IPIAC

Limestone Calcined Clay Cement LC3

# IPIAC's Technology

## LC3 Day

Lisbon / May 2024

# History & Evolution of IPIAC Group

**1855** – Foundation of the Company

**1986** – Bricks and rooftiles plant

**2000** – Present: Expanded Clay Plants

**2016** – Present: Calcined Clay Plants

**2019** – Present: Other sustanability areas waste to energy, waste to hydrogen, CCU

## Own Capacity at IPIAC

- Engineering
- Machinery construction, including own foundry for casting steel/iron
- Automation
- Synergy with major machinery producers

## Commercial Projects

- Tunnel Brick plants
- Expanded Clay plants
- Calcined Clay plants
- Biomass treatment lines
- Sustainability Projects (Waste to Energy, Waste to Hydrogen, CCU)

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# LC3 Day

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## RETROFITTING OF EXISTING KILN

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ecosolutions Sustainable habitat

BEFORE

# Retrofitting of existing kilns

Case Study

The current CIMANGOLA cement factory based in Cacuaco, Angola, is being transformed into an Calcined Clay LC³ cement production plant, by IPIAC Technology.

1. Clay Analysis
2. Raw Material/Industrial Trial
3. Preparation Line Equipment
4. Existing Kiln Transformation
5. Cooling

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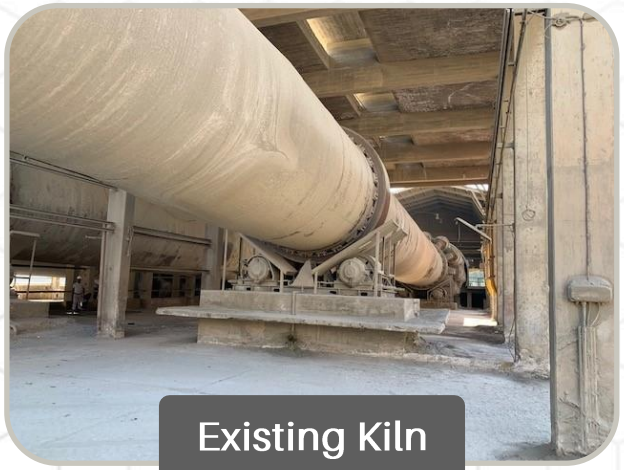
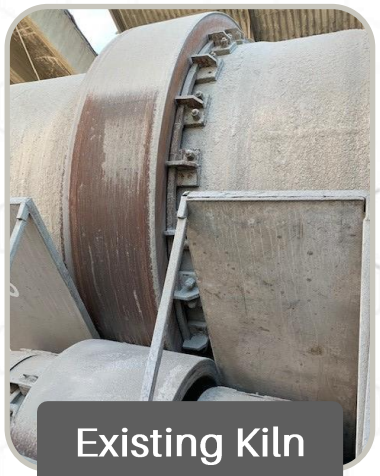
# BEFORE

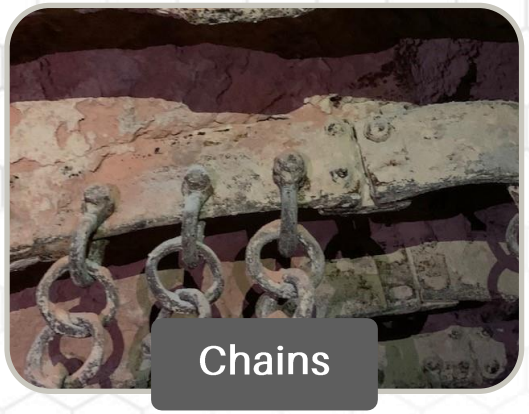


Existing Kiln

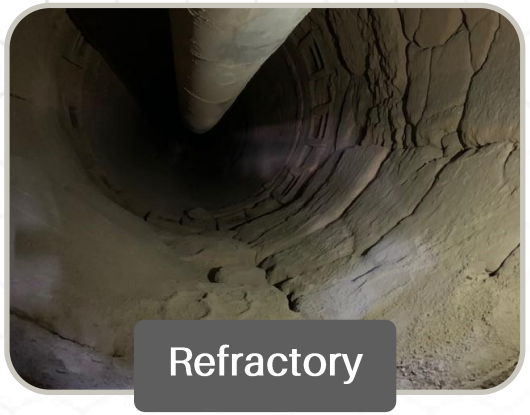


Existing Kiln

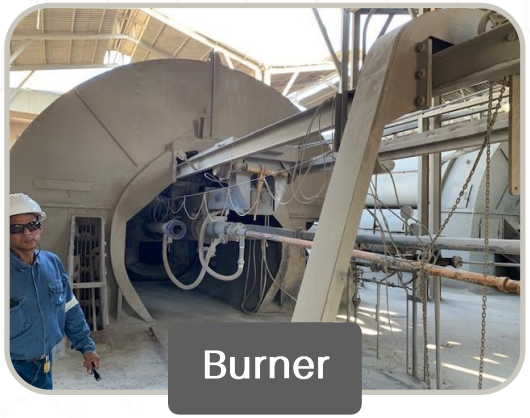
Chains



Chains



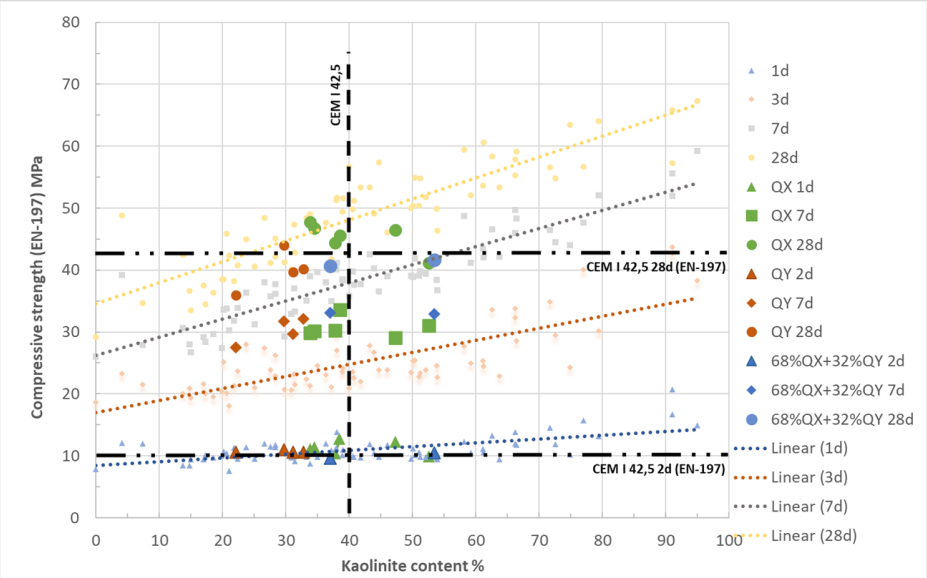
Refractory



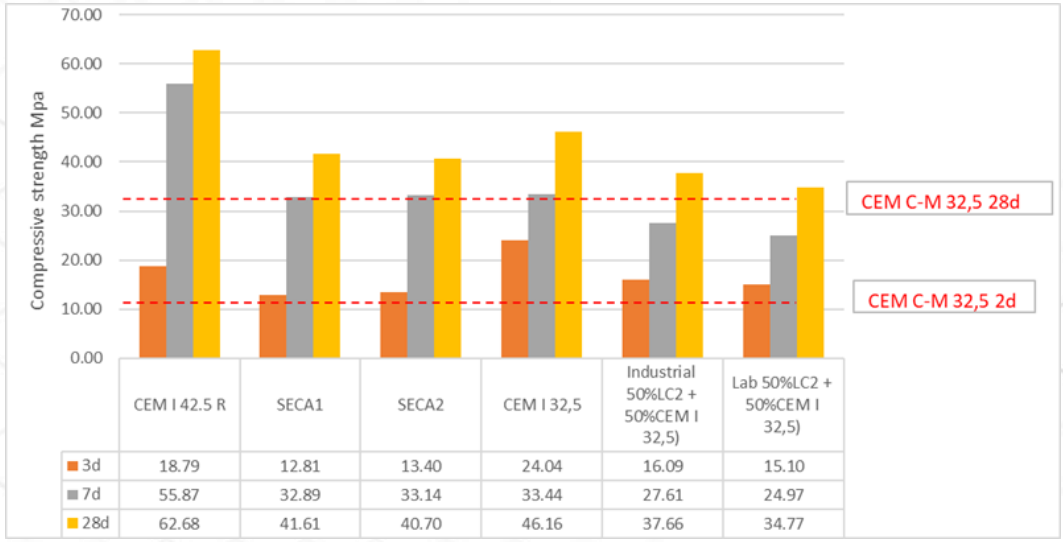
Burner

Burner

# Industrial trial Nova Cimangola



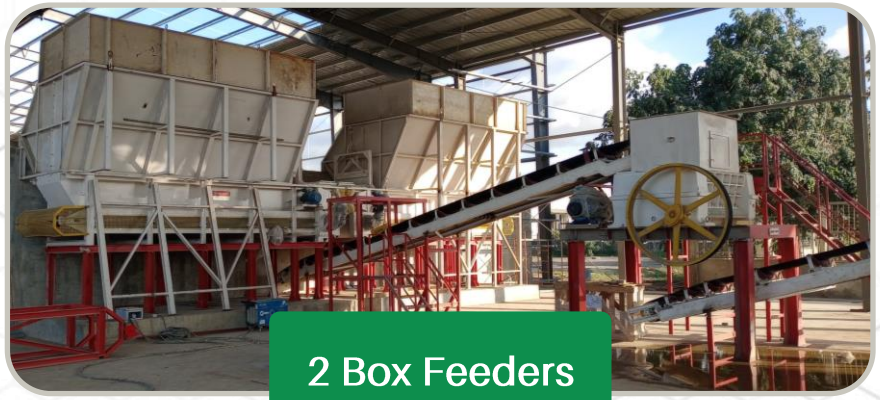

53% CEM I 52,5, 30% Calcined clay, 15% Limestone, 2% Gypsum




| | CEM I 42.5 R | SECA1 | SECA2 | CEM I 32,5 | Industrial 50%LC2 + 50%CEM I 32,5) | Lab 50%LC2 + 50%CEM I 32,5) |
|---|---|---|---|---|---|---|
| 3d | 18.79 | 12.81 | 13.40 | 24.04 | 16.09 | 15.10 |
| 7d | 55.87 | 32.89 | 33.14 | 33.44 | 27.61 | 24.97 |
| 28d | 62.68 | 41.61 | 40.70 | 46.16 | 37.66 | 34.77 |

400 kg of the average material were processed at the Pilot Plant from the TRC LATAM

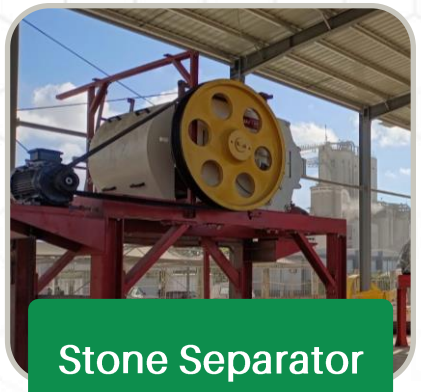
# 2 - Equipment for Calcined Clay Preparation Line



2 Box Feeders

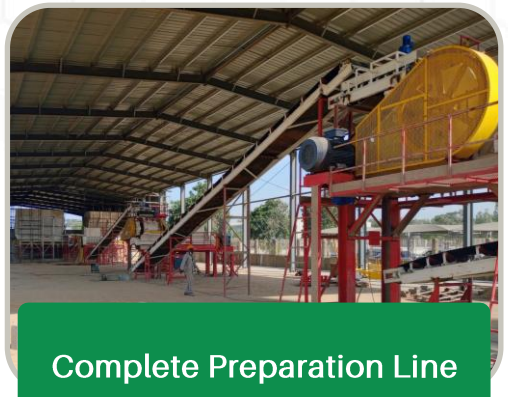
Roller Crusher

Double Shaft Mixer



Stone Separator

Roller Mill



Complete Preparation Line

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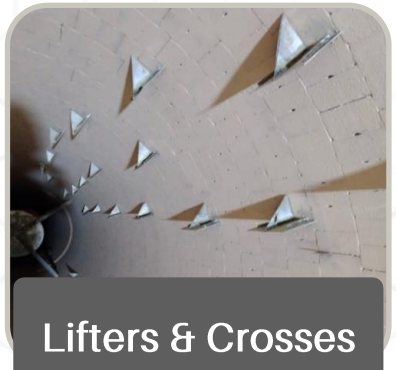
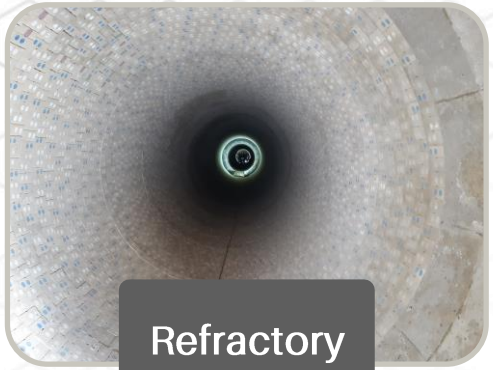
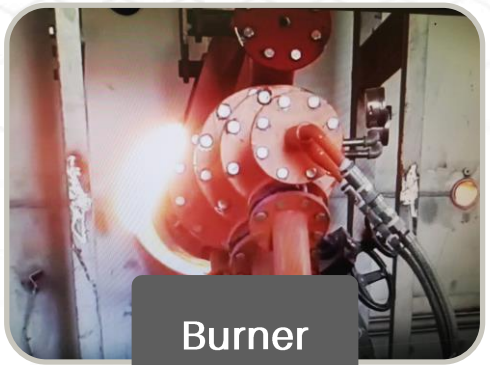
# AFTER

Chains


Lifters & Crosses


Refractory


Burner

Burner

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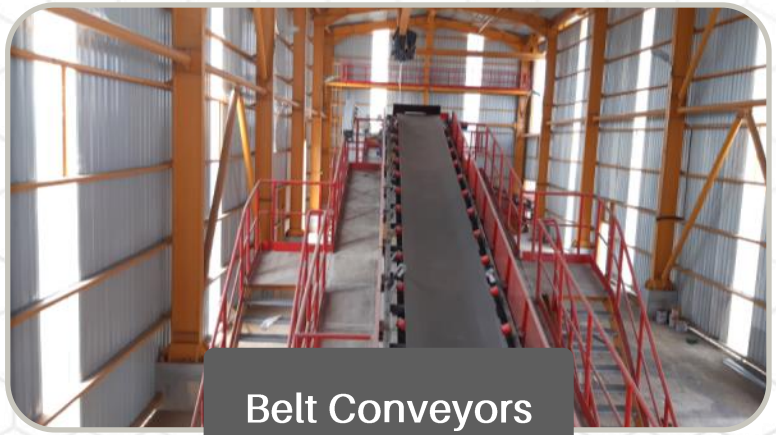
# AFTER

## Cooling Section and Deducting



Belt Conveyors

Cooler

Cyclons

Dynamic Separator for Clay Enrichment

Bag filter

Gear Drive

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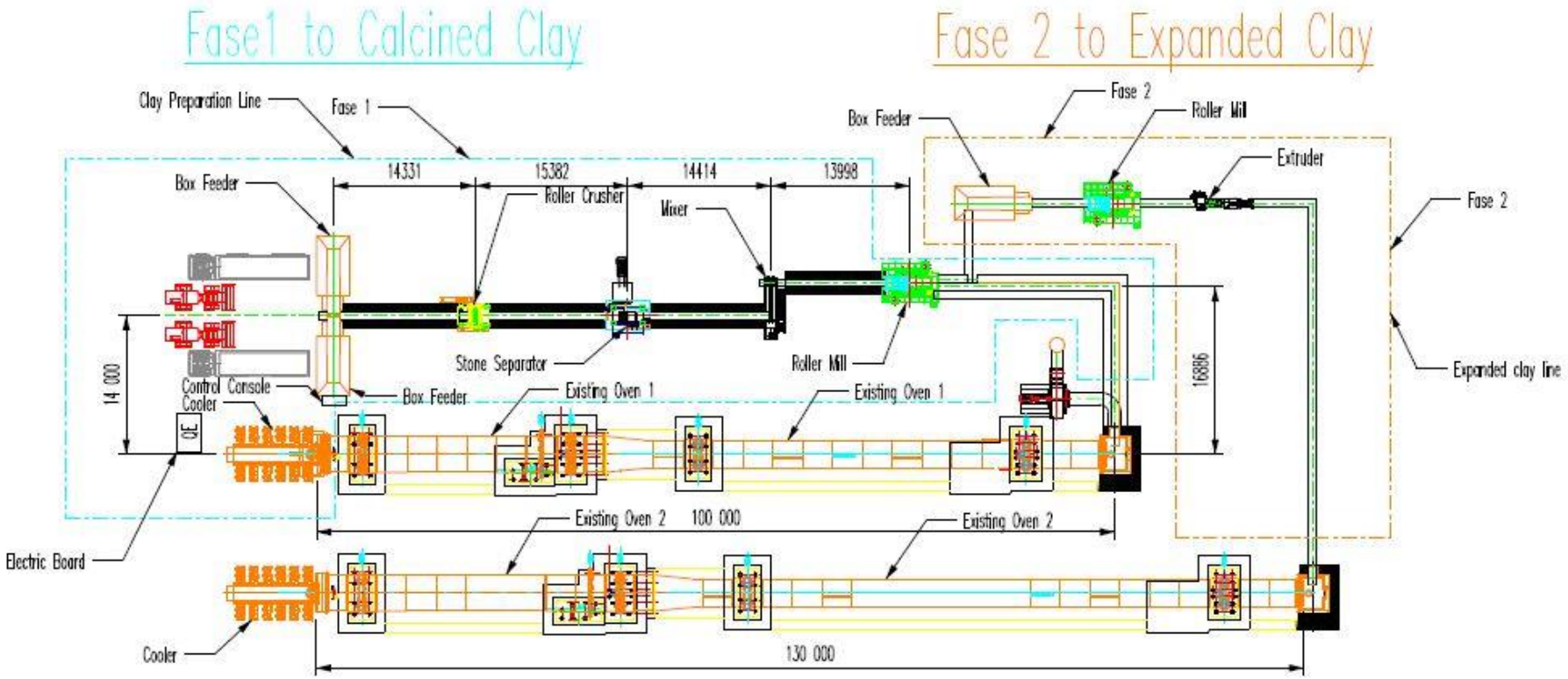
# Layout CIMANGOLA



# CAPEX for Retrofitting Clinker Kiln for Calcined Clay

| | |
|---|---|
| Clay Preparation Line | 1,8 Million € |
| Building & Foundations | 1,55 Million € |

| KILN | |
|---|---|
| Kiln refractory revision | 0,8 Million € |
| Kiln mechanical revision | 0,7 Million € |
| New Burner | 0,6 Million € |
| Cooler System | 0,6 Million € |
| Dedusting | 0,8 Million € |

| SUPPORTING ACTIVITIES | |
|---|---|
| Logistics | 1,05 Million € |

Recrofit of a clinker line to Calcined Clay LC3

**CAPEX**

**8,7 Million €**

# Conclusion

- The whole project is coordinated and supervised by the company techbelt under direction of IPIAC
- This plant will produce 300,000 tons of calcined clay per year, which is equivalent to up to one million tons of LC3 cement per year.
- Fast Implementation of project (12 – 16 months)
- There are hundreds of clinker kilns in the world that can be adapted and transformed into calcined clay kilns for LC3 cement, critically reducing the investment CAPEX and radically reducing the $CO_2$ emission of these plants to the atmosphere.
- This shows a clear commitment to protecting the environment and the sustainability of our industry.
- Special THANKS to CIMANGOLA Management for the effort and the visionary thought of making Angola a first line player of the cement industry.

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RETROFITTING OF EXISTING KILN

# Thank You!


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