

# ingenium

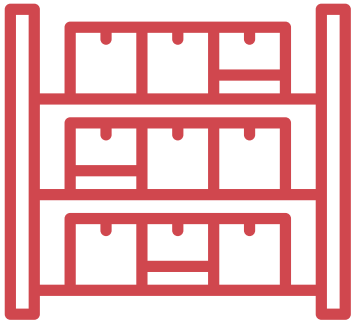
by  CELSAGROUP™

## Reinventing the Steel Industry with Celsa Group

Technological innovations can provide solutions to a number of the challenges faced by the steel industry. Enter the Ingenium programme, an initiative created as a way to seek out entrepreneurial-minded professionals and innovative startups who want to become a part of the steel revolution and Industry 4.0.

# 5 CHALLENGES

# 1



### Energy storage

Create innovative storage systems.

Optimise the storage of large amounts of energy.

Separate consumption hours from storage time.

## 150K-200K

population

A normal steel mill, with a single furnace, consumes as much energy per year as a city with this dimension.

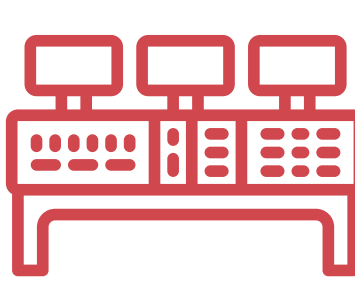
### Traceability in the supply chain

Identify the product along the value chain with pinpoint accuracy.

Stay informed about the product's logistic status at all times.

Provide real-time information on product location and status.

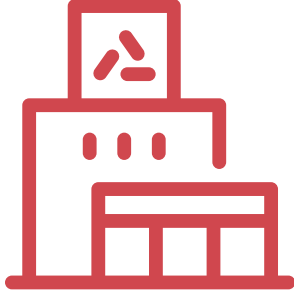
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## €16B

"The total RFID market will be worth more than €16B by 2026".  
Source: IDTechEx.

# 3



### By-product recovery

Recover precious metals and critical materials.

Minimise heavy metal spread and leaching.

Convert by-products like scale into nanoparticles.

## 400MT

"The iron and steel industry produces about 400 million tonnes of slag (including that from blast furnace operations) each year".  
Source: 'Steelworks slag recycling' report by Alacero.

### 3D printing

Reuse steel powder for 3D printing.

Improve printing technology and processes.

Manufacture large-scale products.

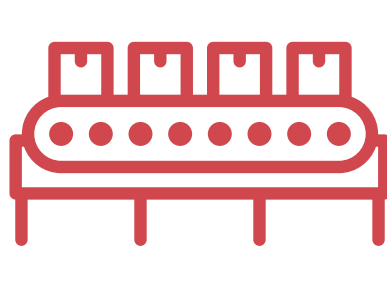
# 4



## 32,2%

"The global market for 3D printing is expected to grow annually by 32.2% to reach a value of \$15.2 billion by 2019".  
Source: Ceramic Industry.

# 5



### Smart steel

Customise steel grades with programmable material.

Manufacture smart materials that adapt to different environments.

Create materials that provide feedback on how and where they are.

## \$14.4B

"The impact of The Internet of Things on industry is estimated to reach \$14.4 billion by 2022".  
Source: Cisco.

## What does the acceleration programme include?

Real possibility of applying the ideas in Celsa Group.

Opportunities to scale within the company if the solution proves effective.

Mentoring and networking with Celsa Group professionals.

Open call for any entrepreneur or startup from Finland until December 9th, 2016.

[ingenium.gcelsa.com](http://ingenium.gcelsa.com)