

Indirect CO₂ emissions compensation: Benchmark proposal for Air Separation Plants

The revision to the ETS Directive passed on 23rd April 2009 (Article 10a.6) provides for “*Member States [to] adopt financial measures in favour of sectors or subsectors determined to be exposed to a significant risk of carbon leakage due to costs relating to greenhouse gas emissions passed on in electricity prices, in order to compensate for those costs [...].*”

Those measures shall be based on ex-ante benchmarks of the indirect emissions of CO₂ per unit of production. The ex-ante benchmarks shall be calculated [...] as the product of the electricity consumption per unit of production corresponding to the most efficient available technologies and of the CO₂ emissions of the relevant European electricity production mix.”

Further it has been determined in the Commission Decision on 24th December 2009 that Air Separation Plant products, oxygen and nitrogen, amongst other (sub)sectors, are indeed subject to the risks of ‘carbon leakage’ and so each requires benchmarking of the specific electricity consumption for production.

With this position paper, EIGA would like to propose an Air Separation Plant benchmark that can be used in all EU industry sectors for the purpose of financial compensation due to costs relating to Greenhouse gas emissions passed on in electricity prices.

An evaluation of the electricity consumption inherent in the production of oxygen and nitrogen using best available Air Separation technology needs to be differentiated according to the form of the delivered product, whether liquid or gaseous (compressed). Calculations by EIGA based on engineering theory, physics and public technical data yield the following results:

Air Separation Plant Product:	Benchmark specific electricity consumption (kWh / tonne) (@ 285 K and 1.013 bar)	
	Oxygen	Nitrogen
Gaseous (@ 40 bar):	400	243
Liquid:	638	549

A practical Air Separation Plant may well be configured to produce both oxygen and nitrogen and to produce one or both in liquid and/or compressed forms.

Therefore, a benchmark electricity consumption for any air separation plant, according to the rules for benchmarking established by the Commission, may reasonably be the sum of the benchmark energy efficiencies for each product and product form in the table above multiplied by the quantity of each produced.

Air Separation Plants are owned and operated by industrial gases companies and by major customer sectors for oxygen and nitrogen, such as the chemical sector, the refining sector and the steel sector. The benchmarks presented here provide a common basis for the benchmarking of air separation plants that can be used in all EU sectors, and is in accord with Recital 23 of the ETS Directive.¹

It should be recognized that for any particular, practical air separation plant the best achievable specific energy consumption for the production of oxygen and nitrogen (kWh/tonne) will also depend on factors which EIGA understand are not permissible within the current benchmarking exercise according to the Commission, including, inter alia, elevation or ambient air conditions, plant scale, operating modes and co-production of oxygen and nitrogen.

¹ Recital 23 of the ETS Directive: “[Those measures] should avoid undue distortions of competition between industrial activities carried out in installations operated by a single operator and production in out sourced installations”

DISCLAIMER

All technical publications of EIGA or under EIGA’s name, including Codes of practice, Safety procedures and any other technical information contained in such publications were obtained from sources believed to be reliable and are based on technical information and experience currently available from members of EIGA and others at the date of their issuance.

While EIGA recommends reference to or use of its publications by its members, such reference to or use of EIGA’s publications by its members or third parties are purely voluntary and not binding. Therefore, EIGA or its members make no guarantee of the results and assume no liability or responsibility in connection with the reference to or use of information or suggestions contained in EIGA’s publications. EIGA has no control whatsoever as regards, performance or non performance, misinterpretation, proper or improper use of any information or suggestions contained in EIGA’s publications by any person or entity (including EIGA members) and EIGA expressly disclaims any liability in connection thereto. EIGA’s publications are subject to periodic review and users are cautioned to obtain the latest edition.

© EIGA 2019 - EIGA grants permission to reproduce this publication provided the Association is acknowledged as the source

EUROPEAN INDUSTRIAL GASES ASSOCIATION AISBL

AVENUE DES ARTS 3 – 5 • B-1210 BRUSSELS

PHONE +32 2 217 70 98 • FAX + 32 2 219 85 14 • E-mail : info@eiga.eu - www.eiga.eu