

Low Emissions Intensity Lime and Cement (LEILAC)

ECRA /U-Mons Chair Event November 9, 2016

Julien Wart, Plant Manager Lixhe, CBR, HeidelbergCement

Jan Theulen, Director Alternative Resources, GES, HeidelbergCement

CBR Lixhe & Leilac Project :

***What role for a Cement Plant Manager
in the current and upcoming CO₂ challenges ?***



**Wart Julien,
Plant Manager CBR Lixhe**

CBR Lixhe & HC Benelux CEM !

CBR Antoing



CBR Gent

CBR Lixhe



ENCI IJmuiden
ENCI Rotterdam



ENCI Maastricht



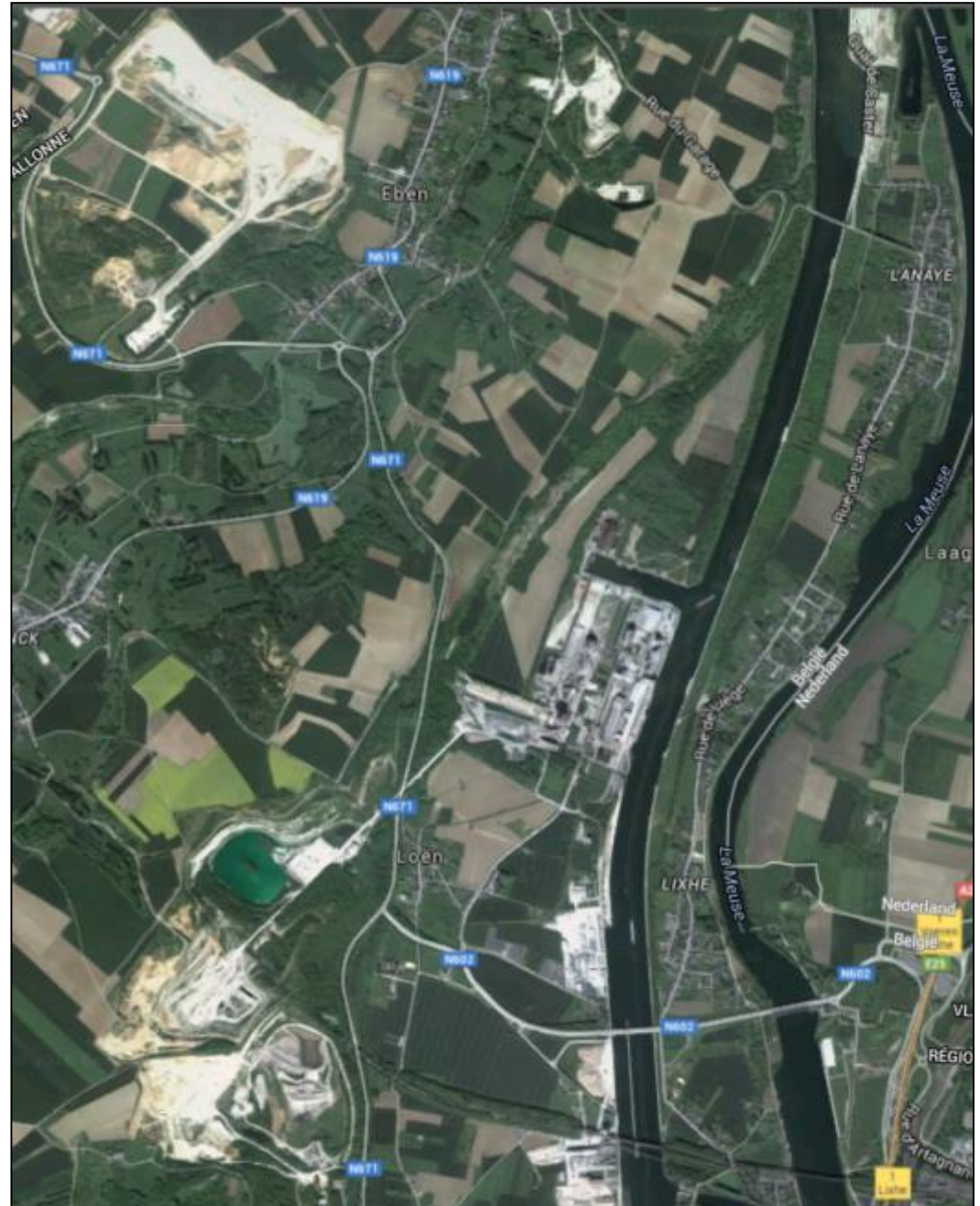
HEIDELBERGCEMENT

Lixhe: Location

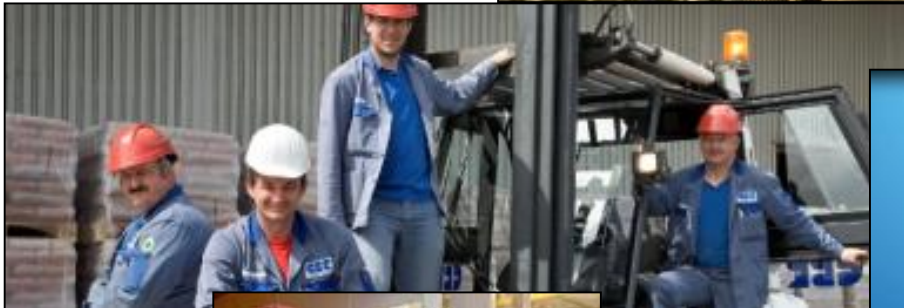


CBR Lixhe :
Integrated plant
→ 3 Main process

Quarry Extraction
Clinker Production
Cement Production
1.4Mt cement/clinker



CBR Lixhe ... Machines & men @ work ...



HEIDELBERGCEMENT

Daily priority :

- 1) Safety**
- 2) Environment**
- 3) Quality (product & services)**
- 4) Tonnage / Volumes**
- 5) Optimization of our costs**



**Of course in line with weekly, monthly
& yearly objectives ...**

But beside those tangible objectives ...

MISSION & VISION

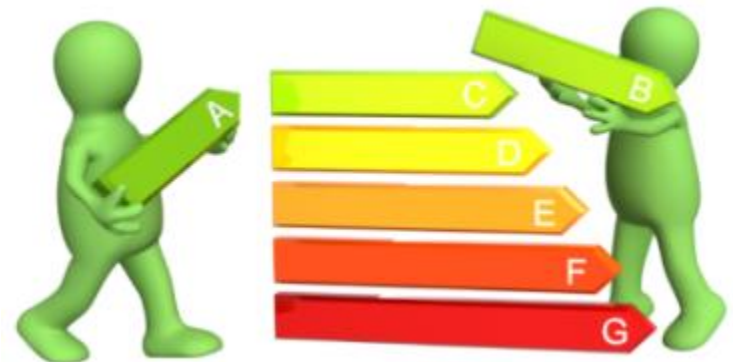
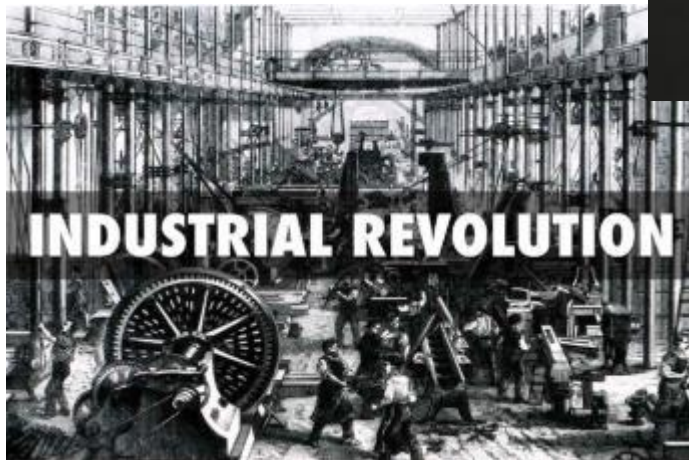


Role of an Engineer :

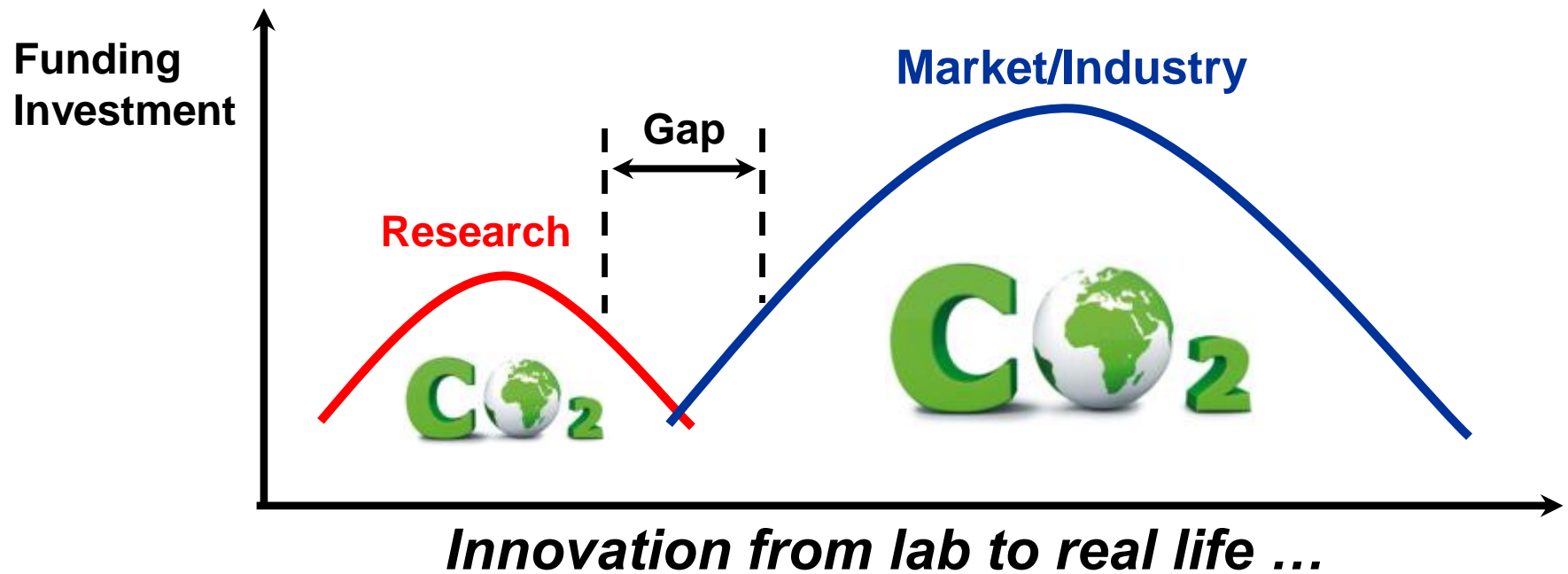
Technically contribute to the challenges of our society ...



~~Problems~~
Solutions



■ Analogy with CO₂ : Cement Plant Manager “Role”



Need of brave courageous company ready to merge the gap and ready to take risk and invest time, resources and money ... not only for industry as a whole but also for society as a whole !

■ Analogy with CO₂ : Cement Plant Manager “Role”

Such a huge project does not come natural ... Need of a clear commitment and willingness from all participants ...

CBR Lixhe is proud to be part of the chain despite the work “on top of”



“Keep on staying aware of what is on-going related to CO₂ CCU CCS is way different than contributing to it”

Jan Theulen, Knowledge exchange workshop CCS/CCU 22/06/16 Leimen

And being part of the creation of a potential industrial CO₂ cycle is quite exiting ... And also fun for an engineer

■ And what if we don't go forward on CO₂ challenge

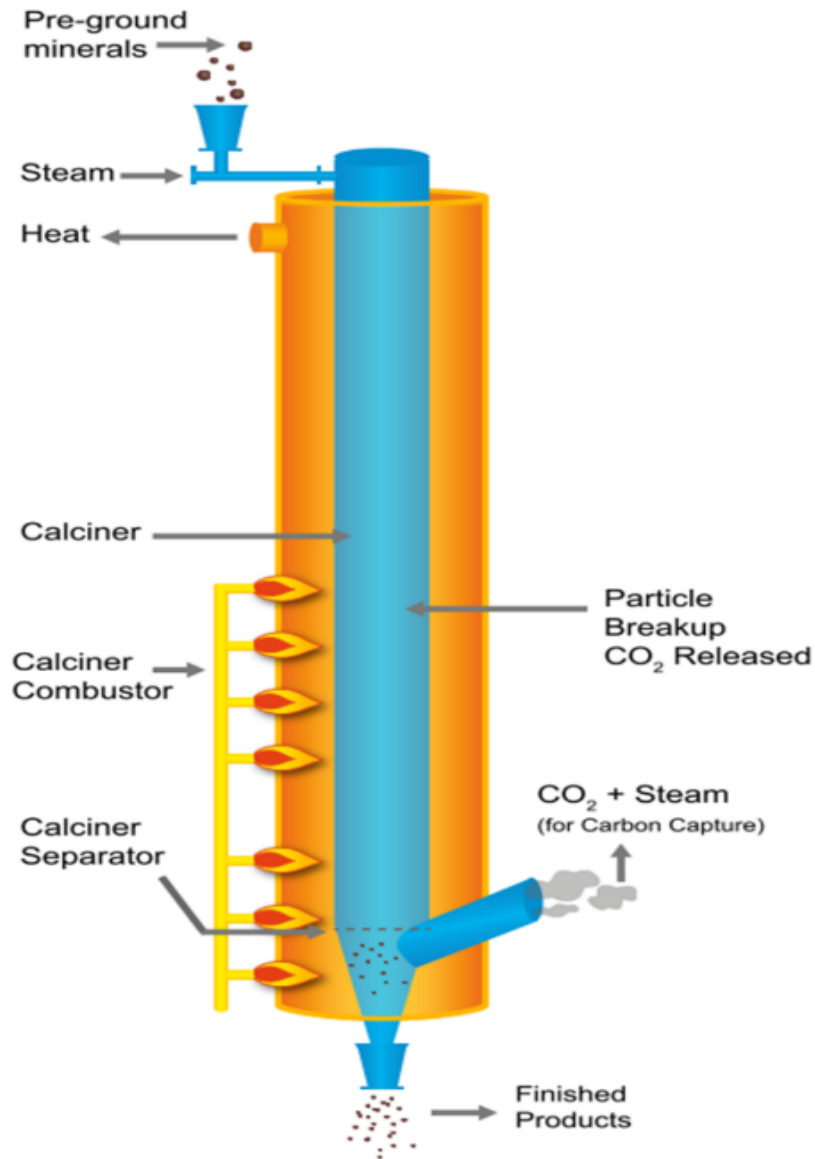


Low Emissions Intensity Lime And Cement

LEILAC

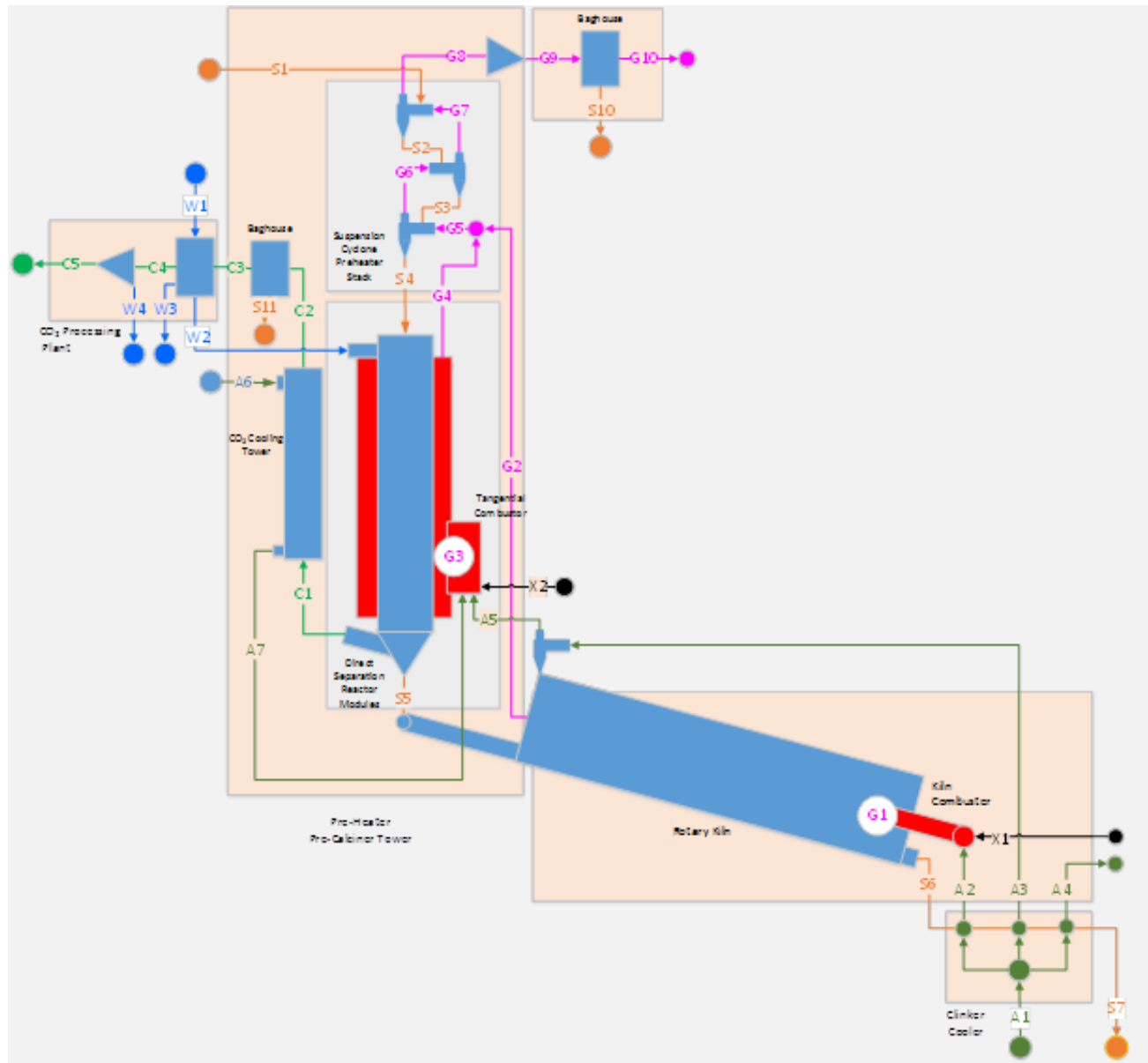
the project itself

Calix Direct Separation Reactor for Cement & Lime

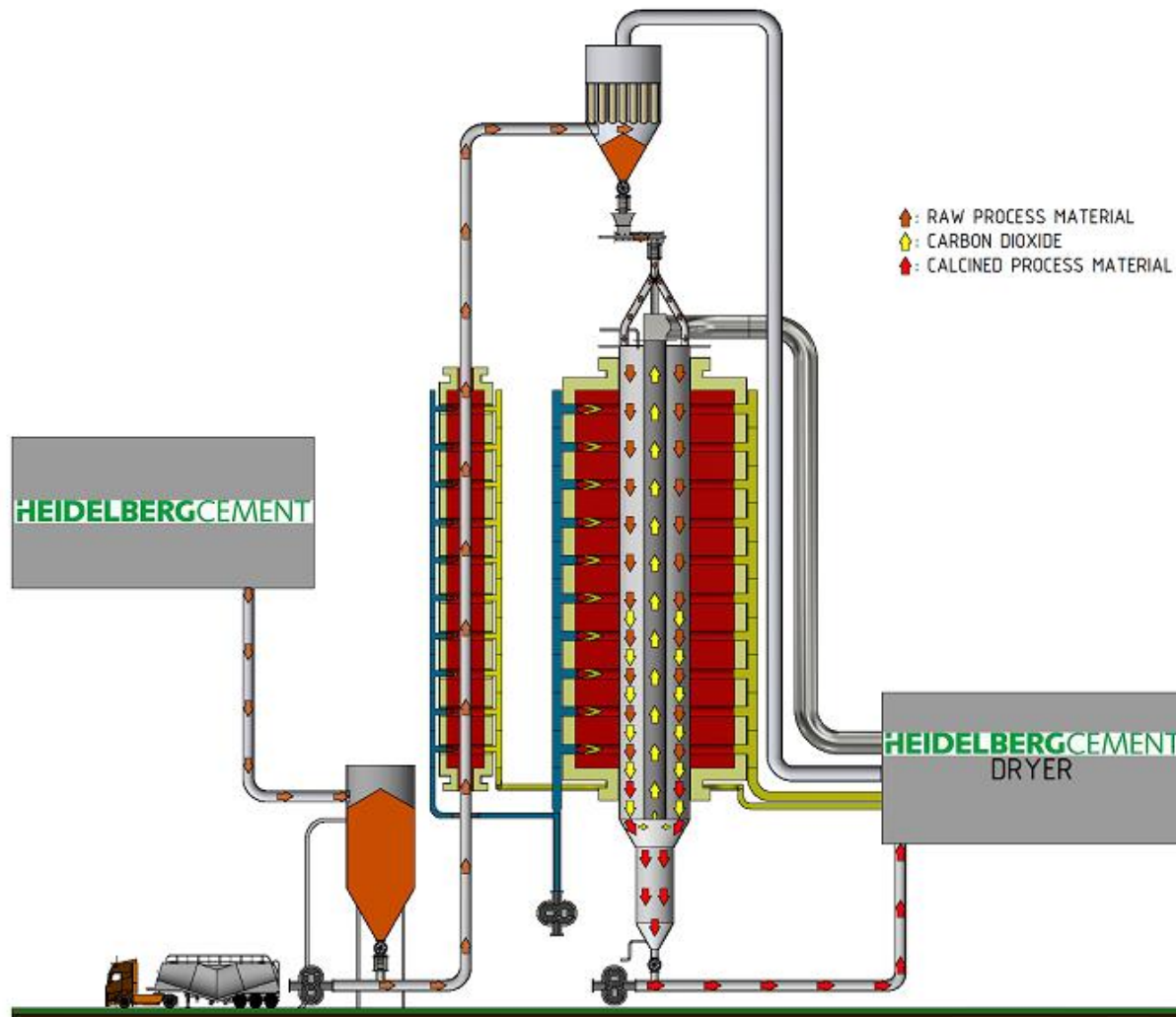


HEIDELBERGCEMENT

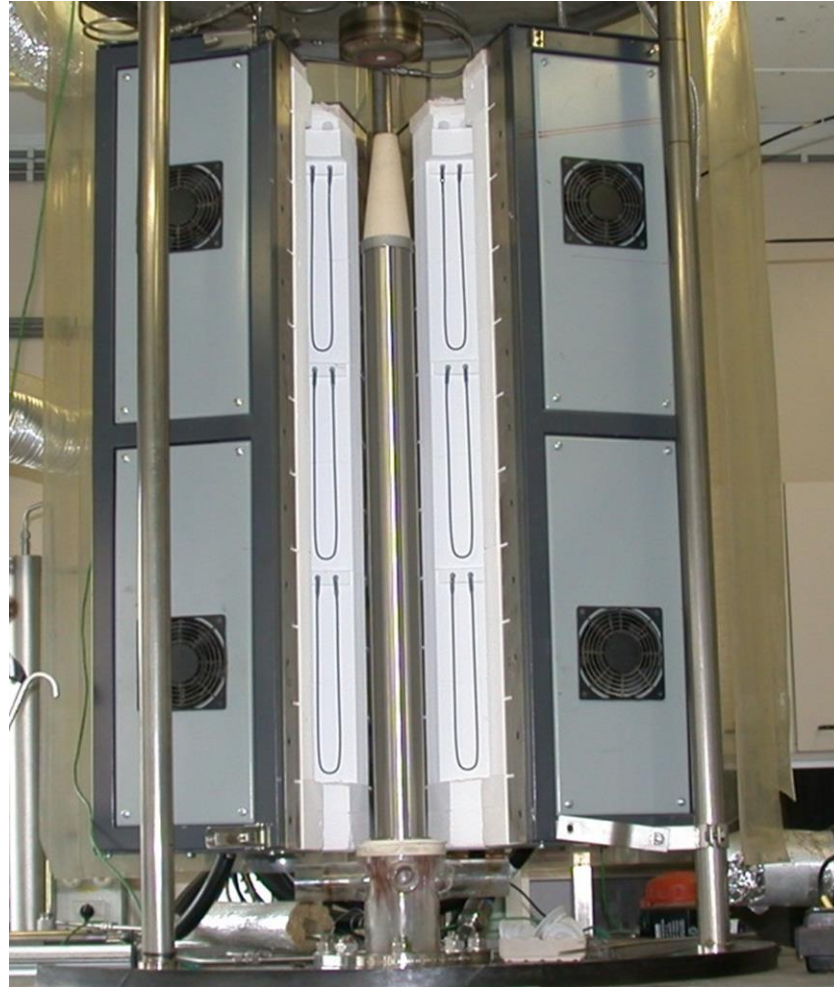
The DSR-reactor is replacing the conventional calciner



Process flow explained

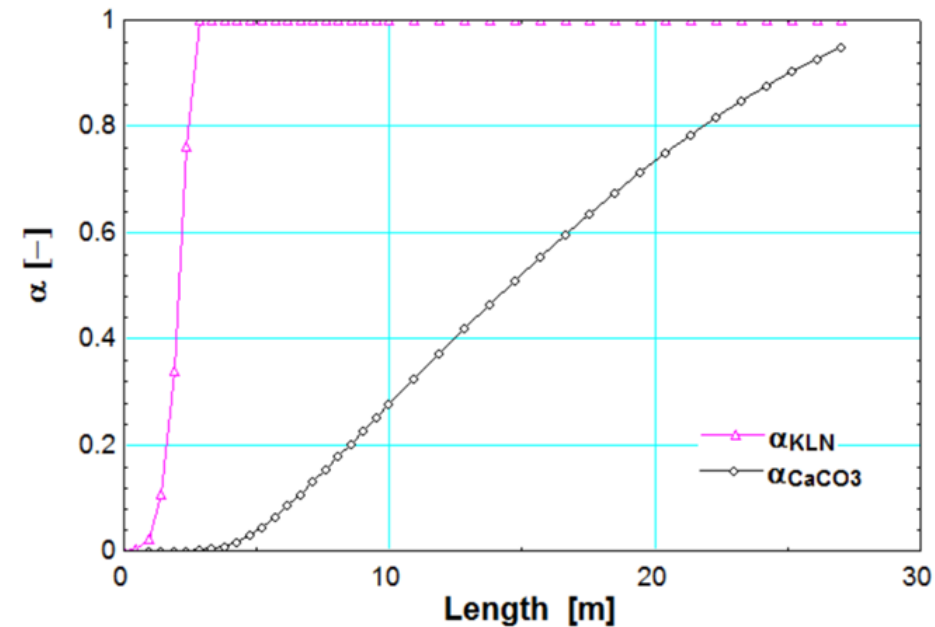


Lab-testing done of high-temp steel tube at ECN-Petten

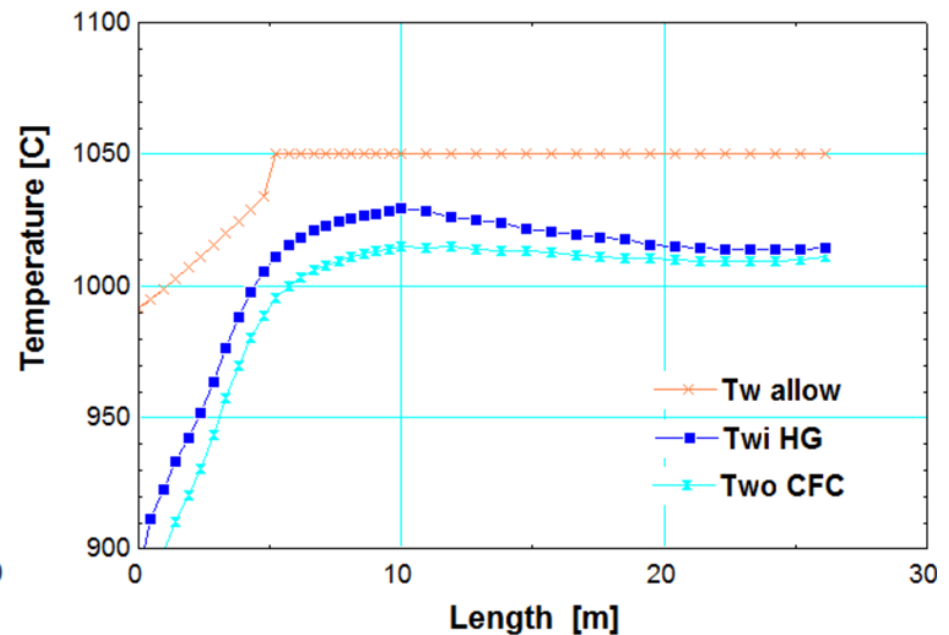


Process calculations Temperature vs Calcination

■ Calcination vs Length



■ Temperature vs Length



Lay-out and structural design + ty-ins to Lixhe plant

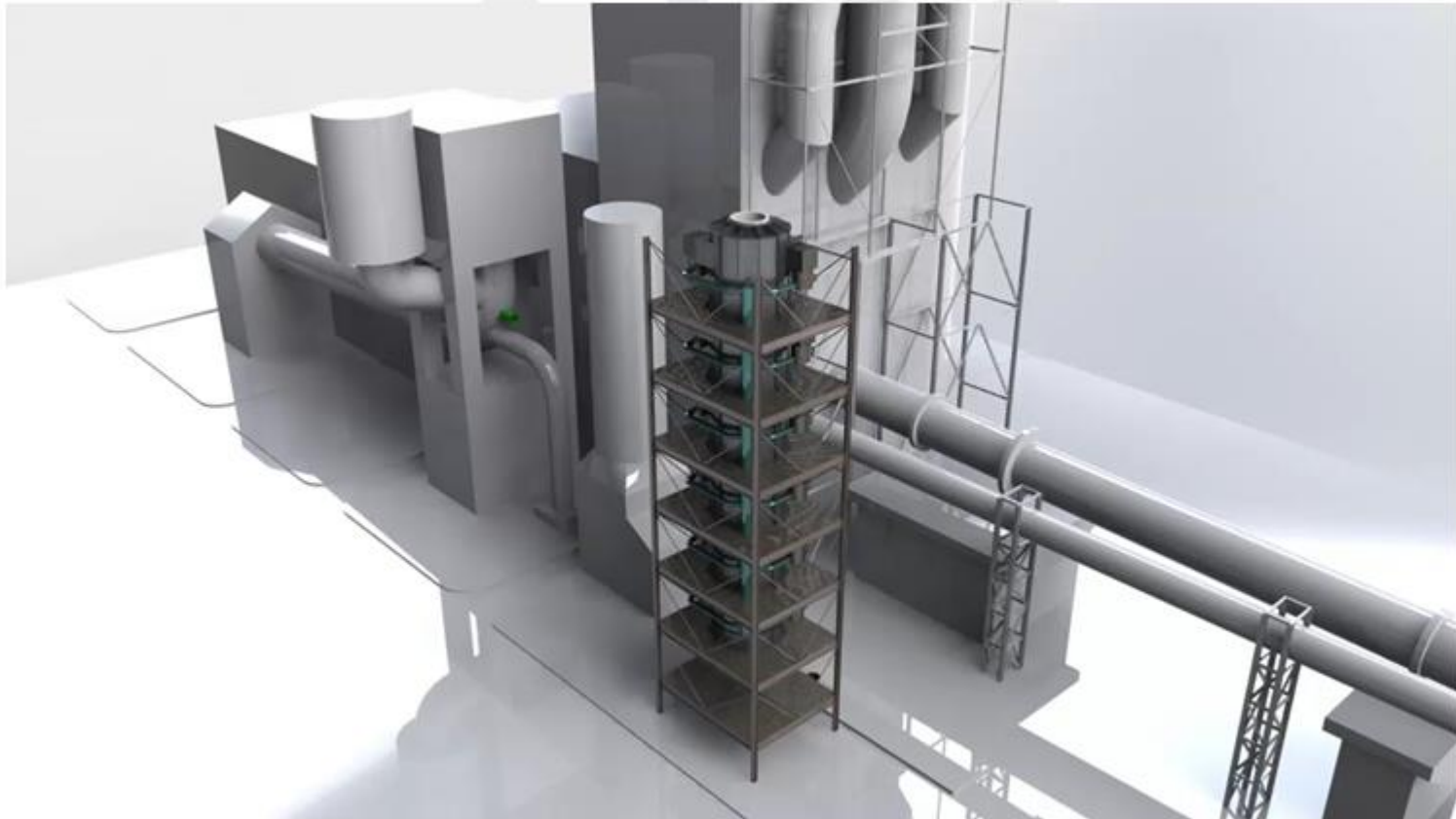


Figure 12 – How the pilot's modular tower may look against the current calciner tower

Intensive budget evaluations

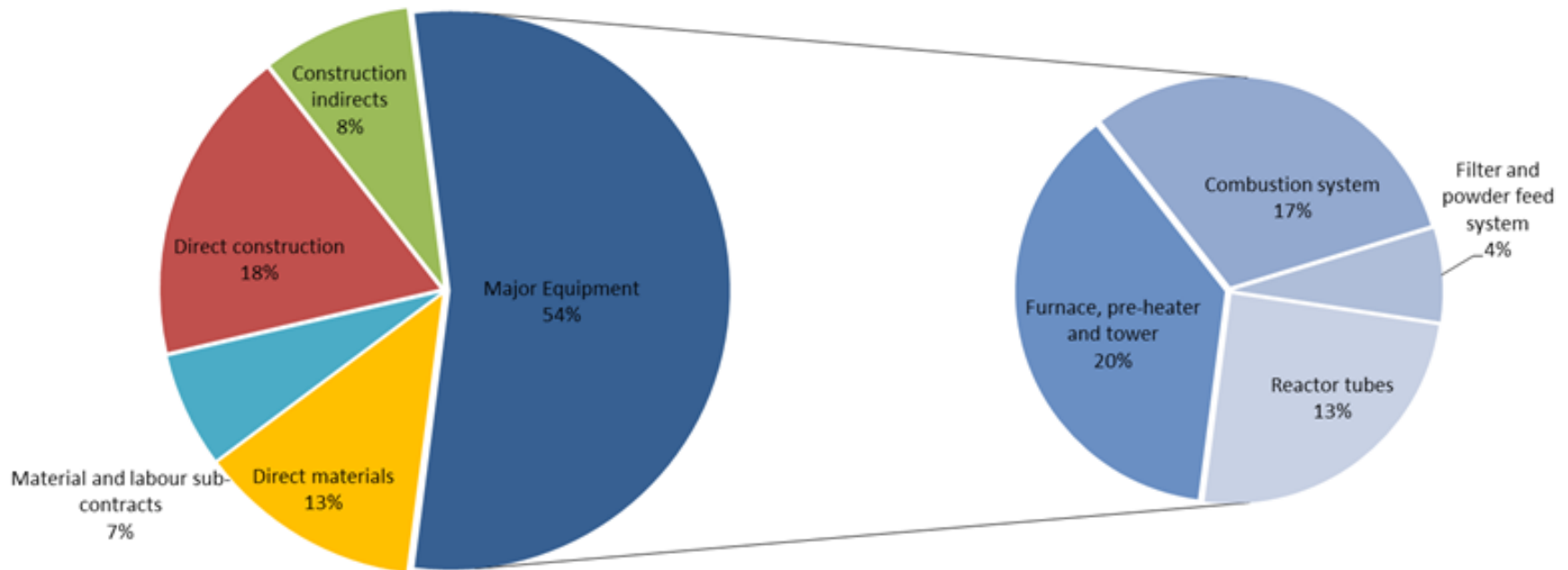


Figure 14 – Pilot's material and construction cost split

Time-line

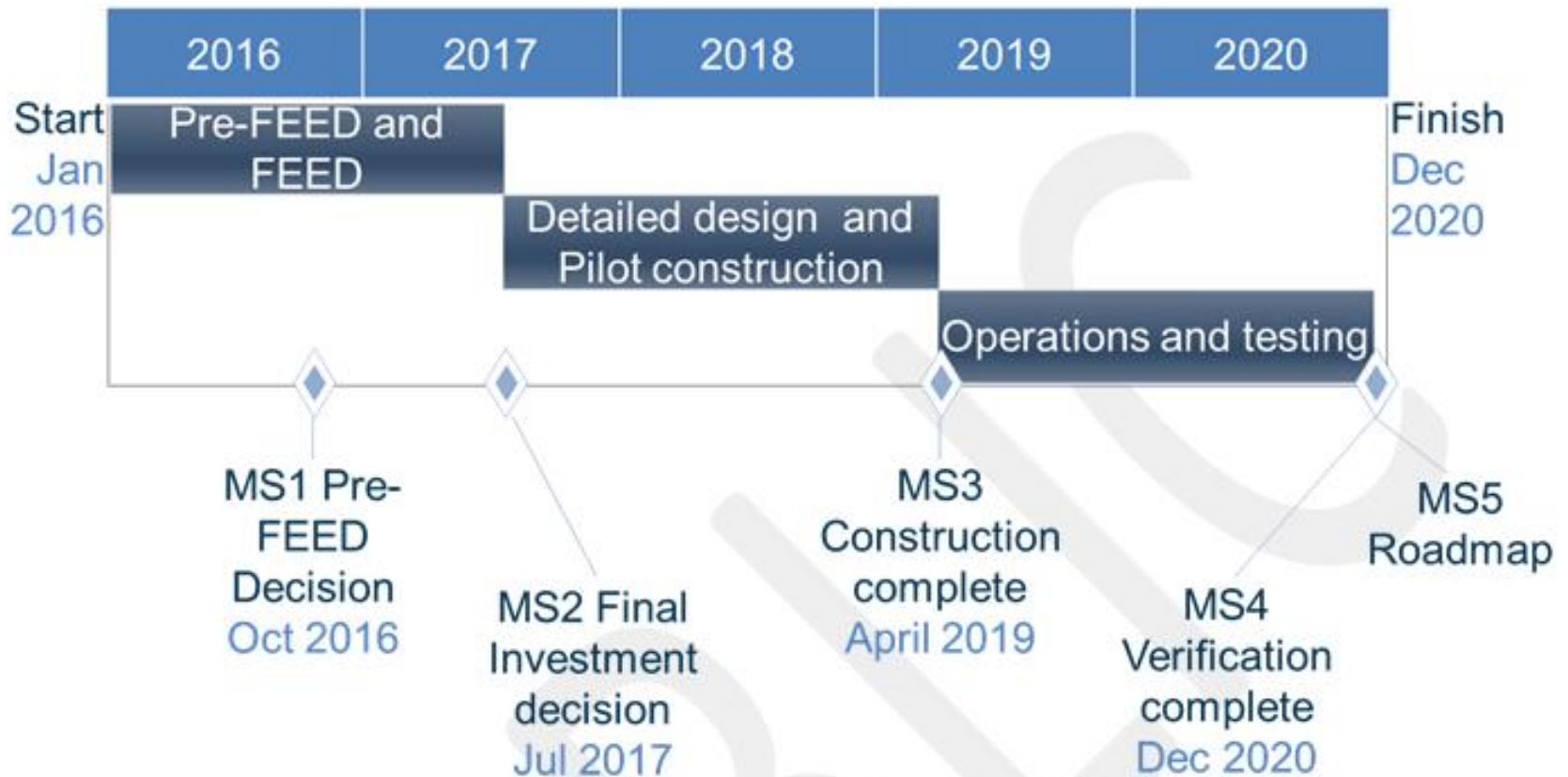


Figure 15 – The LEILAC project's high level timing

Commercial application (I)

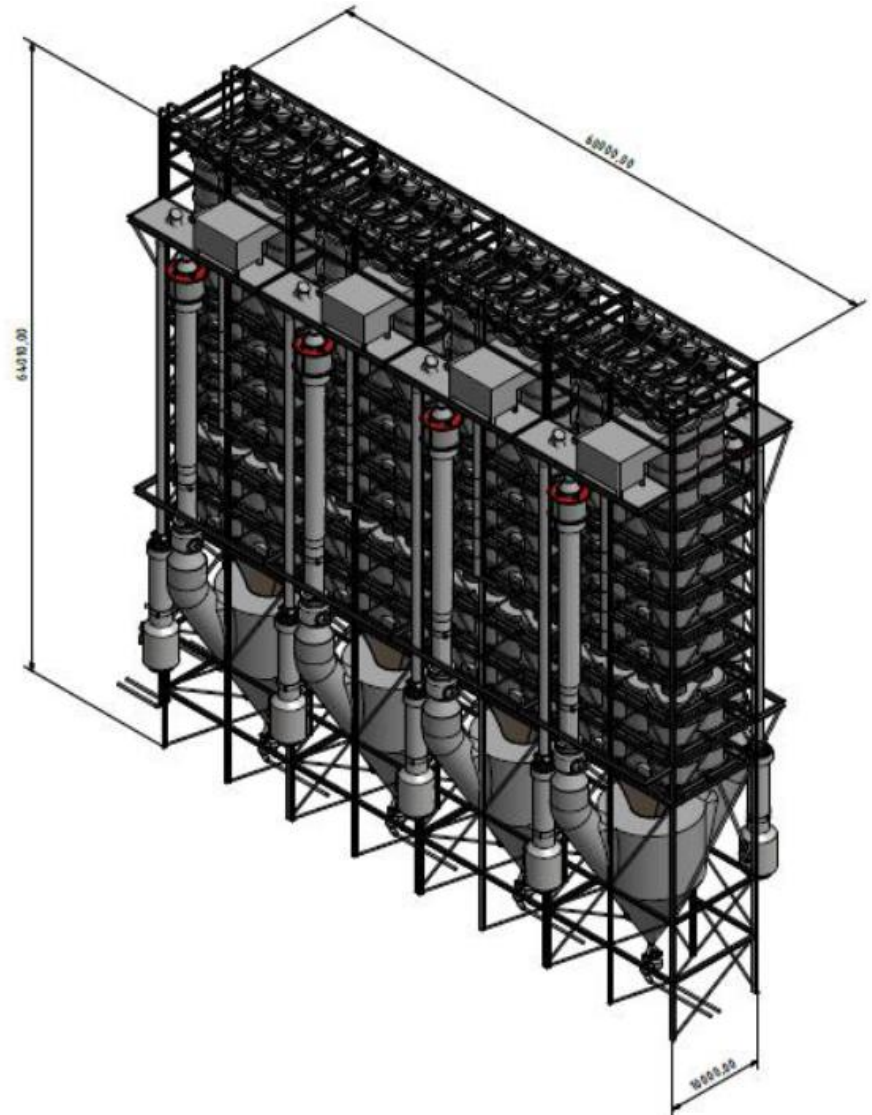
- **Single reactor**
- **Lime – kiln 250 tpd**
 - High surface
 - Added value products
- **CCU for cement kiln 250 tpd**
 - CO₂ separated 30 kton/year
 - Matches with 80 MWe P-t-G facility



HEIDELBERGCEMENT

Commercial application (II)

- Upscaling for cement industry – full CCS/CCU
- Increasing diameter
- Multiple reactor



Consortium Partners

HEIDELBERGCEMENT



**Imperial College
London**

This project has received €12m of funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654465

