ENVIRONMENTAL PRODUCT DECLARATION

FOR MERCHANT BARS PRODUCTION AT GERLAFINGEN (SWITZERLAND), TRITH SAINT LÉGER (FRANCE) AND VICENZA (ITALY) PLANTS.

GRUPPO BELTRAME

Laminés Marchands Européens

Stahl Gerlafingen

EPD®

Based on PCR Construction	Revision	Certification N°:	Valid until:
products and CPC 54 construction services (2012:01, Version 2.0)	2 - 2015, June 25	S-P-00252	2017, February 26

1. THE COMPANY

The AFV Beltrame Group has operated in the steel industry for over a century, producing rolled sections for use in construction, shipyards, and excavators. The facilities, which have a production capacity of approximately 3,2 million tons, include four electric furnaces and ten rolling mills. These are scattered in seven plants located in Italy, France, Switzerland, and Romania. Their geographical distribution is very advantageous given the areas where the products are consumed and those where raw materials are purchased.

The AFV Beltrame Group is commercially present in all European markets as well as in the Mediterranean region through shares in local companies, agents, or the internal sales force. All employees, amounting to approximately 2,600 people, are strongly committed and motivated to satisfy the customers' needs through constant improvements in production, organization and level of service.

In order to support the principles in the code of ethics and the policy regarding Quality, Health and Safety, and the Environment (QHSE), all production plants have adopted an Integrated Management System according to the following scheme:

2. THE PRODUCT

This EPD refers to construction products hot rolled structural profiles and merchant bars produced at Gerlafingen (Switzerland), Trith Saint Léger (France) and Vicenza (Italy) plants, with electric arc furnace route, starting from post and pre consumer steel scraps, having the following characteristics.

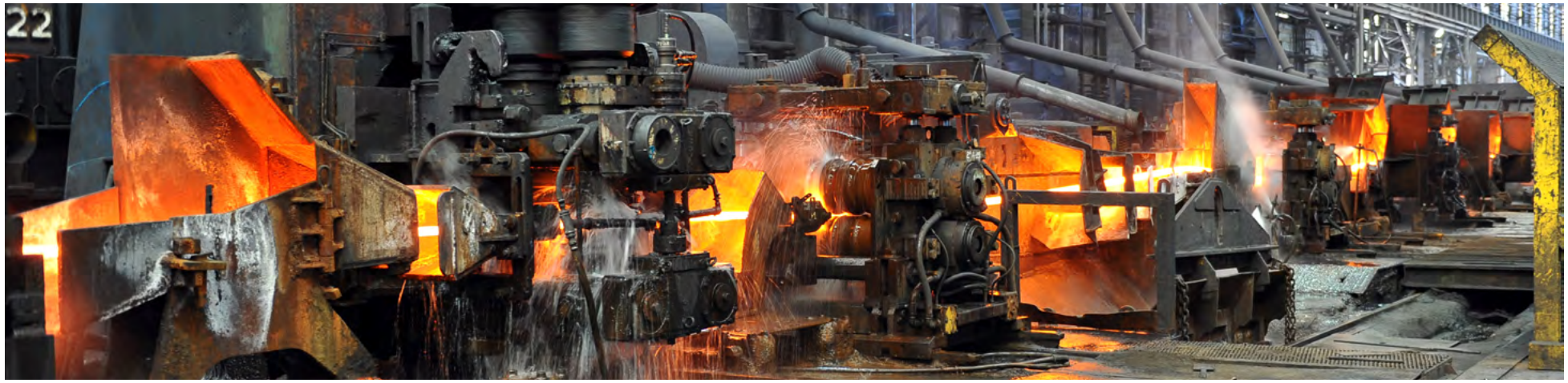
Steel grades (strength level) :
S235 to S355
Product dimensions and specific standards:
EN 10025-1:2004, EN 10025-2:2004 and EN 10025-5:2004
EN ISO 9001:2008, OHSAS 18001:2007, EN ISO 14001:2004
Attestation of conformity system 2+ for CE marking

PRODUCT	STANDARD	DIMENSIONS (mm)		THICKNESS (mm)	
		from	to	from	to
I sections	EN 10034:1993	80	160	5,2	7,4
Tees	EN 10055:1995	30	50	3	7
Angles	EN 10055:1995 EN 10056-2:1993	20	160	3	16
Angles sharp edges	DIN 1022:2004	20	100	3	11
Flats	EN 10058:2003	14	150	3	30
Wide flats	DIN 59200:2001	151	250	6	30
Squares	EN 10059:2003	-	-	10	30
Rounds	EN 10060:2003	-	-	10	30
U channels	EN 10279:2000	30	160	4	7,5

Declaration of Content

The product here considered has the following composition (according to standards into force in final destination countries) :

COMPONENT	TRITH SAINT LÉGER	VICENZA	GERLAFINGEN
Iron	> 96%	> 96%	> 96%
ALLOY ELEMENTS	2% approx	2% approx	2% approx
Other elements	Up to 100%	Up to 100%	Up to 100%



3. ENVIRONMENTAL PERFORMANCE

Methodology

The environmental burden of the product has been calculated according to the general rules of the EPD (Environmental Product Declaration) International Programme and the PCR 2012:01 Version 2.0 Construction Products and CPC 54 Construction Services (Cradle to gate with options).
This declaration is based on the application of Life Cycle Assessment (LCA) methodology to the whole life-cycle system.
Merchant bars at plant level, was described by using specific data from manufacturing facilities (Gerlafingen - Switzerland, Thrith Saint Léger - France and Vicenza - Italy) for year 2013.
Customized LCA questionnaires were used to gather in-depth information about all aspects of the production system (for example, raw materials specifications, pre treatments, process efficiencies, air emissions, waste management), ultimately providing a complete picture of the environmental burden of the system from raw materials supply (A1) to Transport (A2) and Manufacturing (A3).
The use phase and end of life were not considered according to PCR, while transport to final destination was considered (A4).

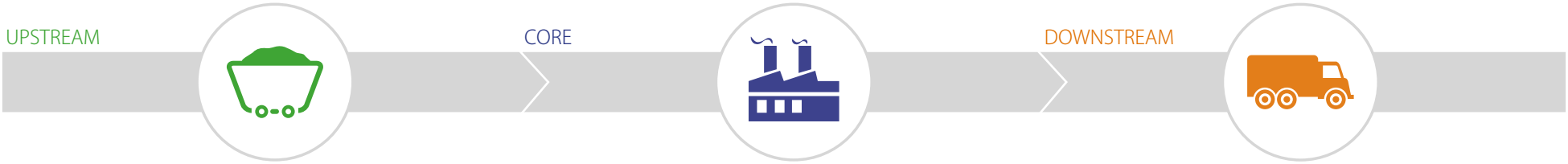
[1]The International EPD® System is managed by the International EPD Consortium - IEC (www.environdec.com)

[2]The LCA methodology is standardized at international level by ISO 14040 and ISO 14044.

Declared Unit

Bars are usually traded in mass so that the declared unit is
1 ton of merchant bars.

4. SYSTEM BOUNDARIES



The system boundaries considered in this analysis (see Figure 1) are according to the PCR then in accordance with EN 15804:

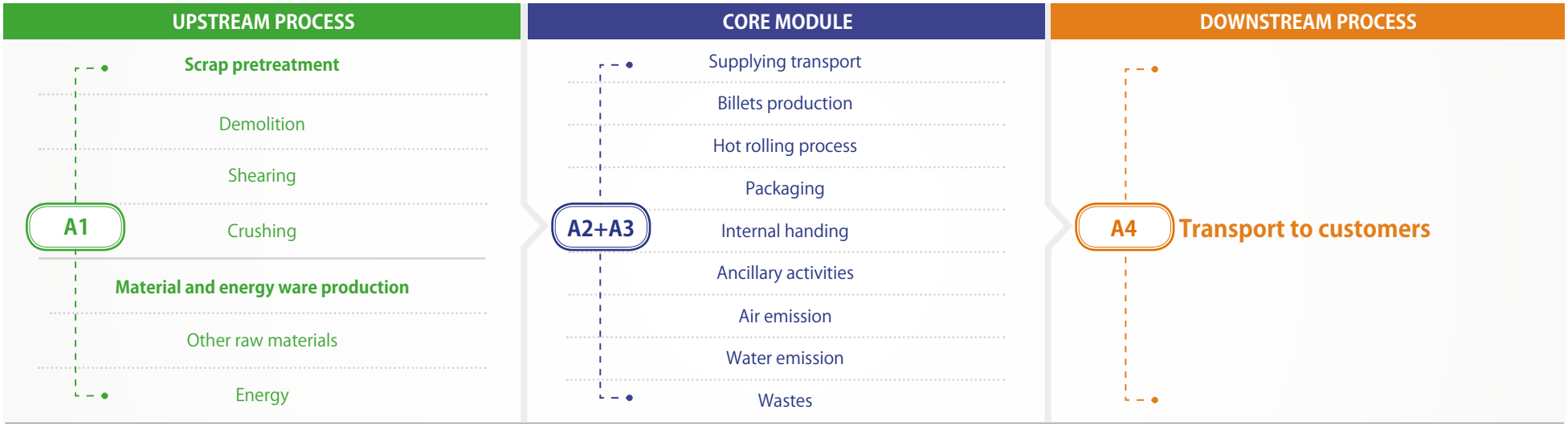


Figure 1. Scheme of the considered system boundaries (including upstream, core and downstream main processes).

5. UPSTREAM PROCESS

Pre and post consumer steel scrap collection.

Production of virgin materials, alloy elements and ancillaries.

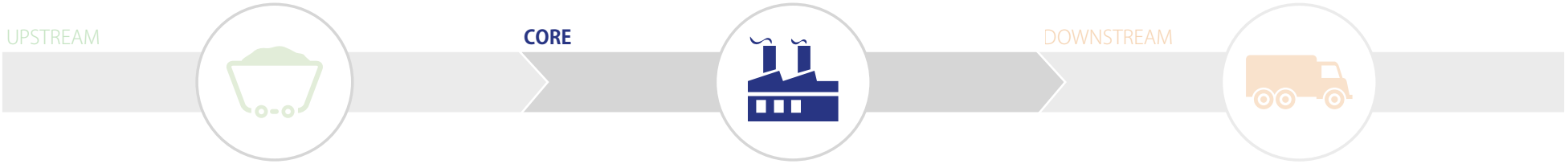
A1 - Raw Materials Supply

Scheme of the considered system boundaries (upstream processes).

Specific secondary materials pre-treatments, where appropriate.

Generation of electricity and other fuels from primary and from secondary energy resources (excluding waste treatments).

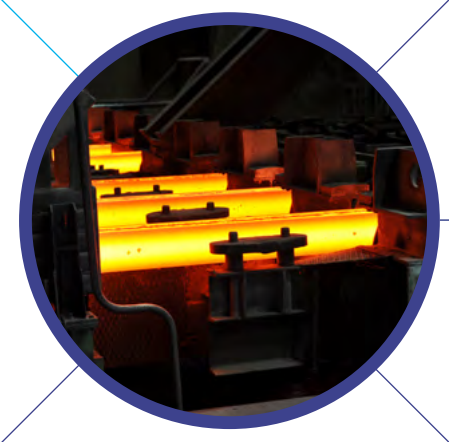
6. CORE PROCESS



A2 - Transportation

Raw materials transportation from production or collection facilities to the production plant and internal transportation.

Rolling mill, production, including utilities.



Scheme of the considered system boundaries (core processes).

Packaging materials.

Steel mill production, including utilities.

Treatment of waste generated from the manufacturing processes.

A3 - Manufacturing

7. DOWNSTREAM PROCESS

Transport to customers (general market average).

In the whole LCA model, infrastructures and production equipments are not taken into account

A4 - Distribution

France, Trith Saint Leger, four main delivery areas: *France, Germany, Belgium, Netherlands*

Italy, Vicenza, four main delivery areas: *Italy, Germany, Algeria, France.*

Switzerland, Gerlafingen, main delivery area: Europe.

8. ENVIRONMENTAL PERFORMANCE

Gerlafingen, Trith and Vicenza's data have been elaborated to generate single results that represent a weighted average of the three plants. The weight of every plant is given according to their production

	GERLAFINGEN 	TRITH 	VICENZA 	TOTAL
PRODUCTION [t]	**98.430***	**512.185**	**690.370**	**1.304.199**
SHARING	**8%**	**39%**	**53%**	**100%**

** The total production of the plant is 622.107 t of which, 98.430 t of merchant bars and 523.677 t of merchant rods. Merchant rods are not included in the scope of this EPD*

The detailed environmental performance (in terms of use of resources, pollutant emissions and waste generation) is presented for the three phases, Upstream, Core and Downstream and related sub-phases (A1-A2-A3-A4).

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RENEWABLE RESOURCES [MJ]	UPSTREAM	CORE		DOWNSTREAM	TOTAL
	Raw materials supply	Transportation	Manufacturing	Distribution	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	569,0	0,6	87,3	1,8	**658,7**
Use of renewable primary energy resources used as raw materials	-	-	-	-	**-**
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	**569,0**	**0,6**	**87,3**	**1,8**	**658,7**

Countries electricity mix according to Ecoinvent 2.2.

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NON RENEWABLE RESOURCES [MJ]	UPSTREAM	CORE		DOWNSTREAM	TOTAL
	Raw materials supply	Transportation	Manufacturing	Distribution	
Use of non-renewable primary energy excluding renewable primary energy resources used as raw materials	9.436,3	449,9	933,8	731,4	**11.551,4**
Use of non-renewable primary energy resources used as raw materials	469,2	-	288,4	-	**757,5**
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	**9.905,5**	**449,9**	**1.222,1**	**731,4**	**12.308,9**

Countries electricity mix according to Ecoinvent 2.2.

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USE OF SECONDARY RESOURCE	UPSTREAM	CORE		DOWNSTREAM	TOTALE
	Raw materials supply	Transportation	Manufacturing	Distribution	
Use of renewable secondary fuels [MJ]	0	0	0	0	**0**
Use of secondary material [kg]	**1.241**	**0**	**0**	**0**	**1.241**
Steel scrap [kg]	1.240	0	0	0	1.240
Polymer scrap [kg]	1,3	0	0	0	1,3
Textile scrap [kg]	0,1	0	0	0	0,1

WATER CONSUMPTION	UPSTREAM	CORE		DOWNSTREAM	TOTALE
	Raw materials supply	Transportation	Manufacturing	Distribution	
Use of net fresh water [m^3]	3,7*	<0,1	1	0,1	**4,8**

**Mainly due to energy production.*

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WASTE GENERATION AND TREATMENT	UPSTREAM	CORE		DOWNSTREAM	TOTALE
	Raw materials supply	Transportation	Manufacturing	Distribution	
TOTAL WASTE kg	3	0	241	0	**244**
Hazardous waste disposed kg	0	0	24	0	**24**
Non hazardous waste disposed kg	3	0	217	0	**220**
Radioactive waste disposed kg	0	0	0	0	**0**

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POTENTIAL ENVIRONMENTAL IMPACT	UPSTREAM	CORE		DOWNSTREAM	TOTALE
	Raw materials supply	Transportation	Manufacturing	Distribution	
Global Warming Potential [kg CO_2 eq]	332	31	281	51	**695**
Ozone Depletion Potential [g CFC-11 eq]	negligible	negligible	negligible	negligible	**negligible**
Photochemical Ozone Creation [g C_2H_4 eq]	207	24	114	42	**388**
Acidification Potential [g SO_2 eq]	494	129	179	222	**1.023**
Eutrophication Potential P. [g PO_4^{3-} eq]	180	36	61	61	**337**
Depletion of abiotic resources (elements) [kgSb eq]	negligible	negligible	negligible	negligible	**negligible**
Depletion of abiotic resources (fossil) [MJ eq]	6.411	446	934	721	**8.512**

9. ADDITIONAL INFORMATION

Main environmental characteristics of the considered plants are:

1. EAF primary and secondary dedusting achieve an efficient extraction of all emission sources by using direct off-gas extraction (4th hole) and total building evacuation, with subsequent dedusting by means of a bag filter

2. Prevention and reduction of (PCDD/F) and (PCB) emissions by using the combination of the following techniques,

- appropriate rapid quenching of the EAF off-gas
- injection of adsorption agents into the duct
- final dedusting with a bag filter.

3. Minimisation of water consumption by using a recirculating loop cooling system with purge recovery. Removal of solids by sedimentation or filtration, removal of oil with skimming devices.

4. Prevention and reduction of waste generation by using the following techniques:

I. appropriate collection and storage to facilitate specific treatments;

II. on-site recovery and recycling of specific by-products from the different processes;

III. external recovery of filter dusts in the non-ferrous metal industry (zinc, lead);

IV. separation of scale in the water treatment process and external recovery in the cement, chemical, mechanical industry;

V. recovery of EAF slag as a secondary raw material (inert aggregates) in the construction industry.

5. Radiation monitoring of scraps and raw materials by means of detection equipment installed at the weighing post.

In accordance with general EPD® requirements the LCA study used specific, generic and other generic data. This last data contributes to the environmental indicators less than 10%.

10. REFERENCE

This declaration has been developed referring to the International EPD® System, following the General Program Instruction and Supporting Annexes (ver. 2.01 -2013/09/18); further information and the document itself are available at: www.environdec.com.

Software: SimaPro ver. 8.0.2 (www.pre.nl)
Main database: Ecoinvent 2.2
Report LCA: Life Cycle Assessment (LCA) for hot rolled bars through EAF process for EPD® purpose - 25/06/2015 FINAL report.
Geographical scope of the EPD: Europe and countries according to sales market conditions.
Environmental declarations published within the same product category, though originating from different programs, may not be comparable. In particular EPDs of construction products may not be comparable if they do not comply with EN 15804.

Contacts

To get more information about this EPD, available plant based results and Gruppo Beltrame activities please contact:

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Technical support to Gruppo Beltrame was provided by Life Cycle Engineering, Italy. (info@studiolce.it, www.lcengineering.eu).

Independent verification

CEN standard EN 15804 served as the core PCR (PCR 2012:01 Construction products and Construction services, Version 2.0, 2015-03-03)
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com

Independent verification of the declaration and data, according to ISO 14025: ☐ **INTERNAL** ☑ **EXTERNAL**

Third party verifier: ICMQ SpA, via De Castillia, 10 20124 Milano. Accredited by: Accredia

Valid until: 2017, February 26.