



## **Coil Coating – Sustainable Business**

ENVIRONMENTAL STATISTICS OF  
THE EUROPEAN COIL COATING INDUSTRY



European  
Coil Coating  
Association



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## Foreword by the President



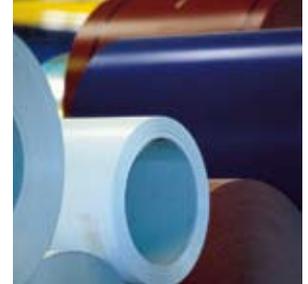
Sustainability is a word much used at the moment. The meaning of sustainability in the context of industrial operations is even becoming well understood. But it is still all too seldom that whole industries can show that they are moving towards a more sustainable future. It is with this background that ECCA set out, in early 2008, to create a more sustainable future for our industry.

As with any operation, there are impacts of coil coating, both in terms of resources which are consumed and waste which is produced, either in solid form, or as emissions to water or air. This first report of the ECCA Environmental Indicators shows how we can measure some of the key impacts of the coil coating industry. It is a first step on the road towards an industry-wide sustainable future. Many of our member companies are already well down this road, but through the work of the Association, we intend to increase the awareness of the whole industry. This first set of ECCA Environmental Indicators gives a first point of benchmarking and in the coming years, it is the benchmarking exercise which this allows which will deliver a more sustainable, lower impact future.

In reporting on the indicators included here, we are not claiming whether these are good or bad – it is very difficult to compare indicators on one industry against another. What we are doing is admitting that we have an impact and that, as for any industry, we have a duty to society to work to minimise this. However, we should always remember that coil coating is still the most efficient, economical and environmentally sensitive means of applying paint to large areas of metal and that coil coated products provide the best solution to a constantly growing multitude of applications.

Arto Ranta Eskola

# Sustainable Business – Leading the way with Coil Coating



Coil coating represents the most efficient, the most reliable and the most environmentally friendly means of applying a high quality paint finish to metal surfaces. This simple statement has been at the heart of the development of the coil coating industry for over 40 years. Such efficiency, reliability and environmental sensitivity have resulted in the dramatic growth of this industry and the adoption of coil coated metals in a wide variety of applications. From buildings and vehicles to domestic appliances, coil coated metals touch our lives every day.

The coil coating industry achieves, for the coating of metal substrates, the ultimate in economies of scale, measured not only in financial terms, but also in the quality and reliability of products and in the close control of the process which leads to good environmental performance. Whilst the industry has promoted this fact for many years, this report represents the first attempt to survey the entire European coil coating industry, measuring key factors and presenting the true impacts of the business.

The concept of sustainability is much talked about and now well understood. Whilst we would like to live within our environmental means, it is important to understand that all human activities have an impact upon the planet on which we live. It is incumbent upon individual industries to understand the origins and effects of this impact and in so doing to work towards minimising them. In this respect, measuring the performance of an industry is an important step towards creating a more sustainable future.

For the first time, the results of the ECCA Environmental Indicators survey presented here provide a snapshot of the impact of the coil coating industry in 2007. The reasons for presenting the information in this report are :

- To provide a basis point for the industry
- To facilitate benchmarking by individual coil coaters against the reported KPIs
- To demonstrate a commitment to sustainability
- To drive improvement within the coil coating industry

It is the intention of ECCA to repeat this exercise on a regular basis and by doing this to encourage individual coil coaters to improve their performance. This report should be seen as the first step on a journey towards a sustainable, environmentally responsible industry.

Having detailed the impacts of coil coating, it is important to remember that coil coating is the most environmentally sensitive means of applying paint to large areas of metal surface. Coil coated metal products are used in a wide array of applications, many of which themselves contribute towards a sustainable future.

# The European Coil Coating Association



“ECCA is dedicated to the promotion of the use of coil and/or sheet coated metal as the environmentally sound, the cost effective and the high quality method of finishing.”

The European Coil Coating Association (ECCA) was founded in 1967, with its Head Office in Brussels and has gained considerable experience in all aspects of the coil coating industry. ECCA is an association of member companies active in coil coating and the major suppliers to the industry. The number of members, starting from less than 20 in 1967, has been constantly rising. ECCA now registers a membership of around 170 companies.



The objectives of ECCA are :

- Setting of quality performance standards and developing of test methods
- Promoting the benefits of coil and/or sheet coated metal with particular emphasis on environmental, cost and quality benefits
- Stimulating process, product, fabrication and market development
- Increasing the awareness of coil and/or sheet coated metal through professional marketing and by organising educational training programmes for non-users
- Creating an industry network and forum for the development and exchange of ideas
- Representation of the industry in its contacts with Public Officials and Public Authorities
- Providing liaison with other trade associations and professional bodies

The membership of ECCA



● European Coil Coaters	24%
● Non-European Coil coaters	17%
● European Paint suppliers	12%
● Non-European Paint suppliers	7%
● European Stockholders	2%
● Other European members	35%
● Other non-European members	4%

72% of ECCA members operate in Europe, but there are members located on every continent except Antarctica. ECCA members range from small enterprises to major multi-national corporations, including some of the best-known names in the metals, chemicals and paint industries.

ECCA provide a range of services directly to members including a regular statistical market review and updates on relevant legislation. ECCA provide a twice-yearly conference for delegates from member companies to keep abreast of developments in the industry. ECCA also carries out detailed scientific investigations on the use of coil coated products to support their adoption across a range of applications.

Through the Environmental and Sustainability Committee, ECCA provide a forum for improvements in environmental performance and ensure that the industry is well informed and represented on sustainability matters.

# The ECCA environmental statement

ECCA and its members are committed to the principle of sustainability and consider the care and protection of the environment to be essential for the wellbeing of the industry, its customers and the wider community.

ECCA members will :

- recognise that they have a responsibility to their employees, shareholders, customers and their local community to control and minimise the impact of their business activity on the environment
- meet the requirements of all relevant legislation in all countries and regions in which they operate
- improve the environmental performance of their processes by reducing energy use, emissions, minimising waste and controlling noise
- develop an open dialogue with all stakeholders on environmental issues

ECCA will :

- cooperate with regulatory authorities at European level in the development of sustainable best practice, legislation and related topics
- communicate with its members on a regular basis with regard to proposed and new legislation and documentation from government and regulatory authorities
- help its members understand the principles of sustainability and the environmental effects of their products and processes, by circulating appropriate information and promoting best practices
- monitor progress of the coil coating industry against a series of sustainability-related Key Performance Indicators and communicate this on a regular basis.

# Coil Coating

## European Coil Coating

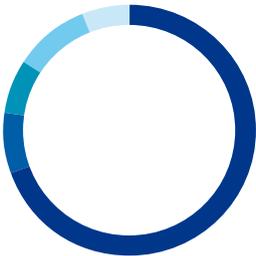
### Key Facts:

- Turnover over €10bn
- Over 1,500 million m<sup>2</sup> coated
- 5.7 million Tonnes of steel
- 438 thousand tonnes of aluminium
- 200 thousand tonnes of paint

Coil coating is a process for providing paint or film coating to strip metals, primarily steel and aluminium, on a continuous basis. Coil coating is a highly efficient means of coating strip metals before fabrication of finished components, providing a high-quality, uniform and reproducible surface finish.

The coil coating industry is a well developed, worldwide industry with over 40 years of history. Output of the global coil coating industry is nearly 15 million tonnes per annum of coil coated steel and nearly 1 million tonnes per annum of coil coated aluminium. The European industry represents 32% of this total, with over 150 production lines situated within the EU27 countries producing over 1,500 million m<sup>2</sup> of coated coil per year – enough to clad 25 million homes. In over 40 years since coil coating started in Europe, an area of metal almost the size of Belgium has been coated using this technique. The European coil coating industry is now worth over €10bn in turnover of coil coaters alone.

The end uses of coil coated products in Europe



- Building 71%
- Automotive 8%
- Appliance 7%
- Stockists 10%
- Miscellaneous 6%

Coil coated products are used in a variety of applications. By far the largest market for coil coated steel and aluminium is the construction market where the building envelope represents the main use. Coil coated products are also used in gutters, partitions, ceiling systems and a variety of ancillary components.

Outside the building industry, the range of applications for coil coated metals is vast. Coil coated metals are used wherever the end use demands a high-quality painted finish on a component fabricated from sheet metal. In the transport sector, coil coated materials are used in parts such as trailer bodies and recreational vehicles, but also in a variety of components such as oil filter caps and wiper blade assemblies. Coil coated metal is used as a pre-primed surface for the body-in-white of cars, providing a high-quality base for application of customised automotive paint coatings.

In the home, coil coated products can be found everywhere from fridges, freezers and washing machines, through furniture, doors and shuttering to small appliances like clocks, toasters, light fittings or DVD players.

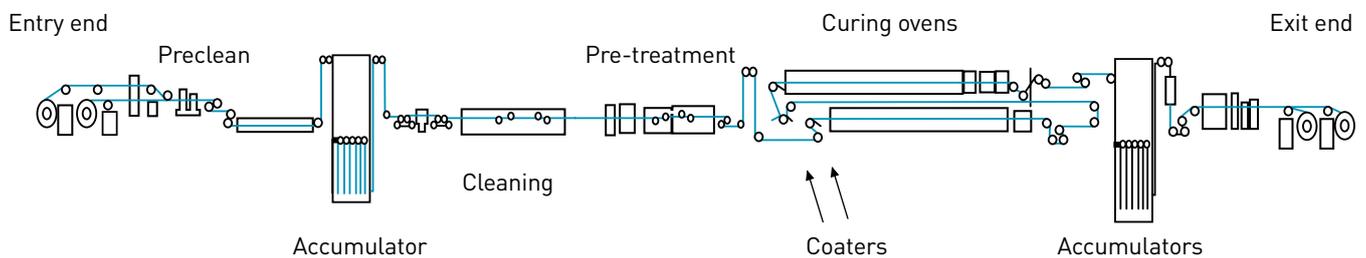
The uses of coil coated metals are many and varied and are increasing daily.



## The Coil-Coating Process

Coil coating is a continuous process of applying up to three separate coating layers onto one or both sides of a metal strip substrate. Coil coating lines vary greatly in size, with rated outputs between 3,000 tonnes per annum and 200,000 tonnes per annum of coated metal, maximum widths from 350 mm to over 2500 mm and speeds from 20 metres per minute to 200 metres per minute. However, all coil coating lines share the same basic process steps.

*The layout of a typical coil coating line*



### Cleaning and pre-treatment

- To ensure a high quality of finish, it is essential that the surface of the substrate to be coated has a good level of cleanliness. Acid or alkali cleaning can be used to prepare the surface of the strip.
- Once the surface is clean, a chemical pre-treatment must be applied to ensure good adhesion between the metal surface and the paint or film. The pre-treatment can be applied either through a wet (bath or spray) process or by the use of roller-coating. The pre-treatment contributes to the overall corrosion protection of the final product.



### Coating

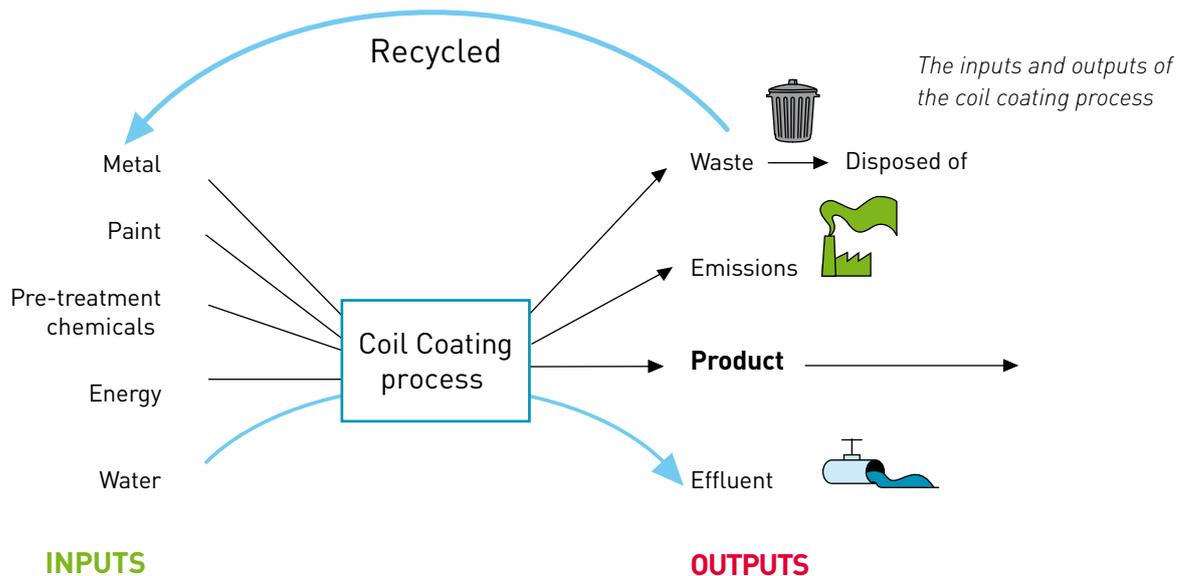
- Most coil coating lines have two main coating stations for the application of a 2-coat paint system, often referred to as primer and topcoat.
- Roller-coating is used to apply paint to the moving strip surface. A combination of rolls is used to pick paint up from a tray and apply it to the strip. Close control of roll speeds and gaps between the rolls allows specific paint thicknesses to be applied uniformly across the surface, within very tight tolerances and at line-speeds of up to 200 metres per minute.
- The wet-paint coated strip is fed through ovens which dry and cure the paint. Close control of oven temperatures produces a highly uniform paint finish. Solvents driven off by the ovens are collected and in most cases are treated in thermal oxidisers.
- The strip is quenched on exit from the ovens to allow recoiling.
- In the case of film coatings, a base-coat and/or adhesive is applied at the coater head and the film is laminated onto the still-hot surface after the ovens.





# Environmental Aspects of the Coil Coating Process

Coil coating is a highly industrialised process. As with any process, there are inputs and outputs and there are environmental impacts of these. Inputs to the process include metal substrates, paint, pre-treatment chemicals, water and of course energy. Outputs include solid waste, effluent and vapour emissions in addition to the product itself.



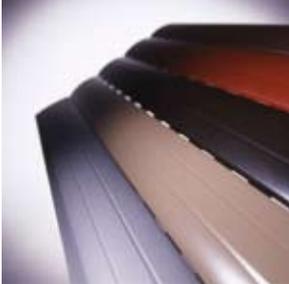
The coil coating process has developed over the last 40 years into a very clean process. Most installations are of a size which requires permitting under various European regulations and so the coil coating process is carried out under very tightly controlled conditions. Unlike many smaller post-coating operations, this provides an assured level of environmental standards to at least those regulated for at a European level.

This report presents, for the first time, a measure of the environmental impacts of the coil coating process, but briefly, these include:

- Energy – used to provide motive power and, the largest part, in heat to cure the coatings.
- Emissions of volatile organics are very tightly controlled by the coil coating process to the extent that they are virtually eliminated. In many cases, this is a primary factor in small fabricators turning away from post-painting to using pre-painted metals.
- Water - used in rinsing, mostly at the cleaning / pre-treatment stages and for quenching. However, most modern lines use a cascading rinse system to minimise water usage and discharges.
- The continuous nature of the coil coating process and the efficiency of roller-coating mean that waste is very much reduced and wastage of paint is virtually eliminated, with most potential waste being re-used in paint formulation.

Whilst some coatings can include harmful elements, the coil coating industry has continually evolved the coatings it uses to eliminate these. Most coatings are now produced without harmful heavy metals or hazardous solvents. Phthalate plasticisers responsible for endocrine disruption have been phased out.

# Sustainability Benefits of Coil Coated Products



As an alternative to painting finished articles, coil coating provides many benefits because of the efficiency of applying paint by the roller-coating process to flat strip.

- Wastage of paint is virtually eliminated.
- The even application allows a reduced paint film thickness, so using less paint.
- Paint drying and curing is carried out in a very well controlled way to dramatically cut emissions of harmful VOCs.
- Fabricators who use pre-paint in place of post-painting have much simplified regulatory compliance.

*“... guaranteed for anything up to 40 years, so re-painting and eventual replacement is minimised.”*

The benefits of coil coating do not end with the manufacture of finished articles. The coatings generated through the coil coating process also present significant benefits during the service life of the final applications. Close control over the coating operation that the coil coating process allows results in a high quality, reproducible and reliable finish. A coil coated part, even with a reduced paint film thickness, will generally last longer than an equivalent part with a post-applied coating. Coil coated steel and aluminium products for external exposure in some of the harshest climates are guaranteed for anything up to 40 years, so re-painting and eventual replacement is minimised. Coil coating reduces or in many cases eliminates the need for ongoing maintenance and makes products last longer.

*“...both steel and aluminium are among the most recycled materials on Earth.”*

The base materials for coil coated metals are steel and aluminium. Both of these metals have a very well developed global recycling industry. In each case, a high proportion of the metal used already contains up to 100% recycled content, while the ease of recycling and the value of scrap means that both steel and aluminium are among the most recycled materials on Earth. The coatings applied in the coil coating process do not hamper the recycling process and do not cause harmful emissions during recycling when treated appropriately.

Whatever the application, coil coated steel or aluminium present an efficient design solution. The inherent properties of the metals give them a high strength-to-weight ratio and continued development of steel grades and aluminium alloys can be enjoyed in pre-painted form through the coil coating process.

Through the myriad of applications in which these products are used, it is true to say that they really are at the heart of sustainable development.

# Sustainability in the European Coil Coating Industry

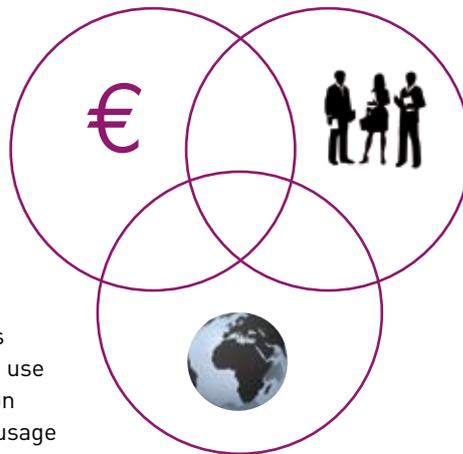
ECCA, as the representative body of the European coil coating industry, is fully committed to the triple bottom line of sustainable development, balancing a financially stable industry with social responsibility to employees and stakeholders and an attitude of guardianship towards the environment.

## Profit :

- A financially stable industry
- Affordable and efficient products

## Planet :

- Recyclable and recycled products
- Low waste in manufacture and in use
- Controlled process with a focus on energy, emissions and resource usage



## People :

- A stable, non-itinerant workforce
- A valued member of the community
- A safe working environment
- High-quality, reliable products used at the heart of society
- Responsible reporting

As a part of the industry's commitment to transparent reporting, for the first time in 2008, ECCA members have taken part in a major data-gathering exercise to fully describe the status of the industry against a range of key performance indicators (KPIs). This report presents the first measure of the industry against these KPIs.

The collation and reporting of this data represents a step on the road towards a truly sustainable future for the European coil coating industry. By ongoing measurement against a set of meaningful KPIs, the European coil coating industry will reduce its impact upon the planet while maintaining a financially and socially stable presence.

## Basis of Reporting Against KPIs

Data presented here has been gathered only from European coil coater members of ECCA and has been provided on a voluntary basis. Data is based on the most recent 12 month period available to each respondent which in most cases is the calendar year 2007. The data is based on returns from 14 coil coater members of ECCA, covering 37 coating lines. This represents 57% of the output of the European coil coating industry. The data represents 65% of the aluminium coil coating sub-sector and 55% European steel coil coating. Where European totals are referred to in this report, results have been scaled by these factors and where incomplete data was received on certain indicators, the factors have been adjusted accordingly. While throughput of coil coaters is often quoted in tonnes, the difference in density between steel and aluminium make it difficult to compare the industry on this basis. The fundamental measure of output for a coil coater is m<sup>2</sup> of substrate coated, whether coating is on one side or both. Wherever possible, data is translated into values per m<sup>2</sup>. Total market size excludes can coating for packaging applications.

# Social responsibility of the Coil Coating industry

## Employment

Based on the results of this survey, the European coil coating industry is estimated to employ nearly 4000 people directly and full-time involved in the coil coating process, with over 1500 people being partly employed in the coil coating process. Many coil coaters are a part of larger companies, usually vertically integrated either with upstream metal suppliers or downstream users. In these cases, many staff will be employed partly in the coil coating process (including sales and administration) and partly in either upstream or downstream operations. The part-time figure reflects this. This data does not include the employment provided by the suppliers to the coil coating industry, including the paint and chemicals industries, which represents at least as many employees as in the coil coating businesses themselves.

Coil coating installations represent large capital investments and as such are generally managed through economic cycles. The nature of the industry therefore presents a stable working environment.

## Health & Safety

*47% of coil coating lines had no lost time injuries in 2007*

The European coil coating industry takes the health and safety of their employees very seriously. It is continually striving to improve the safety of employees and individual companies measure and improve their performance continually. Across the companies represented in the survey, the range for the measure of lost time injury frequency (defined as number of work-time injuries resulting in time lost, excluding the day of injury, per million man-hours worked) for 2007 was from 0 to 53, with 14 (47%) of the reporting lines having an LTIF of 0, although the small size of some reporting companies can distort the figures given on a company basis.

In 2007, the total number of days lost through injury by the reporting companies was 854. This represents 1.25 days lost to injury per million m<sup>2</sup> of coil coated product. If the respondents can be assumed to be typical of the European industry, then the total number of days lost through injury for the European coil coating industry is just under 1900.

		Respondents	EU Industry
Social Indicators 2007	Total employed full-time	1784	3970
	Total employed partly in coil coating	691	1537
	Man-days lost through injury (total)	854	1894
	Man-days lost through injury (days/million m <sup>2</sup> )	1.25	

# Environmental performance of the Coil Coating industry



## Environmental management systems

The coil coating industry includes a wide range of companies, ranging from those integrated into major steel and aluminium producers to small independent companies, often specialising in coil coating for a particular niche market. Across this broad range of companies, environmental management is very important in day-to-day business. Of the ECCA member companies' installations surveyed 89% adopted an environmental management system, with all of these being accredited to the international standard ISO14001. Some companies have also adopted EMAS or other environmental management systems. On the basis of this survey, it is estimated that of the total quantity of coil coated material produced in Europe, 95% is produced under an externally verified environmental management system.

*95% of coil coated products are produced under ISO14001*

Environmental management covers a wide range of issues, but the primary ones for

	% of lines	% of capacity
ISO14001	89%	95%
EMAS	16%	22%
Other	24%	25%
Total adopting one more EMS	89%	95%

Adoption of Environmental Management Systems 2007

the coil coating industry are :

- Energy usage
- VOC emissions
- Water
- Waste

These four topics are covered here separately.



## Energy Usage and Climate Change

With growing concern over the effects of climate change exacerbated by our continuing emissions of greenhouse gases and in particular CO<sub>2</sub>, there is increasing emphasis on energy usage as a key measure of environmental performance and a key generator of CO<sub>2</sub>. The majority of CO<sub>2</sub> emissions from the coil coating industry are as a result of energy usage and so it is important to focus on this aspect. The coil coating industry uses energy for two primary purposes, namely motive power and to provide the heat required to dry and cure the paint film.

In the coil coating process, wet-applied paint is dried and cured in ovens, sometimes at very high temperatures. Most paint systems need a peak metal temperature of around 200°C to 250°C for full curing, although some specialist products require even more heat. To achieve these curing temperatures in fast coil coating lines, oven temperatures in excess of 400°C are common. Over 90% of ovens are gas fired, although there is some use of NIR and induction heating and there is ongoing investigation of alternative radiation curing which promises even lower energy usage.

The largest source of energy for coil coating is gas, used for heating curing ovens. LPG is occasionally used in place of natural gas and in some cases where coil coating lines share manufacturing sites with major steel-making operations, coke oven gas is used. The total average energy usage of the coil coating process in 2007 was 1.8 KWh per m<sup>2</sup> of coated product.

	Total over survey (GWh)	Estimated European total (GWh)	Average consumption (KWh/m <sup>2</sup> )	Range of consumption (KWh/m <sup>2</sup> )
Total energy 2007 (based on billed quantities)				
Electricity	225	436	0.3	0.13 – 0.82
Gas	1,160	2,242	1.5	0.20 – 3.00
LPG	24.4	47	0.03	0.20 – 1.57
Total	1,409	2,725	1.8	0.52 – 3.48

In combining energy usage patterns to assess total CO<sub>2</sub> generated from energy used within the industry, it is assumed that electricity consumers use electricity from a source reflecting the national average electricity generation in the country of operation and using a national average energy conversion factor. By doing this, the gas and electricity usages can be combined and converted into an average CO<sub>2</sub> emissions figure for energy usage by the coil coating industry. From the survey respondents, the average CO<sub>2</sub> emission from energy in the coil coating process in 2007 was almost 400 g (CO<sub>2</sub>)/m<sup>2</sup>. Factoring this to the European industry as a whole, energy usage in the European coil coating industry is estimated to have accounted for just over 600 thousand tonnes of CO<sub>2</sub> emissions in 2007. The total CO<sub>2</sub> emissions associated with the energy used in the entire European coil coating industry is equivalent to the emissions from only 150,000 average family cars.

	Electricity	Gas	LPG	Total
Average CO <sub>2</sub> emissions rate (g(CO <sub>2</sub> )/m <sup>2</sup> )	138	251	7	396
Estimated total EU industry emissions (kt(CO <sub>2</sub> ))	210	383	10	603

CO<sub>2</sub> emissions associated with energy in the coil coating industry, 2007

In discussing CO<sub>2</sub> emissions from the industry, it is important to put this into context. The measure given here is the CO<sub>2</sub> emissions resulting from energy usage in the coil coating process itself. This does not include energy used for ancillary processes, transport or administrative activities. It also does not include any consideration of the paint system applied or the solvents which form a part of the paint systems. However, CO<sub>2</sub> emissions associated with energy usage are known to be by far the largest source of emissions for coil coating.

The carbon footprint of the coil coating operation represents a small fraction of the total carbon footprint of the coil coated product, the majority of the remainder being embodied in the steel or aluminium substrate. For example, the CO<sub>2</sub> emissions associated with energy in the coil coating process, as reported here, represents less than 10% of the total carbon footprint of organic coated steel, as reported by the World Steel Association and only around 2% of the carbon footprint of a typical insulated metal-based cladding system.

Finally, it is important to understand the relationship between embodied CO<sub>2</sub> emissions and operational CO<sub>2</sub> emissions in the use of products. Coil coated metal is used in a wide variety of products, but whether in vehicles, domestic appliances or buildings, the carbon footprint of the finished product over its intended life is generally accepted to be made up of 90% operational impacts and only 10% embodied in the materials. Given that the coil coating process forms only a very small portion of the materials impact in any of these applications, the impact of the coil coating process is a very minor part of the end application.

## VOC emissions

92% Of coil coating lines use incinerators to remove > 99% of VOC emissions

The second most important source of potential emissions associated with the coil coating industry is that of volatile organic compounds (VOCs). The vast majority of coil coating operations use solvent-based liquid paints. During the drying and curing operation, the solvents are driven off. The typical composition of a liquid paint for coil coating will include between 30% and 50% of solvents. There are low-solvent and no-solvent systems available, but the application of these are very limited due to economic, functional and practical reasons and in some cases there are side effects which may, for example, increase energy usage.

Adoption of oxidiser technology, by capacity\*



- Recuperative 55%
- Regenerative 32%
- Other 13%
- None 4%

The emission of VOCs can be instrumental in causing smog formation and other damaging effects and is regulated for by the EU and by individual national authorities. The size of many coil coating installations makes IPPC permitting necessary. The primary abatement technology for VOC emissions is the adoption of oxidisers to collect and incinerate emitted solvents. In the 2007 survey, 92% of coil coating installations used some form of oxidiser for controlling VOC emissions. In 91% of these cases, heat is recovered from the oxidiser to assist in the curing operation, so reducing the use of other fuel sources. While all oxidisers used in the coil coating industry have very high efficiency in removing VOCs (> 99%), regenerative oxidisers are more energy efficient, but the high capital cost means that these are not always applicable, particularly on smaller installations.

With the collection of waste gases from oven and quench units and the incorporation of oxidisers to treat these gases, emissions of VOCs from coil coating plants is well controlled. Almost all plants in the EU are required to meet strict limits on stack VOC emissions concentrations of 50mg/m<sup>3</sup> and fugitive emissions of not more than 10% of solvent inputs.

\* Some lines use combinations of technologies, so totals may be >100%

While all plants operate within the limits of regulations for VOC emission concentrations, there are many factors which can affect the total emissions on a throughput basis. These include line speed and capacity, product mix, substrate type and oven management regimes. For this reason, there is a wide range of reported point-source VOC emissions when expressed per m<sup>2</sup> of coated metal. The average point-source emissions rate of VOCs in 2007 was 0.63g/m<sup>2</sup>, with a range of between <0.1g/m<sup>2</sup> and 2.1g/m<sup>2</sup> when highly efficient oxidisers are used to remove the vast majority of VOCs. From this, total point-source VOC emissions from the European coil coating industry can be estimated to be just over 960 tonnes per annum.

### VOC Emissions, 2007

Average point-source VOC emissions where oxidisers are adopted (g/m <sup>2</sup> )	<0.1 – 2.1 g/m <sup>2</sup>
Average point-source VOC emissions where oxidisers are not adopted (g/m <sup>2</sup> )	4.1 –6.3 g/m <sup>2</sup>
Total average point-source VOC emissions (g/m <sup>2</sup> )	0.63 g/m <sup>2</sup>
Estimated European point-source VOC emissions from the coil coating industry (tonnes)	962 t



## Water

Perhaps second only to the issue of climate change and global warming is the question of water scarcity and security of supply with a continually expanding global population. For this reason, responsible industries need to look very closely at their use of water. In the coil coating industry, water is used for two main purposes :

- Rinsing in cleaning and pre-treatment operations
- Quench-cooling the strip after curing.

In both cases, techniques are adopted to minimise water usage, including reverse cascade rinsing which is widely used. Average water consumption among the survey respondents was just over 7.5 litres/m<sup>2</sup> of coated product which gives an estimated total water usage by the European industry of 11.5 million m<sup>3</sup> in 2007. This water usage from the entire European coil coating industry is the equivalent to the domestic usage of just 200 thousand European citizens.

Alongside minimising the amount of water used, the other challenge for industry is in minimising discharges of waste water. By monitoring waste water discharges, a measure of the efficiency of water usage can be gained. Among the survey respondents, average waste water discharges accounted for just under 1 litre/m<sup>2</sup>, the remainder being evaporated during quench and drying operations, giving an estimated total for the European industry of 1.5 million m<sup>3</sup> of water discharges in 2007.

Average water usage in coil coating (litres/m <sup>2</sup> )	7.56 l/m <sup>2</sup>
Estimated annual water usage by the European coil coating industry (million m <sup>3</sup> )	11.5
Average water discharge in coil coating (litres/m <sup>2</sup> )	0.98 l/m <sup>2</sup>
Estimated annual water discharge by the European coil coating industry (million m <sup>3</sup> )	1.5

Water usage and discharges, 2007



## Waste

*62% of waste is disposed of in a more sustainable manner*

The amount of waste generated by an industry is a measure of the efficiency of the process and the usage of scarce resources. The use of landfill and incineration without heat recovery is considered unsustainable, while other forms of waste treatment, including re-use, recycling and incineration with heat recovery are to be promoted.

The average total waste production from survey respondents was just over 25 g/m<sup>2</sup> of coil coated product, with only 41% being classified as hazardous. 62% of all waste generated by the process is disposed of in a more sustainable manner. Using this data, the total waste associated with the European coil coating industry can be estimated as 38.5 thousand tonnes.

	Hazardous	Non-Hazardous
Estimated total waste from the European coil coating industry (thousand tonnes)		
Landfill	4.3 (2.8g/m <sup>2</sup> )	7.5 (4.9g/m <sup>2</sup> )
Incineration without heat recovery	2.0 (1.3g/m <sup>2</sup> )	0.6 (0.4g/m <sup>2</sup> )
Other (including recycling)	9.4 (6.2g/m <sup>2</sup> )	14.7 (9.7g/m <sup>2</sup> )
<b>Total</b>	<b>15.7 (10.3g/m<sup>2</sup>)</b>	<b>22.8 (15.0g/m<sup>2</sup>)</b>

*Disposal routes for waste from the coil coating process*



- More sustainable routes 62%
- Landfill 31%
- Incineration without heat recovery 7%

# Appendix – Environmental Indicator Returns

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The survey detailed here was carried out in Summer/Autumn 2008 and coil coater members of ECCA were asked to give data for the last 12-month period, ideally for the calendar year 2007. Coil coater members who participated in this survey were:

Alcan  
 ArcelorMittal  
 Bancolor  
 Corus  
 Duferco  
 Euramax  
 Hydro  
 Metalcolor  
 Novelis  
 Replasa  
 Ruukki  
 Salzgitter  
 ThyssenKrupp Steel  
 Voestalpine

It was not possible for all respondents to provide data on all aspects requested. While data was gathered from 37 lines from the above companies, some indicators represent a lesser proportion of the total population. In these cases, in order to provide estimates of the European totals, data has been factored according to the measured throughput of lines that did respond.

Responses on specific items were as follows:

Employment numbers	32 lines
Safety statistics	30 lines
Environmental management systems	37 lines
Oven technology	37 lines
Oxidiser technology	37 lines
VOC emissions	33 lines
Energy usage	35 lines
Water consumption / discharge	33 lines
Waste	36 lines

It must be stressed that the data presented here has been provided on a voluntary basis by the ECCA members involved and is, to the best of our abilities, representative. However, this data should not be used as a basis for comparison against other materials or processes without very close attention being paid to the basis of the data. For further information about the collection of this data and how to compare against other published information, please contact ECCA Head Office.

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