COMPANY PROFILE

CIMPROGETTI®
THE GREEN EDGE OF
LIME TECHNOLOGIES

nr. 2 Twin shaft vertical kilns
mod. Vanguard®

OUR CORE BUSINESS

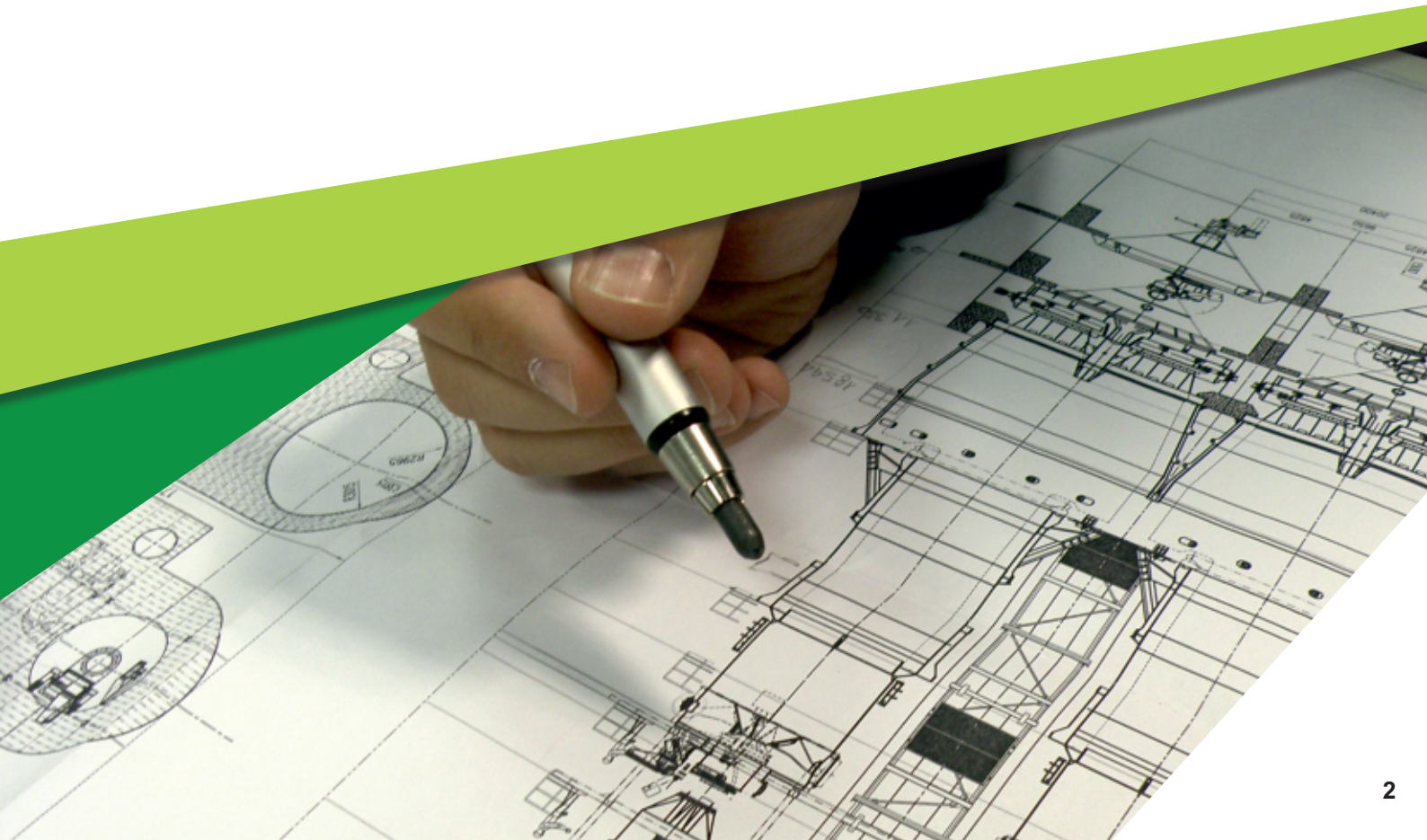
Cimprogetti was founded in Bergamo (Italy) in 1967. The company is leader in the design and supply of equipment and plants for the lime industry.
The product range spans from vertical kilns for the calcination of limestone and dolomite, to complete lime hydration units.
Cimprogetti todays boasts the realization of over 400 plants throughout 5 continents.

The scope of supply is diversified according to essential guidelines that constitute our core business:

- **ENGINEERING** - provision of basic and detailed and «tailor-made» engineering;
- **KEY COMPONENTS** - supply of essential components;
- **TECHNICAL ASSISTANCE** - provision of technical supervision;
- **SPARE PARTS** - supply of spare parts; thanks to the ERP system (Enterprise Resource Planning), the spare parts are quickly identified and delivered.

Cimprogetti acts as technology provider leveraging the partnership of companies specialized in construction.
Cimprogetti provides a customer care service worldwide, an unique and bespoke consulting assistance for plant revamping, enhanced plant efficiency, product quality and reduced operational cost, engineering support, process operator training, etc.

Process operator training is essential for the safety operation of plant facilities. Cimprogetti know-how is promoted through Cimprogetti Academy: skilled instructors deliver training course and seminars for operators and production supervisors. More than fifty years of experience and knowledge at disposal of our Customer to obtain a certified process operators training.



Twin shaft vertical kiln
mod. Flex Reversy®

TECHNOLOGIES PORTFOLIO

TSR (Twin Shaft Regenerative) kilns

The TSR-Kilns series utilizes the regenerative process for lime calcination and represents the best option for high capacity lime production in terms of:

- **energy savings,**
- **maintenance costs,**
- **eco compatibility,**
- **high quality of lime.**

The Flex Reversy® series is the natural evolution of the former Twin-D® series and is the result of years of studies on existing units as well as very advanced 3D mathematical simulations and modelling.
The Flex Reversy® boasts a patented innovative polygonal and symmetrical design of the shafts to favor the use of a broader range of limestone granulometries to the benefit of a better quarry mass balance.

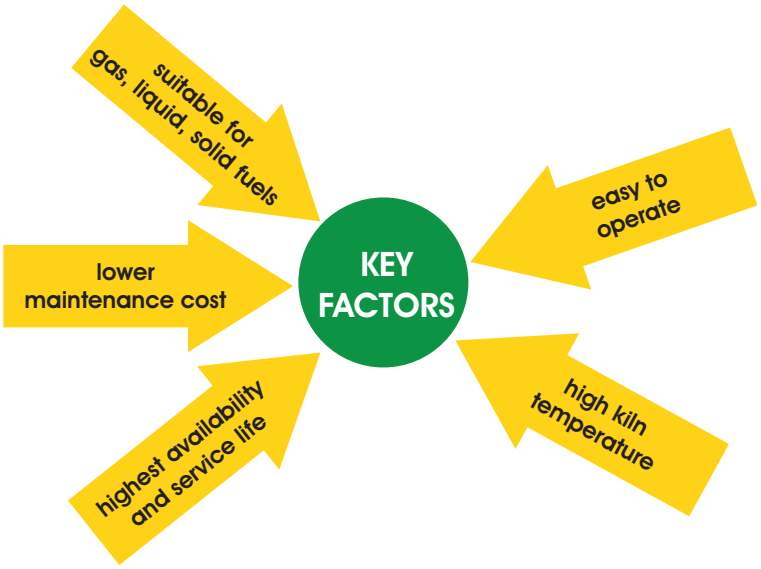
The new Vanguard® series, with its circular section and radial cross-over channel, is state-of-the-art in its field. The Vanguard® is the Cimprogetti Twin Shaft kiln designed to respond to the lime market trend moving towards larger kiln capacities and superior lime quality. It has been recently improved to reduce CAPEX and the design has been simplified, bettering the performance of the kiln.

Twin shaft vertical kiln mod. Vanguard®

ABC® (Advance Burning Concept) kiln

ABC® (International patent no. PCT/IB2010/051146) is the Cimprogetti vertical single shaft kiln with counter current flow arrangement and is the latest in the evolution of single shaft kilns.

The ABC® kiln, thanks to its particular firing system, allows to produce the so called hard-burnt lime, with an optimal use of diverse limestone sizes and a variety of gaseous, liquid and pulverized solid fuels.
The innovative technologies involved in the new firing arrangement achieve a substantial reduction in pollutant emission.



With the particular burner design of the ABC®, the control of the burning temperature makes this design the “must-have” technology especially for :

- soda ash and PCC industries;
- applications where a high CO2-content in off-gases is required.

Traditional mixed-fired lime kilns may be replaced with the ABC® lime kiln.

Quicklime hydration

Hydrated lime is the second most relevant commodity of the lime industry and modern industrial applications developed in the 20th century require many different qualities of lime to be manufactured under controlled conditions.
In particular relatively newer industrial uses - such as FGD - have required new product characteristics.
Cimprogetti is sensitive to the needs of its Customers and endeavours to develop smart solutions.

- **Cim-Hydrax-4G** is the further evolution of the Cim-Hydrax basic model, developed to produce enhanced fineness of raw hydrate;
- **Cim-Hydrax-4G MAX** for special applications (high humidity-medium BET);
- **Cim-Hydrax-FGD** is the dedicated hydrator for flue gas desulphurization applications;
- **CIM-PILOT**, a scaled down standard hydrating machine to execute testing campaigns at client's plant sites .

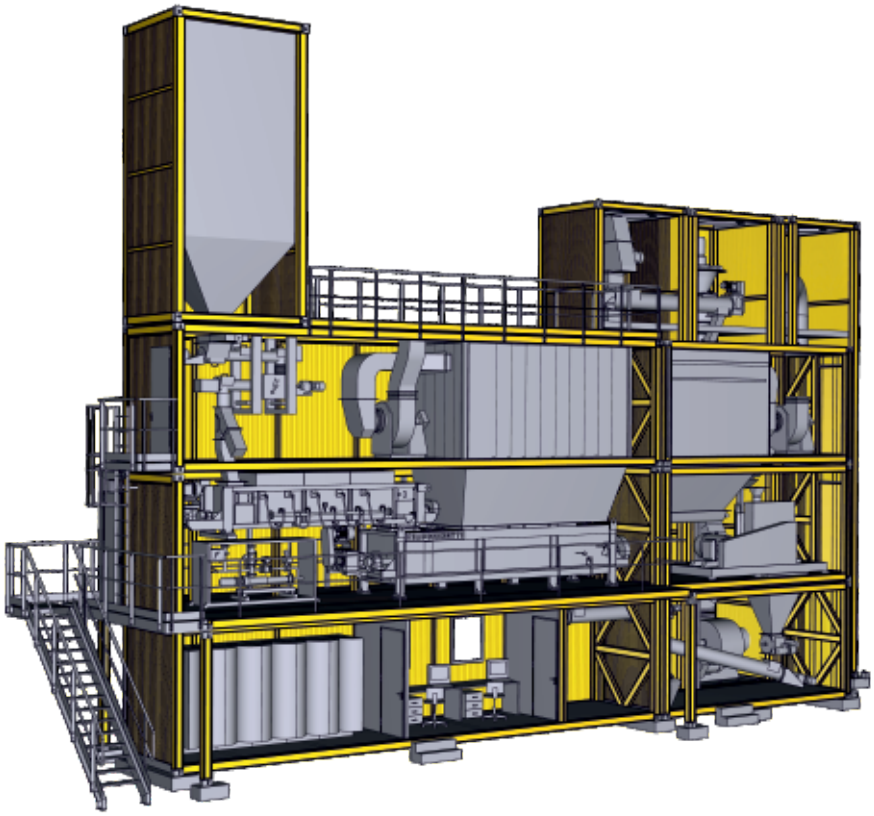
A range of specialized ancillary equipment has also been developed to complement the hydration process, namely:

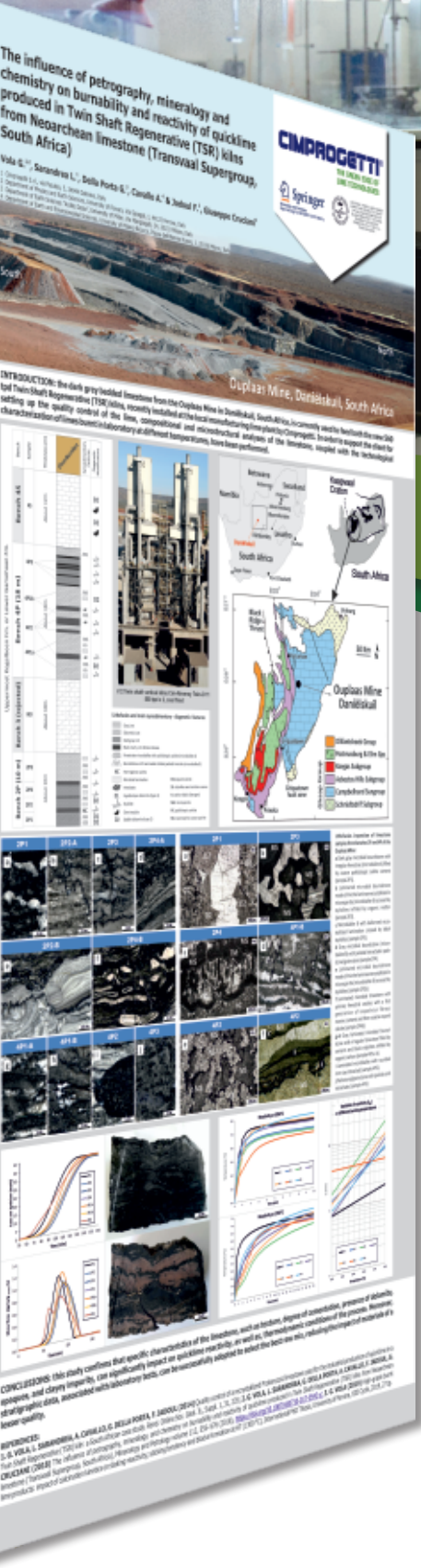
- **Cim-Premix™,** a premixer stage for boosting the hydration reaction;
- **Cim-Digidoser™**, the digital weighing feeder;
- **Cim-Zeropoll™**, the dedicated bag house;
- **Cim-Cage™**, a compact desagglomerator to enhace product uniformity;
- **Cim-Microsep™**, the separator for razor sharp cuts;
- **Micro-Jetsep®**, the lower end feeding separator for special configuration;
- **Loss-in-weight feeder**, a gravimetric metering device for an accurate material dosing.

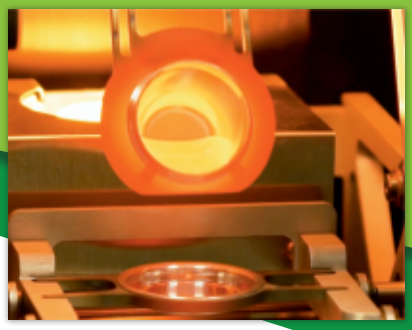
Cim-Hydrax-Compact®

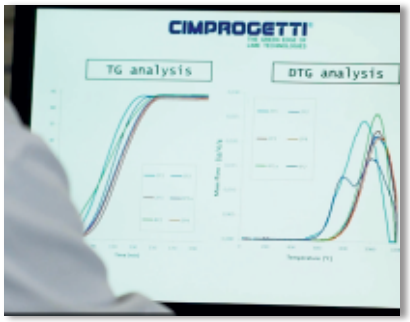
Industrial hydration plant specially designed to reduce the overall dimensions, be as compact as possible by eliminating unnecessary auxiliary machines and spaces, thus greatly reducing the CAPEX and preserving contractual performances of the Hydrax.

The Cim-Hydrax-Compact® is available in different configurations to meet the maximum flexibility in technical options, retrofitting space and product quality requirements.




The influence of petrography, mineralogy and chemistry on burnability and reactivity of quicklime produced in Twin Shaft Regenerative (TSR) kilns from Neoarchean limestone (Transvaal Supergroup, South Africa)
CIMPROGETTI
Springer
Duplaas Mine, Danielskuil, South Africa
CONCLUSIONS: this study confirms that specific characteristics of the limestone, such as texture, degree of cementation, presence of dolomite, inclusions, and clayey impurities, can significantly impact on quicklime reactivity, as well as, thermodynamic conditions of the process. Moreover, stratigraphic data, associated with laboratory tests, can be successfully adopted to select the best raw mix, reducing the impact of materials of lesser quality.

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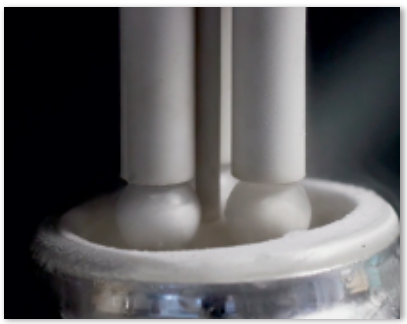
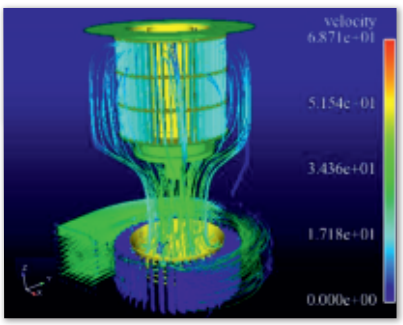
TG analysis
DTG analysis




velocity
6.871e+01
5.154e+01
3.436e+01
1.718e+01
0.000e+00

TECHNOLOGICAL LAB

A correct plant configurations and technology selection imply and cannot disregard a thorough analysis and testing of raw materials and finished products: this activity of primary importance is entirely carried out in-house by Cimprogetti through our Technological Innovation LAB.
Cimprogetti's technological laboratory is able to perform a large spectrum of material analysis, among them:

- petrographic examinations by mean of transmitted and reflected light microscope;
- TG (thermogravimetric)-DTG (differential thermogravimetric) analysis by mean of thermo-gravimetric muffle furnaces;
- chemical analysis by mean of atomic absorption (AAS) and X-ray fluorescence (XRF) spectrometers;
- mineralogical analysis by mean of a desktop X-ray powder diffractometer (XRPD);
- particle size analysis by mean of a laser diffractometer;
- specific surface area calculation (BET) and pore volume distribution (PV) by mean of a gas sorptometer.

BOT PLATFORM™ SOFTWARE

Since 1985, Cimprogetti plants have been automated and controlled by means of a dedicated software.
BOT Platform™ is constantly updated on the basis of the experience gathered worldwide by Cimprogetti commissioning engineers.
Maintenance support online, remote plant supervision and internet data transmission are key features of the BOT Platform™ package.

Cimprogetti - M-A. Grellier - 04.2023

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CIMPROGETTI GROUP

THE GREEN EDGE OF
LIME TECHNOLOGIES

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COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =