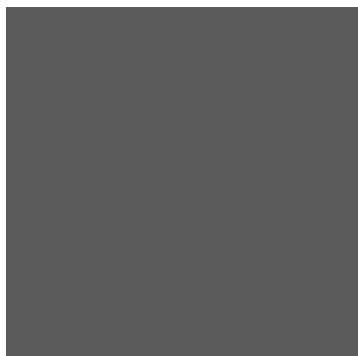


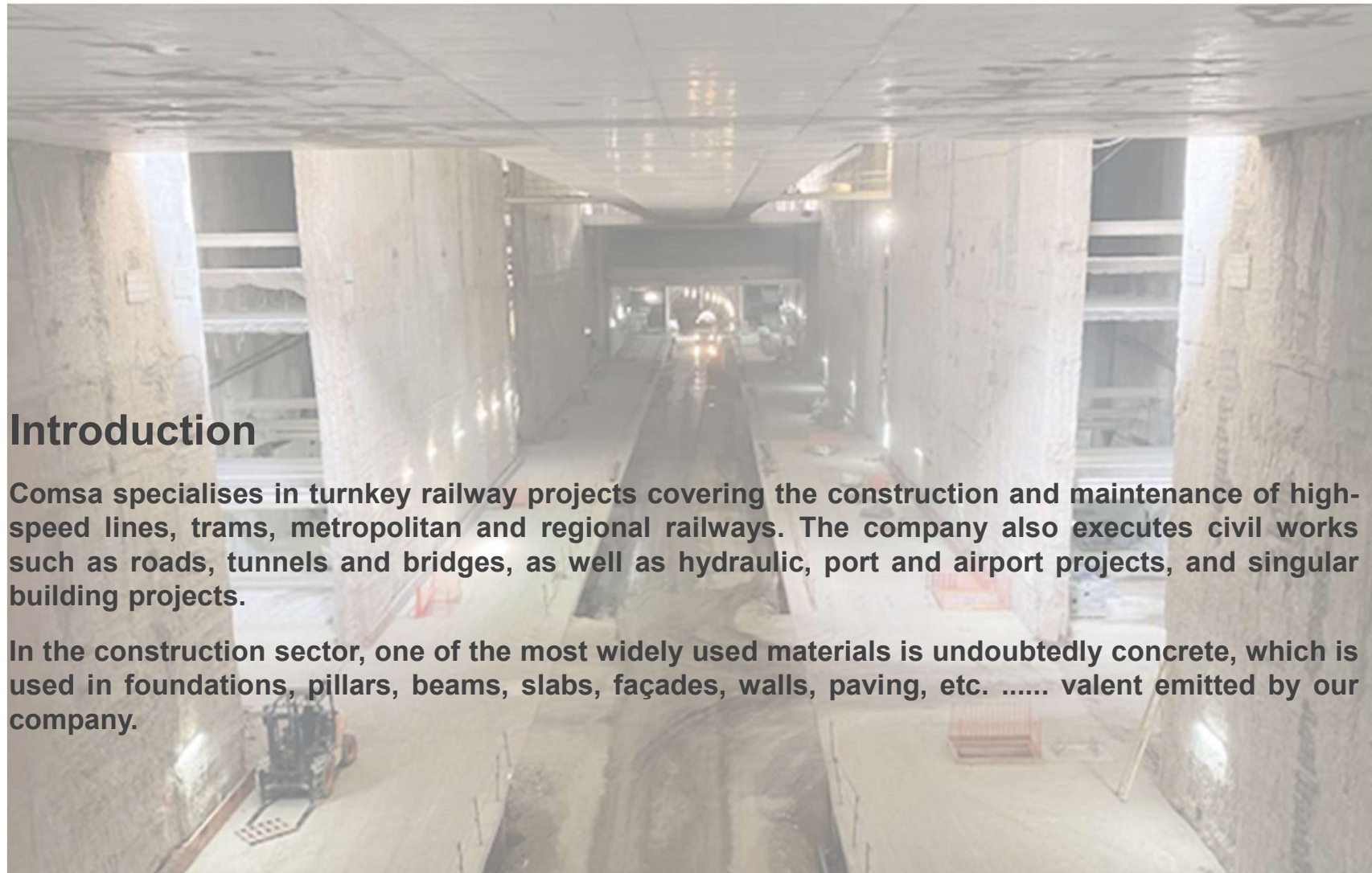


Since 1891

November
2025

COMSA Challenge 2





Introduction

Comsa specialises in turnkey railway projects covering the construction and maintenance of high-speed lines, trams, metropolitan and regional railways. The company also executes civil works such as roads, tunnels and bridges, as well as hydraulic, port and airport projects, and singular building projects.

In the construction sector, one of the most widely used materials is undoubtedly concrete, which is used in foundations, pillars, beams, slabs, façades, walls, paving, etc. valent emitted by our company.



DIGITISATION OF CONCRETE INFORMATION FLOWS.

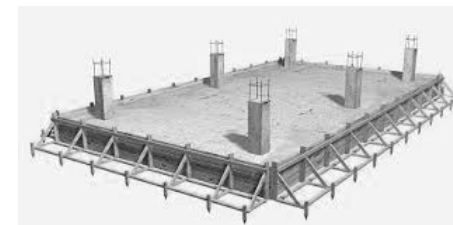
The concrete in our company: on site

Concrete is one of the most widely used materials in our works, and its quality and compliance with technical requirements are extremely important to guarantee the safety of the structures we build.

It is important for us to record the following information regarding the concrete of each truck that arrives on site:

- delivery note number
- elements that are concreted
- type of concrete
- theoretical strength
- Abrahams cone test result

so that we can later verify it with the laboratory results of the samples taken on site.





DIGITISATION OF CONCRETE INFORMATION FLOWS.

The concrete in our company: sustainability

Furthermore, from a sustainability point of view, the concept that contributes most to our carbon footprint at corporate level is due to the carbon footprint in the purchase of concrete and mortar, which in the last year, 2024, has come to represent 7% of the total tonnes of carbon equivalent emitted by our company.

We currently use the Exiobase conversion factor to calculate greenhouse gas emissions in the case of concrete, which is calculated on the basis of the amount of concrete, without taking into account the type of concrete. So, concretes with a low footprint, which tend to be somewhat more expensive, are giving us higher emission values than the usual concretes. In order to develop a good decarbonisation strategy, it is necessary to be able to calculate emissions taking into account both the type of concrete mix and the actual emissions provided by the manufacturer, as well as those derived from transport from the plant to our site.





Challenge: Digitisation of concrete information flows

Objective: To develop an innovative solution to manage the information relating to the concrete on site, providing traceability of the information from the manufacturing plant, with the quality tests carried out in the laboratory, BIM models and the possibility of calculating the carbon footprint taking into account the type of concrete and the emission factor provided by the supplier instead of general factors.

Challenges:

- link the information on the concrete delivery note with the parameters of the BIM model of the concreted objects and the results of the test specimens in the laboratory, in a digitalised and automated way
- avoid entering the information manually
- link the above information with the emission factor indicated by the supplier
- automated calculation of the equivalent carbon footprint of a BIM object.
- quickly consult the delivery note, resistance and footprint information of a BIM object.

Expected Impact:

Improved efficiency on site, taking data digitally and automatically from the supplier and digitally on site. No need to handwrite or repeat information in different formats or platforms.

More realistic calculation of the equivalent carbon footprint per concrete purchase.



DIGITISATION OF CONCRETE INFORMATION FLOWS.

Let's
DO
This
THING