

Energy efficiency is a crucial factor for today's steam cracking furnaces.

Opposing factors like cost efficiency and a simultaneous **reduction of emissions** of greenhouse gases and NO_x needs to be controlled.

Innovative technologies will allow:

- ✓ to **increase energy efficiency** by at least **20%**
- ✓ to **reduce greenhouse gases** and NO_x / ton ethylene produced by at least **25%**
- ✓ to **increase the time** on stream by a **factor 3**



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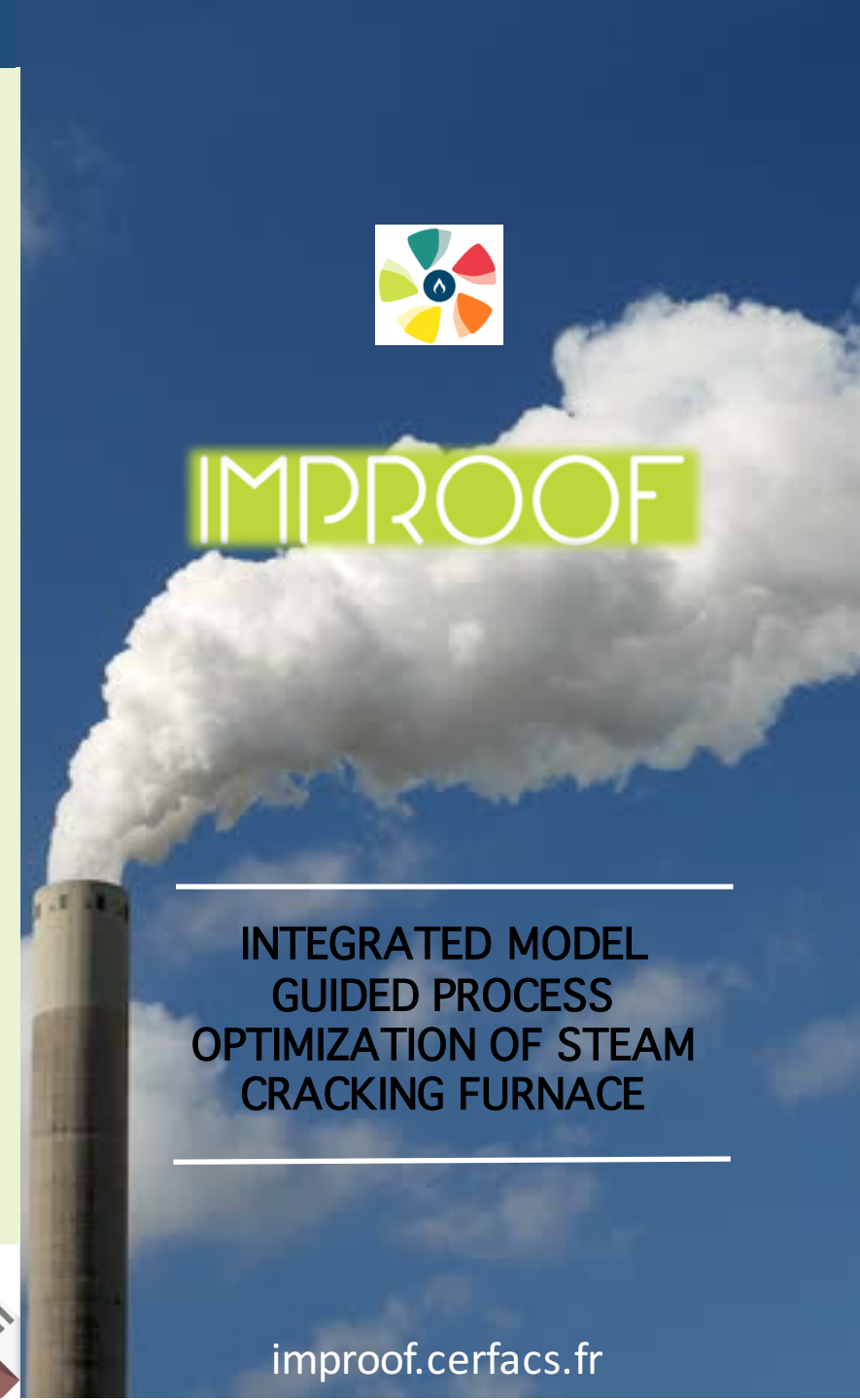
POLITECNICO MILANO 1863 **DOW**

ayming **business performance consulting** **CRESS**

Associated partner: **Emisshield**

PROJECT DETAILS
Duration 48 months
EU Grant 6 878 401 €

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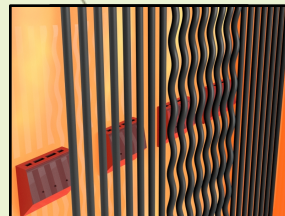
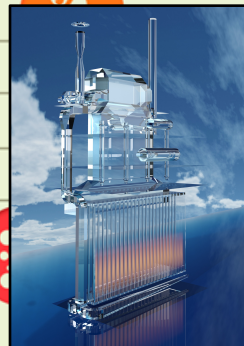
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**INTEGRATED MODEL
GUIDED PROCESS
OPTIMIZATION OF STEAM
CRACKING FURNACE**



IMPROOF

INNOVATIONS



New 3D furnace and reactor design leading to:

- 30% fuel savings
- 30% less CO₂ emissions
- Cost effective furnace design
- Improved run length

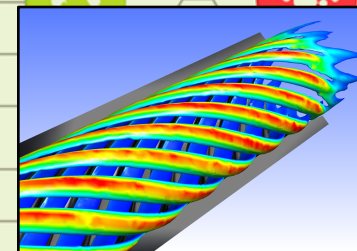
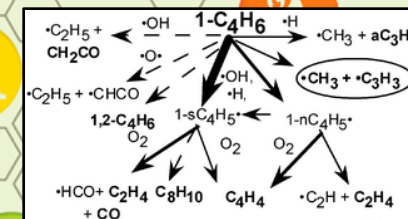


Renewable fuels
(biogas and bio-oil) for
lower net CO₂ production



High emissivity coatings for
lower fuel consumption

METHODS



Advanced
numerical
simulation



Upscaling and
integration

Next generation steam cracking process

OBJECTIVE

Develop new techniques to **reduce coke formation**, use **high emissivity coatings**, and **include biogas and bio-oil as fuels** to drastically improve the energy efficiency of steam cracking furnaces in a cost effective way, while reducing emissions of greenhouse gases and pollutant emissions.