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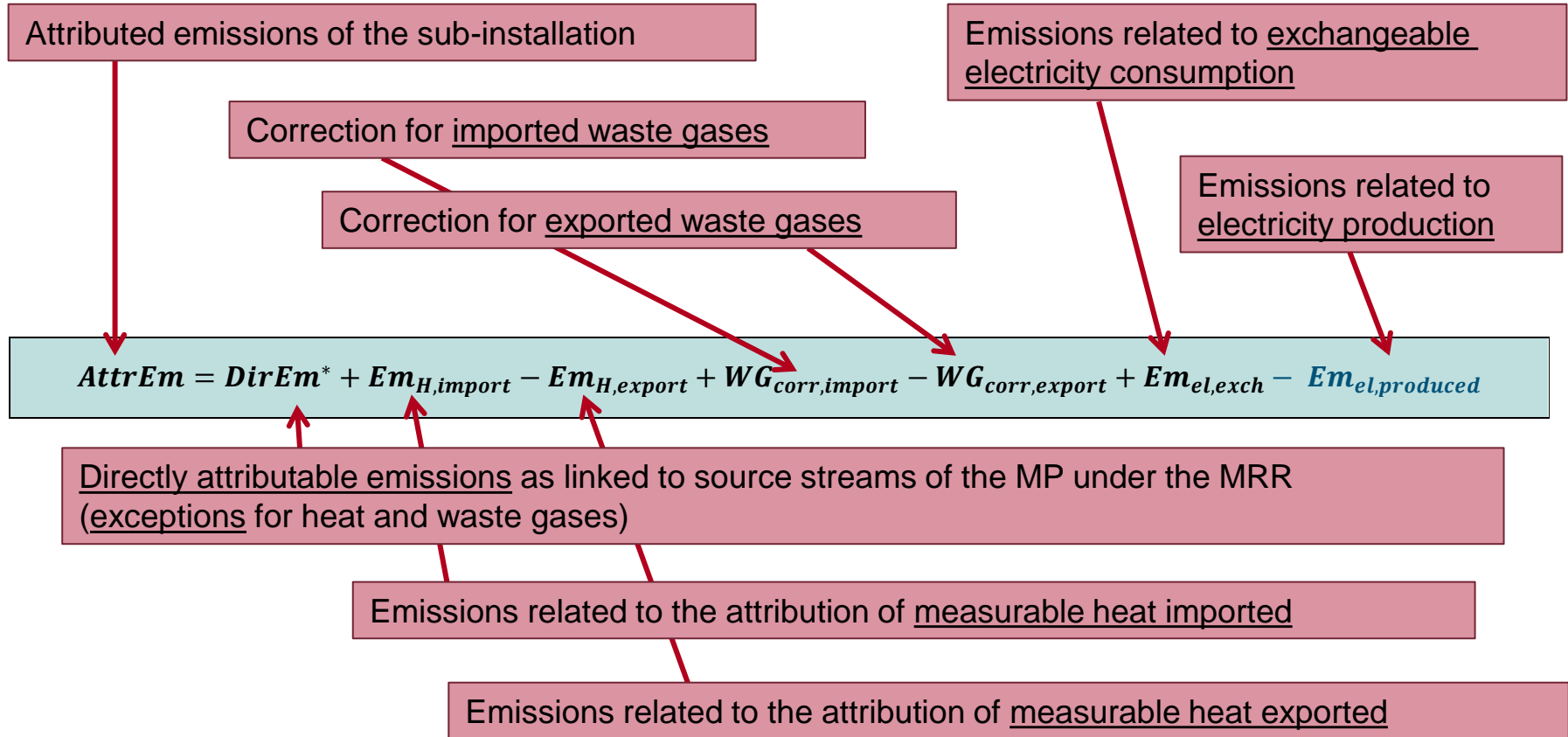
EU ETS - Free Allocation Rules post 2020

WORKSHOPS FOR COMPETENT AUTHORITIES



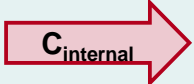



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BM Update – Attributed emissions



Examples – colour codes

Arrow type	Description
	Green arrows are used for source streams found in the MP under the MRR (“MP source streams”).
	Grey arrows are used for fuels which are combusted outside the system boundaries of the installation, i.e. not covered by the MP under the MRR.
	Light red arrows are used for “internal source streams” which are not covered by the MP (e.g. because a mass balance is applied over the whole installation).
	Dark blue arrows are used for measurable heat flows.
	Blue arrows are used for products, e.g. product BM products.
	Red arrows are used for electricity flows.

Link to templates

Notes required for the determination of the benchmark improvement rate personal to Article 90(2) of the Sub-installation with product benchmark:

[More information on the calculation can be found in section 6.10.4.2 of the](#)

14) Directly attributable emissions [DirEm*] (MPP source streams) in this sub-installation

14.1 Directly attributable

14.2 Fuel input in this sub-installation and relevant emissions [DirEm*]

14.3 Further internal source streams impacted in an upstream sub-installation

14.4 Name of further source streams - 9:

14.5 Name of further source streams - 8:

14.6 Name of further source streams - 7:

14.7 Name of further source streams - 6:

14.8 Name of further source streams - 5:

14.9 Name of further source streams - 4:

14.10 Name of further source streams - 3:

14.11 Name of further source streams - 2:

14.12 Name of further source streams - 1:

15) Annual of CO₂ imported as reported as feedstock

16) Residual heat input to and output from this sub-installation

16.1 Total heat input

16.2 Specific heat input

16.3 Heat input from pulp

16.4 Heat input from nitric acid

16.5 Total heat output

16.6 Heat output

16.7 Specific heat output

17) Waste gas balance for this sub-installation

17.1 Are waste gases reported for this sub-installation?

17.2 Type of waste gases produced:

17.3 Type of waste gases consumed:

17.4 Type of waste gases flared:

17.5 Total amount of pulp produced

18) Total amount of pulp produced

19) Impact on output of intermediate products covered by product benchmark

19.1 Reported amount:

19.2 Reported amount:

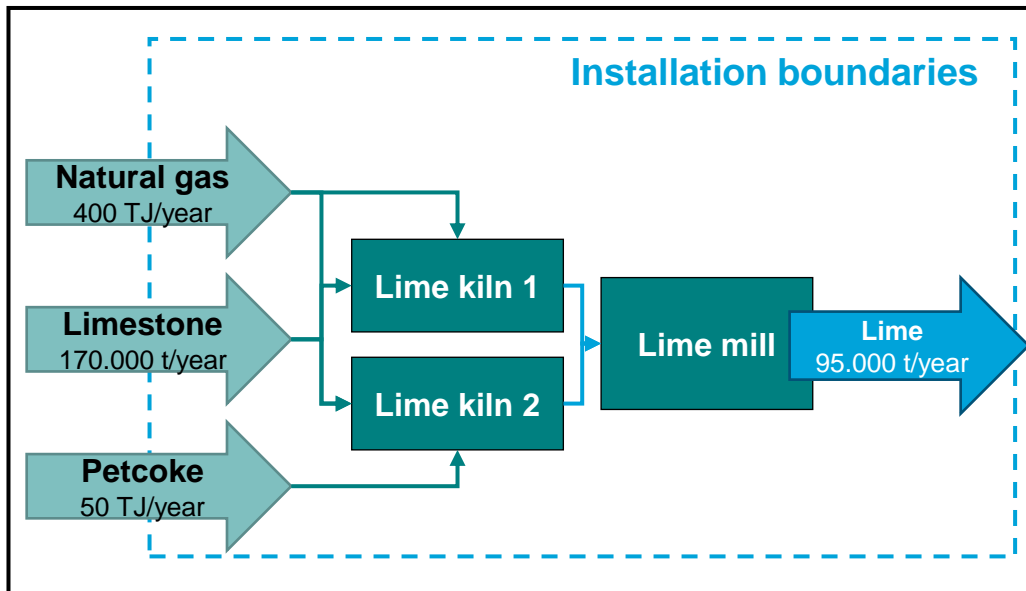
19.3 Reported amount:

19.4 Reported amount:

Attributed emissions	Relevant section in the baseline data collection template		Relevant section in the MMP Template		Relevant examples in this section
	Product BM	Fallback BM	Product BM	Fallback BM	
<i>DirEm* (MP source streams)</i>	F.g	G.c	F.e.i	G.c	All
<i>DirEm* (Internal source streams)</i>	F.i	-	F.e.ii	-	WG-1
<i>DirEm* (CO₂ feedstock)</i>	F.j	-	F.e.iii	-	-
<i>Em_{H,import}</i>	F.k	G.1.f	F.g	G.1.f	MH(all), WG-3, Elec-2
<i>Em_{H,export}</i>	F.k	G.4.e	F.g	G.4.e	MH(all)
<i>WG_{corr,import}</i>	F.l	G.4.d	F.h	G.4.d	WG(all)
<i>WG_{corr,export}</i>	F.l	-	F.h	-	WG(all)
<i>Em_{el,exch}</i>	F.c	-	F.c	-	Elec-1
<i>Em_{el,prod}</i>	F.m	-	F.c	-	Elec-2
<i>Parameter: Fuel input</i>	F.h	G.d	F.f	G.d	All
<i>Parameter: Fuel input from waste gases (WG)</i>	F.k	G.1.f	F.g	G.1.f	MH(all), WG-3, Elec-2
<i>Parameter: Heat produced</i>	-	G.4.e	-	G.4.e	MH(all)
<i>Parameter: Heat from pulp</i>	F.k	G.1.f	F.g	G.1.f	MH(all), WG-3, Elec-2
<i>Parameter: Heat from nitric acid</i>	F.k	G.1.f	F.g	G.1.f	MH(all), WG-3, Elec-2
<i>Parameter: Waste gases produced</i>	F.l	G.4.d	F.h	G.4.d	WG(all)
<i>Parameter: Waste gases consumed</i>	F.k	G.4.d	F.h	G.4.d	WG(all)
<i>Parameter: Waste gases flared</i>	F.l	-	F.h	-	WG(all)
<i>Parameter: Total pulp produced</i>	F.n	-	-	-	-
<i>Parameter: Intermediate products</i>	F.o	-	F.a	-	-

No direct impact on attributed emissions (consistency checks, etc.)

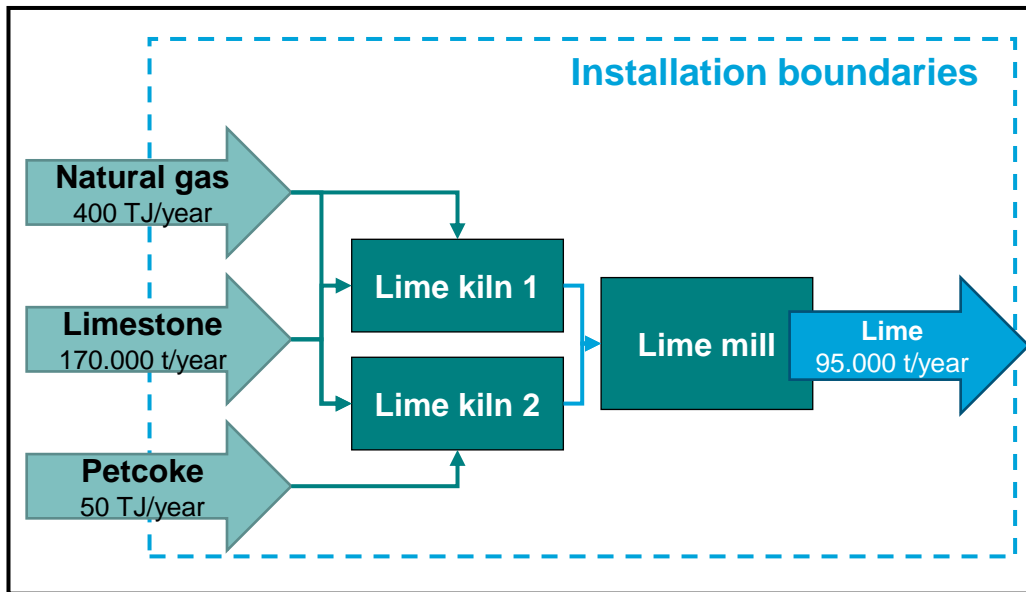
Case study 1



EF Natural gas	56 t CO ₂ /TJ
EF Petcoke EF	96 t CO ₂ /TJ
EF Limestone	0.44 t CO ₂ /t

Parameter	Value
<i>Activity level (HAL)</i>	
<i>DirEm* (MP source streams)</i>	
<i>DirEm* (Internal source streams)</i>	
<i>DirEm* (CO₂ feedstock)</i>	
<i>Em_{H,import}</i>	
<i>Em_{H,export}</i>	
<i>WG_{corr,import}</i>	
<i>WG_{corr,export}</i>	
<i>Em_{el,exch}</i>	
<i>Em_{el,prod}</i>	
<i>Parameter: Fuel input</i>	
<i>Parameter: Fuel input from WG</i>	
<i>Parameter: Heat produced</i>	
<i>Parameter: Heat from pulp</i>	
<i>Parameter: Heat from nitric acid</i>	
<i>Parameter: Waste gases produced</i>	
<i>Parameter: Waste gases consumed</i>	
<i>Parameter: Waste gases flared</i>	
<i>Parameter: Total pulp produced</i>	
<i>Parameter: Intermediate products</i>	

Case study 1

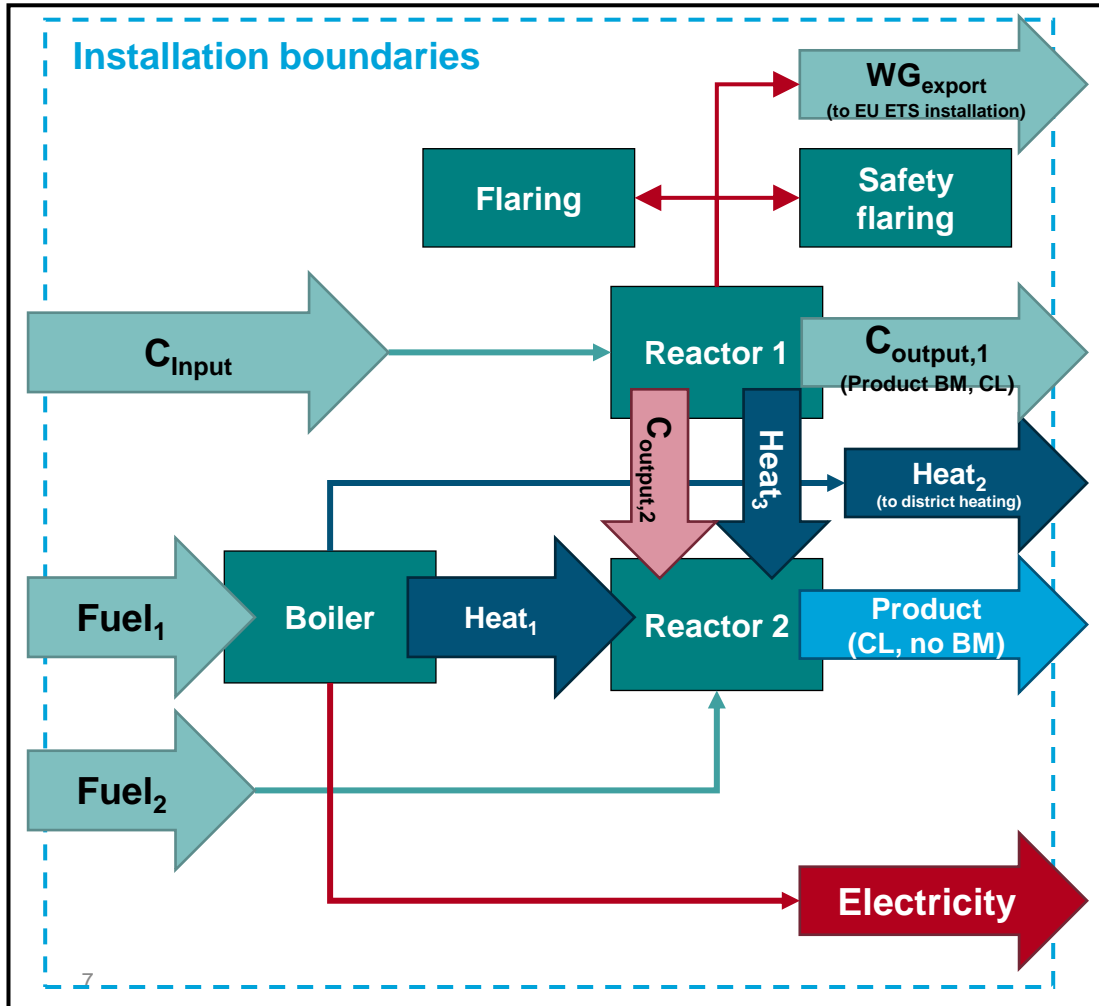


EF Natural gas	56 t CO ₂ /TJ
EF Petcoke	96 t CO ₂ /TJ
EF Limestone	0.44 t CO ₂ /t

Parameter	Value
Activity level (HAL)	95.000 t
DirEm* (MP source streams)	102.000 t CO ₂
DirEm* (Internal source streams)	
DirEm* (CO₂ feedstock)	
Em_{H,import}	
Em_{H,export}	
WG_{corr,import}	
WG_{corr,export}	
Em_{el,exch}	
Em_{el,prod}	
Parameter: Fuel input	450 TJ
Parameter: Fuel input from WG	
Parameter: Heat produced	
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	
Parameter: Waste gases consumed	
Parameter: Waste gases flared	
Parameter: Total pulp produced	
Parameter: Intermediate products	

Case study 2

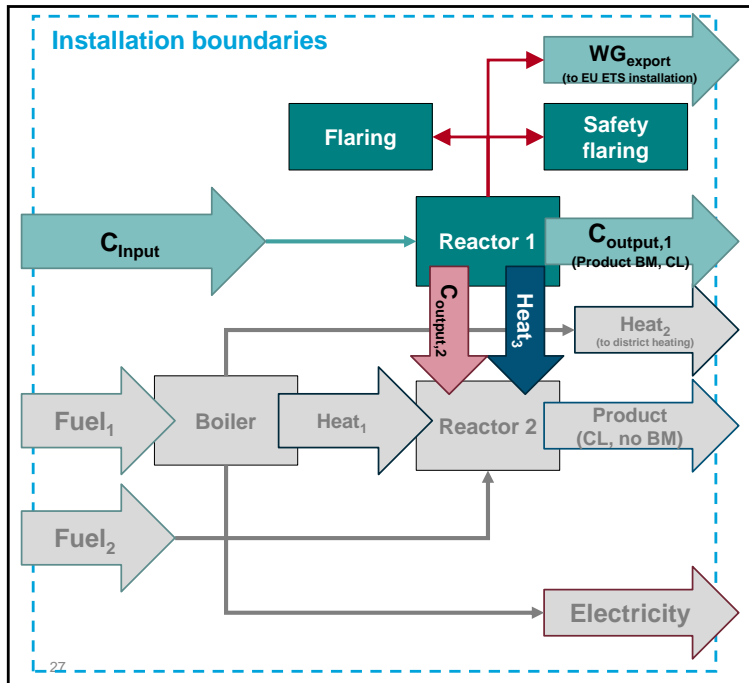
- Identify for all sub-installations:



Parameter	Value
<i>Activity level (HAL)</i>	
<i>DirEm* (MP source streams)</i>	
<i>DirEm* (Internal source streams)</i>	
<i>DirEm* (CO₂ feedstock)</i>	
$Em_{H,import}$	
$Em_{H,export}$	
$WG_{corr,import}$	
$WG_{corr,export}$	
$Em_{el,exch}$	
$Em_{el,prod}$	
Parameter: Fuel input	
Parameter: Fuel input from WG	
Parameter: Heat produced	
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	
Parameter: Waste gases consumed	
Parameter: Waste gases flared	
Parameter: Total pulp produced	
Parameter: Intermediate products	

Case study 2 – solution (1)

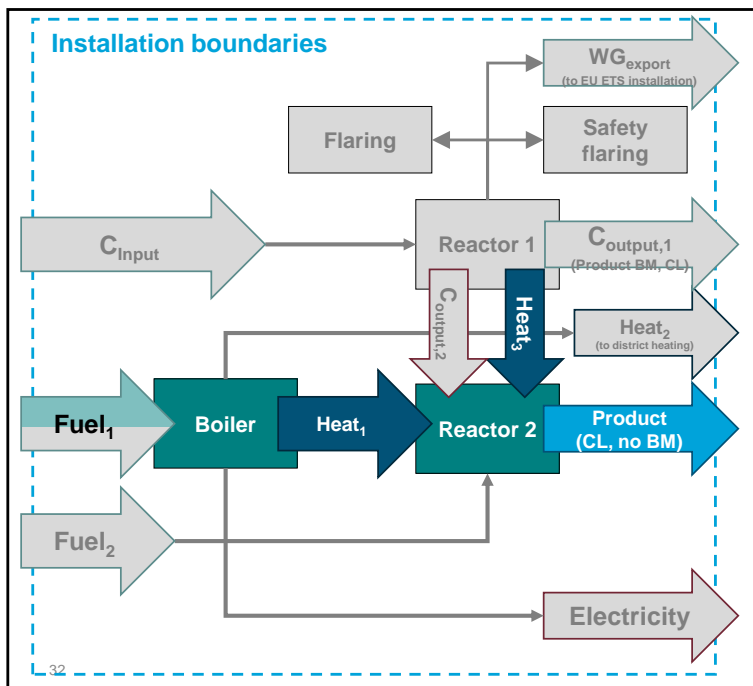
• Sub-installation 1: Product BM



Parameter	Value
Activity level (HAL)	$AL(C_{output,1})$
DirEm* (MP source streams)	$3.664 \times (C_{input} - C_{output,1}) [t CO_2e]$
DirEm* (Internal source streams)	$- 3.664 \times C_{output,2} [t CO_2e]$
DirEm* (CO₂ feedstock)	
Em_{H,import}	
Em_{H,export}	$- Heat_3 [TJ] \times BM_{Heat}$
WG_{corr,import}	
WG_{corr,export}	$- WG_{export} [TJ] \times EF_{NG} \times CorrF$
Em_{el,exch}	
Em_{el,prod}	
Parameter: Fuel input	$Fuel(C_{input}) [TJ]$
Parameter: Fuel input from WG	
Parameter: Heat produced	
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	$WG(\text{export} + \text{flaring} + \text{safety flaring}) [TJ]$
Parameter: Waste gases consumed	$WG(\text{safety flaring}) [TJ]$
Parameter: Waste gases flared	$WG(\text{Flaring}) [TJ]$
Parameter: Total pulp produced	
Parameter: Intermediate products	

Case study 2 – solution (2)

- Sub-installation 2: Heat BM, CL



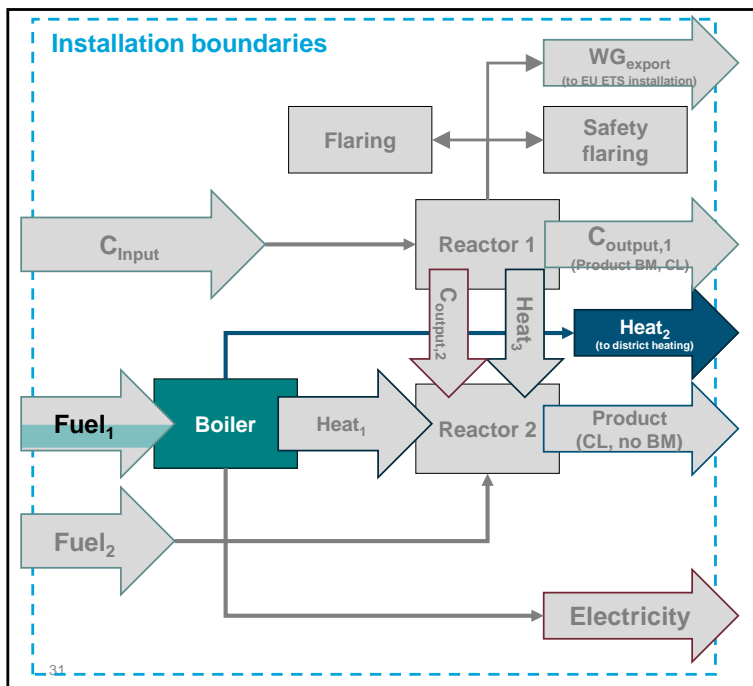
Parameter	Value
Activity level (HAL)	$\text{Heat}_1 + \text{Heat}_3$ [TJ]
DirEm* (MP source streams)	0
DirEm* (Internal source streams)	
DirEm* (CO₂ feedstock)	
Em_{H,import}	$+ \text{Heat}_1$ [TJ] x EF _{Heat} + Heat_3 [TJ] x BM _{Heat}
Em_{H,export}	
WG_{corr,import}	
WG_{corr,export}	
Em_{el,exch}	
Em_{el,prod}	
Parameter: Fuel input	0
Parameter: Fuel input from WG	
Parameter: Heat produced	$+ \text{Heat}_1 + \text{Heat}_3$ [TJ]
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	
Parameter: Waste gases consumed	
Parameter: Waste gases flared	
Parameter: Total pulp produced	
Parameter: Intermediate products	

Determined via "CHP Tool"



Case study 2 – solution (3)

• Sub-installation 3: District heating



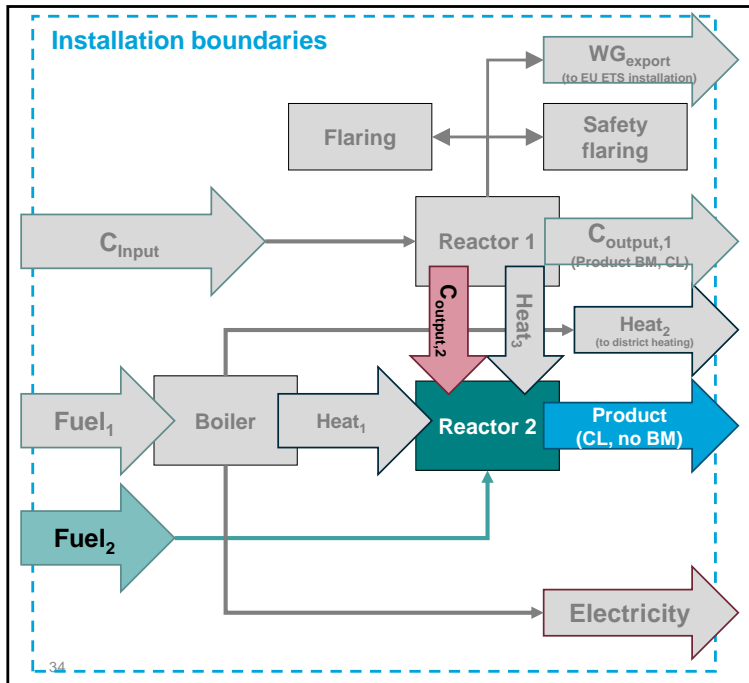
Parameter	Value
Activity level (HAL)	Heat ₂ [TJ]
DirEm* (MP source streams)	0
DirEm* (Internal source streams)	
DirEm* (CO₂ feedstock)	
Em_{H,import}	+ Heat ₂ [TJ] x EF _{Heat}
Em_{H,export}	
WG_{corr,import}	
WG_{corr,export}	
Em_{el,exch}	
Em_{el,prod}	
Parameter: Fuel input	0
Parameter: Fuel input from WG	
Parameter: Heat produced	Heat ₂ [TJ]
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	
Parameter: Waste gases consumed	
Parameter: Waste gases flared	
Parameter: Total pulp produced	
Parameter: Intermediate products	

Determined via "CHP Tool"



Case study 2 – solution (4)

- Sub-installation 4: Fuel BM, CL



Parameter	Value
Activity level (HAL)	Fuel ₂ + Fuel(C _{output,2}) [TJ]
DirEm* (MP source streams)	Fuel ₂ x EF ₂ [t CO ₂ e]
DirEm* (Internal source streams)	+ 3.664 x C _{output,2} [t CO ₂ e]
DirEm* (CO₂ feedstock)	
Em_{H,import}	
Em_{H,export}	
WG_{corr,import}	
WG_{corr,export}	
Em_{el,exch}	
Em_{el,prod}	
Parameter: Fuel input	Fuel ₂ + Fuel(C _{output,2}) [TJ]
Parameter: Fuel input from WG	
Parameter: Heat produced	
Parameter: Heat from pulp	
Parameter: Heat from nitric acid	
Parameter: Waste gases produced	
Parameter: Waste gases consumed	
Parameter: Waste gases flared	
Parameter: Total pulp produced	
Parameter: Intermediate products	

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