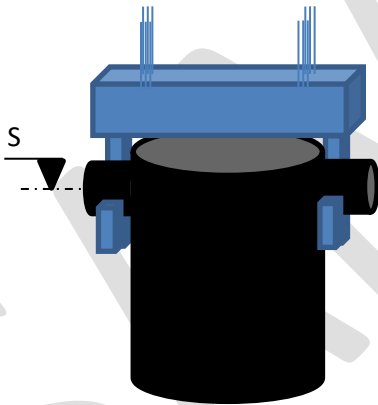
Tapping / casting cranes



Directions



Bays:		
Scrap yard (width/length)	[m]x[m]	60x16/144x26/168x26
Furnace bay (width/length)	[m]x[m]	120x20.5
Height of hook-on at transfer car (S)	[m]	3.000
Height of furnace platform	[m]	5.900
Height furnace rim (upper shell)	[m]	9.500
Tapping/casting bay	[m]x[m]	117x20.5
Transport of ladle from EAF → LF by:		<input checked="" type="checkbox"/> ladle car <input checked="" type="checkbox"/> by OHC
Height of hook-on at ladle car (S)	[m]	3.000
Height of ladle furnace platform	[m]	4.5
Transport of ladle from LF → VD/CCM by:		<input type="checkbox"/> ladle car <input checked="" type="checkbox"/> by OHC
Height of vacuum station platform	[m]	5.0
Height of hook-on at vacuum tank (S)	[m]	4.85
Height of hook-on on turret at CCM (S)	[m]	16.500
Transfer car:		
Speed	[m/min]	20
Travelling distance	[m]	15
Ladle car:		
Speed	[m/min]	20
Travelling distance	[m]	12



Required drawings: Plant layout (.dwg or similar)
 Section view (EAF, RMH, steel structure,
 Layout of RMH (.dwg or similar)
 Scrap basket (.dwg or similar)

Thank you very much.
 Please send the filled-in form to rvm@eco-eag.com