TATA STEEL

Tata Steel – Europe's second largest steel producer with an output of 18 million tonnes of steel per year – has been using LCA for 16 years to support the development of its products and to contribute to industry-wide efforts to establish standards for sustainability, principally in the automotive, con-struction and packaging sectors. www.tatasteel.com

The Tata Steel Sustainability Team uses:
> GaBi Professional
> GaBi Reader
> GaBi Databases '11
>GaBi Extension Databases I-X, XII, XIV

About Sphera

Sphera is the leading global provider of Integrated Risk Management software and information services with a focus on Environmental Health & Safety (EHS), Operational Risk Management and Product Stewardship. Sphera has advanced Operational Excellence for more than 30 years, serving companies and customers across the globe to create a safer, more sustainable and productive world.

www.sphera.com

For more information contact us at:
https://sphera.com/contact-us

®2020 Sphera. All Rights Reserved.

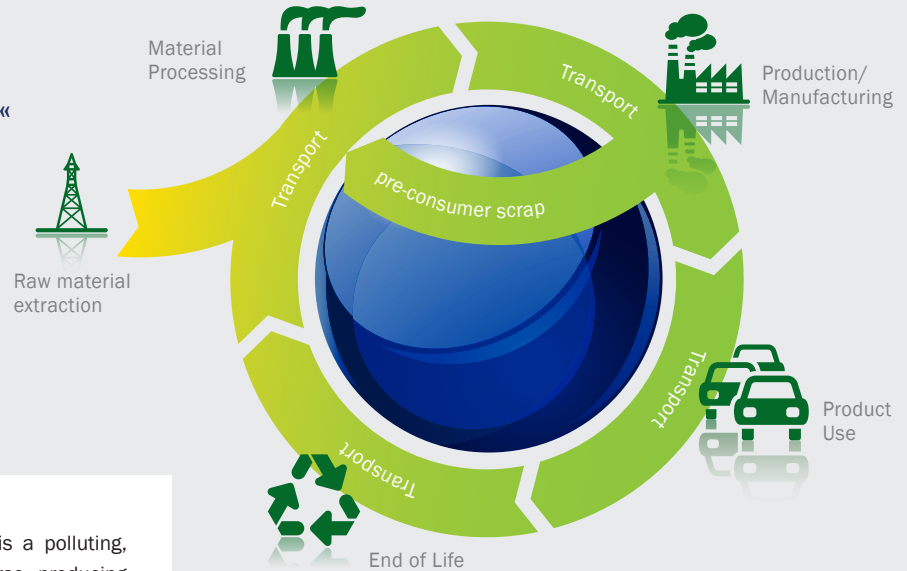# TATA STEEL
The Business Case for Product Sustainability

TATA STEEL

»Life Cycle Assessment helps us to fully understand the benefits across the life cycle and assists us in communicating these to our stakeholders.«

Allan Griffin, Knowledge Group Leader, Sustainability at Tata Steel

sphera

Material
Processing

Transport

Production/
Manufacturing

Transport

pre-consumer scrap

Transport

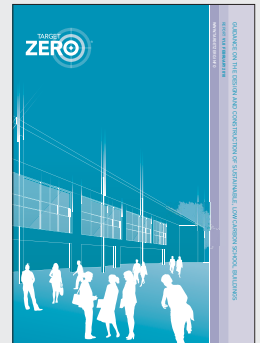Raw material
extraction

Transport

Product
Use

End of Life

"There is a historical perception that the steel industry is a polluting, energy-intensive industry but that's changed a lot. Of course, producing steel requires a lot of energy, but the benefits you get from modern steels over the full life-cycle more than outweigh this initial investment in energy. Not only does the use of steel bring advantages during its service life, steel as a material is fully recyclable at end-of-life as well. Through Life Cycle Assessment (LCA) we are able to fully understand the impacts and benefits across the life cycle. The results from our LCA studies are then used to support the technical case for steel as part of our supply chain communications."

Using GaBi Software, Tata Steel's sustainability team can build product models covering environmental impacts such as energy use, carbon emissions, water consumption and material usage.
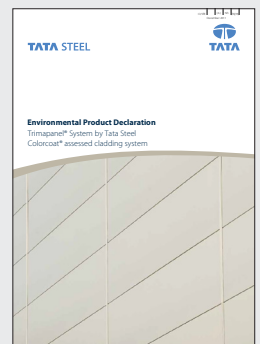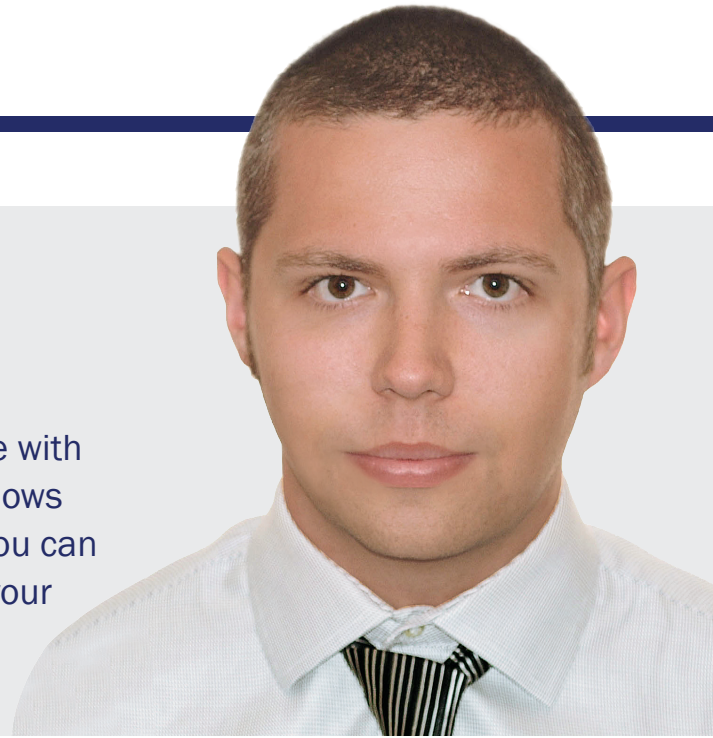
Benefits

> LCA studies help Tata Steel understand how steel performs compared to other materials such as aluminium, concrete, timber and carbon fibre by demonstrating its environmental attributes.

> Tata Steel uses LCA studies as a marketing tool to support its supply chains. Tata Steel's sustainability team provides technical support and information to the sales and marketing teams within Tata Steel to support customers with data regarding the sustainability of steel.

> LCA studies support the decision making in product development. The information derived from LCA modeling using GaBi drives both Tata Steel's own new product development, as well as supporting that of its cus-tomers.

> LCA helps in identifying hot spots in the steel value chain so that ef-forts to reduce a product's carbon footprint, water footprint and energy use can be directed to where they will have most effect.

Buildings are responsible for approximately 40% of energy consumption and carbon emissions in Europe and North America. In the UK, the government has an ambition to reduce operational carbon in new domestic buildings to zero by 2016 and by 2019 for their non-domestic equivalents. Tata Steel's CLEAR model built in GaBi was used as part of the Target Zero project which provided leading-edge design guidance for low energy and sustainable buildings built in steel.

An EPD contains a standard description of the product and presents key environmental outputs that help architects and designers to understand the likely environmental performance of a building and building materials. The GaBi i-report allows LCA models and scenarios to be used on a day-to-day basis by technical staff to produce bespoke EPDs on a wide variety of products.

»The important thing is that GaBi allows us to engage with people and start to have a discussion. Above all it allows us to highlight where the benefits of steel lie: once you can have a technical discussion, it brings confidence to your brand.« Allan Griffin, Knowledge Group Leader, Sustainability at Tata Steel

Business Case: Product differentiation and EPDs

Triggered by the dramatic increase in the demand for environmental information about its products, the sustainability team at Tata Steel employed a simplified LCA tool for nonspecialists from the GaBi software family to build an interactive template (i-report). The tool produces re-sults in a pre-set Environmental Product Declaration (EPD) format for the construction sector.

Griffin explains: "We provide the i-report to our business unit colleagues who are not LCA practitioners. Then, they use it to generate EPDs for their customers. Our cladding i-report model for example, has been used to generate over 200 EPDs and this has cemented good relations with our supply chain partners. Our value chain partners get an EPD issued to them for their systems and they then use it when they are selling to their clients," said Griffin. "So, it is a win/win situation and we have an excel-lent marketing tool because we are differentiating our product in a com-petitive market."

Business Case: Sustainable product development

Tata Steel also uses LCA to assist in developing new products. For example, in the construction sector, steel cladding is painted under highly controlled conditions, which eliminate the risk from volatile organic compounds (VOCs) in the paint. However, analysing the LCA results Tata Steel found that VOCs can be released into the atmosphere during the use phase, if the cladding needs to be repainted once it is in place. The LCA study supported Tata Steel's development of Colorcoat® pre-finished steel pro-ducts which are maintenance free for up to 40 years, significantly reducing environmental impacts in the use phase. The LCA study also helped support the development of water based paints for maintenance repainting additionally reducing VOC emissions.

Business Case: Comparing green building designs

The British Constructional Steelwork Association, with the support of Tata Steel, has set up a free online resource to help people in the con-struction sector learn how to meet the government targets; such as reducing operational carbon emissions in new buildings to zero through the use of real world examples.

The project, called Target Zero, chose five major building types – schools, warehouses, offices, supermarkets and mixed use – and produced reliable, fully-costed solutions demonstrating how to achieve steel intensive, low and zero carbon buildings with the three highest BREEAM ratings.

The LCA experts at Tata Steel have developed the Construction Life Cycle Environmental Assessment Resource (CLEAR) model using GaBi. Simply put, CLEAR allows a standard bill of materials for different building designs to be entered into the model and calculates the full life cycle environmental impacts of the different designs on a complete building, material type or component basis. The model reflects the complex reality and relies heavily on the quality of data behind the GaBi software. The project has won plaudits within Tata Steel and made it to the final of Innovista, the wider Tata Group's annual innovation awards.

"We have built models to look at multi-material impacts of buildings and used it in marketing and communications in the Target Zero project to tell people where steel's strengths lie. We are also demonstrating that buildings of the future can be built using steel. It also helps to get the mess-age across about the benefits of steel recycling: one of the key benefits that is often overlooked in construction LCA studies," comments Griffin.