



Innovative solutions **FOR THE CHALLENGES** of the industry

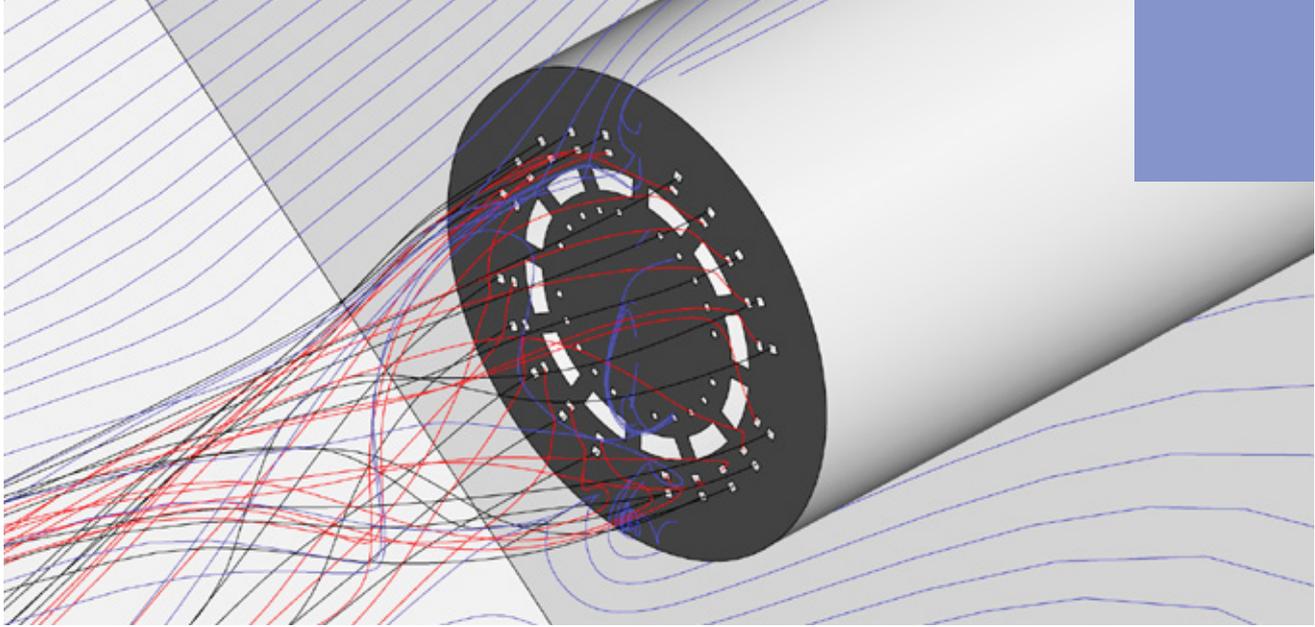
Dynamis is a company that offers innovative solutions to various industrial segments, aiming energy efficiency maximization and operational cost reduction.

Founded in 2003 as a company specialized in technical services on the thermal field - energy and fluids - the company evolved along the years to become not only a consulting office, but also an engineering company.

Besides combustion systems, Dynamis has developed in new areas, conceiving projects that range from specific solutions for drying systems, handling of conventional or alternative fuels and solid fuel milling to large contracts like new cement plants and integration of equipment from various suppliers.

This evolution process has gained new impulse in 2010, when the company started to offer industrial equipment to its clients.

After 10 years of existence, Dynamis is proud to offer great variety of products and services to the market, executed with technical competence, professional attitude and ethical behavior that have always characterized its way of working.



Professionalism and attitude **AT OUR CLIENTS' SERVICE**

Technical Knowledge

With more than 30 years of experience in projects on the thermal and fluids field and over 400 implemented projects, our highly qualified professionals rely on extensive industrial background and large practical experience in day-to-day factory processes to deliver innovative solutions to our clients' needs.

Commitment to the client

Being committed to our clients' success is what drives us to find effective solutions to differentiate their business with competitive advantages, such as lower costs and higher quality.

Audacity and innovation

We operate as a technical extension of our clients, understanding their business characteristics in deep, ready to face any new technological challenges from a constantly mutating industrial environment.

Dynamism and efficiency

Our engineers are responsible for delivering quick and effective solutions to the problems faced by clients, never neglecting the quality of provided services.

Technology

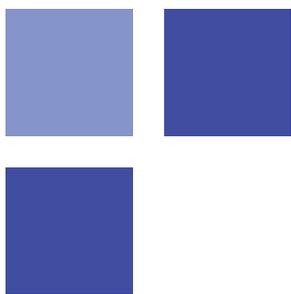
At Dynamis, we test and simulate every solution we develop for our clients. To do so, we count on state-of-the-art softwares that provide:

- › Better quality of projects and equipment through simulation and testing of virtual models that allow analysis and comparison of process variables
- › Precise heat transfer and head loss calculations
- › Cost and resource optimization, minimizing material usage without compromising performance and safety requirements
- › Increased safety in structure and equipment projects

Patents

Some technological developments by Dynamis, such as special combustion and gasification devices, as well as significantly more efficient and less expensive mineral processing equipment, have allowed the obtainment of patents, due to their innovative characteristics.



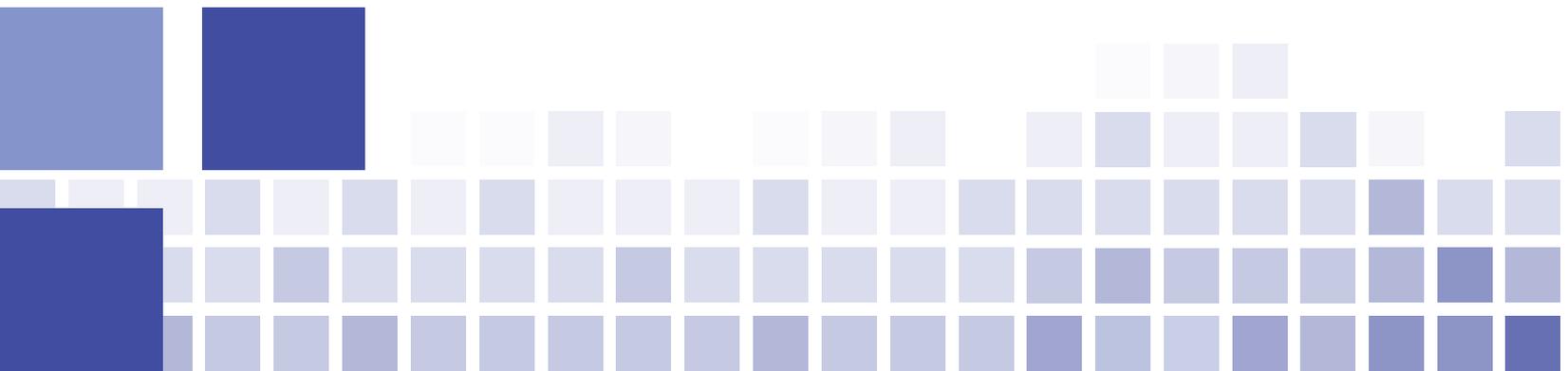


Our **BUSINESS**

Dynamis is proud to be a company based in practical application of scientific concepts.

That is how we deliver tailor-made innovative industrial equipment and projects to our clients, with whom we have established long term relationships, providing technical support with efficiency and excellence.

All field engineers who have experienced plant routine on a day-to-day basis provide feedback in order to enable continuous project improvement.



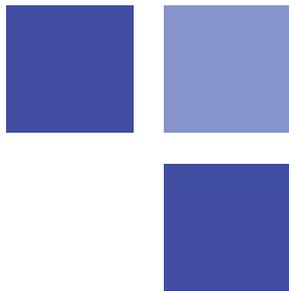


INDUSTRIAL EQUIPMENT



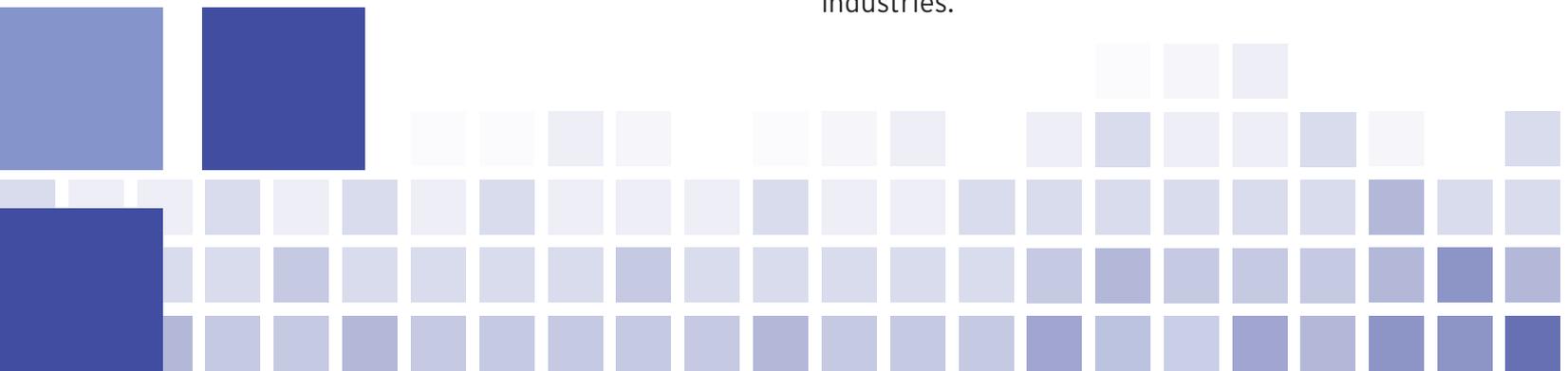
ENGINEERING PROJECTS

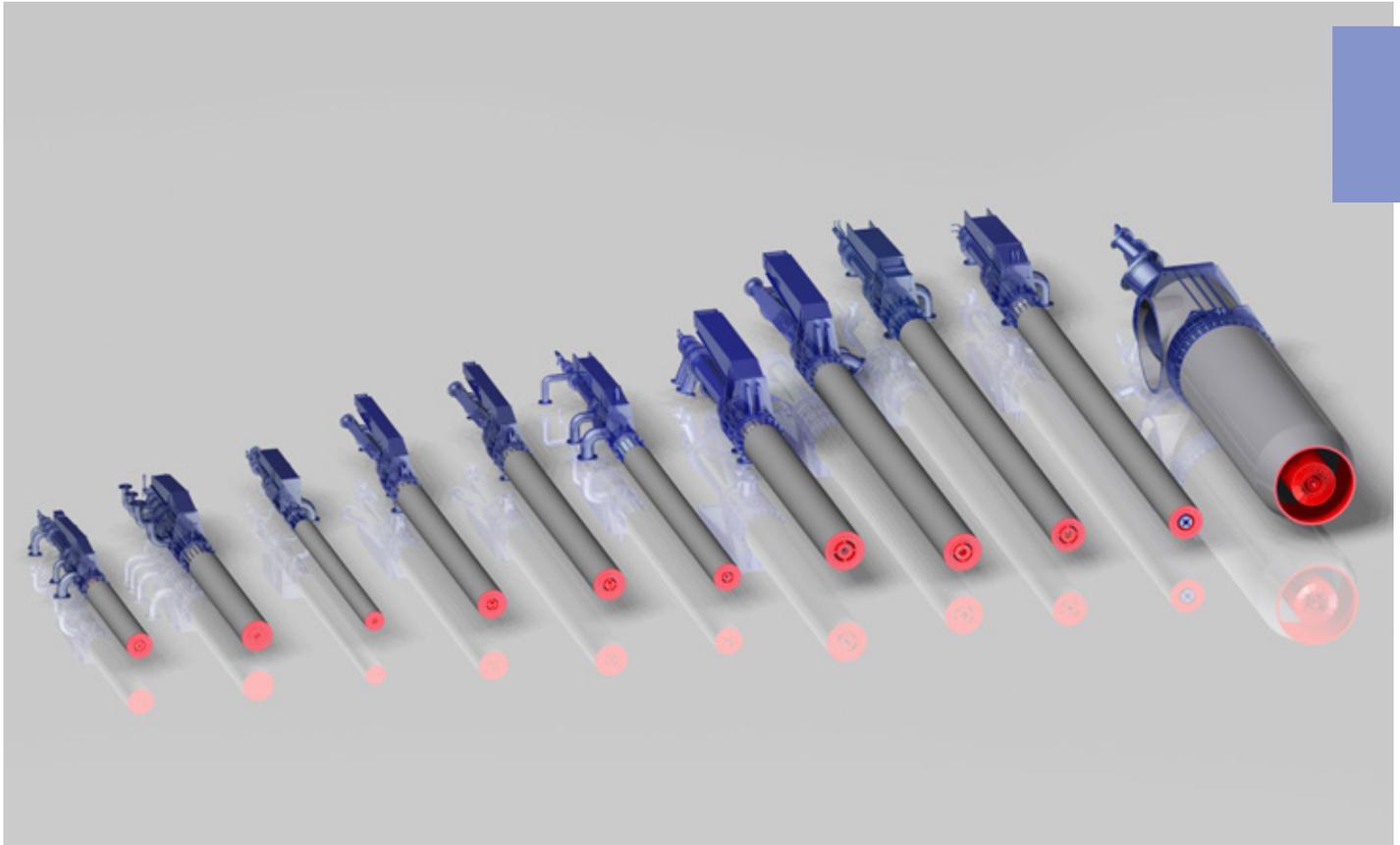
EQUIPMENT



In 2004, Dynamis installed a burner at a Votorantin Cimentos plant in Brazil. This burner became the first equipment ever sold by the company.

Nowadays, with over 60 burners delivered, Dynamis has a complete structure to answer the needs of companies that wish to acquire tailor-made industrial equipment, including combustion chambers, hot gas generators and maintenance trolleys for the Mining and Cement industries.





Industrial Burners

Dynamis burners range from 10 to 100Gcal/h and are able to operate with pulverized solid fuels (petcoke, coal, charcoal), gaseous fuels (natural gas, LPG), fuel oil (diesel and ultra-viscous oils) besides liquid, pasty and solid industrial waste. Tailor-made to each kiln, Dynamis burners are highly flexible, giving the operator a better control of the process - thermal profile, heating rate, hot spot elimination and more. After heating up, Dynamis burners give a more stable coating formation, avoiding unburned material during initial operation.

Top performance, flexibility and cost reduction

The main benefits of using Dynamis burners are:

- › Low primary air rate (around 10% for petcoke and 7% for oil and / or gas)
- › High injection velocities (around 250 m/s)
- › High flexibility to shape the flame during operation, due to specific conditions
- › High turbulence / mix indexes - Kinetic power times thermal power
- › Multiple fuels, with or without different kinds of secondary fuels
- › Easy flame adjustment due to independent air channels / controls
- › Low-NOx with emission down to 300ppm at 10% Oxygen
- › Low sulfur volatilization, avoiding cloggings at the smoking box

EQUIPMENT



Hot Gas Generators (HGGs):

Tailored equipment, according to desired temperatures and fuel, designed to operate with solid, liquid and gaseous fuels. One of the characteristics of our HGG is the high turn-down (ratio between minimal and maximal fuel injection), resulting in high process adaptability and fuel savings.



Maintenance Trolley

Designed for the substitution of an used burner for another, reconditioned, enabling easy, fast and safe operation and thus making a rapid restart of the kiln possible.



Combustion Chambers

Designed by Dynamis and patent-protected, this innovative equipment enables the use of solid fuels with low volatile contents such as petcoke in low temperature and dusty environments. Successfully employed in the activation process of pozzolanic clay, nickel ore reduction and hot gas generation for drying.

ENGINEERING



With more than 400 successful projects, Dynamis allies technical knowledge with high-technology tools to provide innovative solutions to clients, including some of the largest world players in engineering, such as Outotec, Krupp Polysius and LVT.

Every project begins with the gathering of detailed field data that is afterwards processed, enabling calculations and simulations in state-of-the-art softwares. The conception of technical solutions follows, with the development of the necessary drawings and specifications that turn bright ideas into reality. For every delivered project, Dynamis guarantees technical assistance wherever and whenever it is necessary.



Combustion systems

Dynamis has designed more than 50 combustion systems, focusing the reduction of operational costs through employment of less expensive fuels. Featured is a combustion installation developed for Samarco, substituting oil for gas in a project contracted by Outotec (Germany).



Kilns and Dryers

Dynamis has developed more than 30 calcining and drying installation projects, working with iron, nickel, niobium, zinc and copper ore, as well as lime, alumina and pozzolan.

ENGINEERING



Industrial Waste and Secondary Fuels

In 2011, with the objective of knowing the state-of-the-art in handling and injection of alternative fuels, Dynamis analysed the best solutions of European industrial plants and equipment providers to develop a standard plant for handling industrial waste in Brazilian territory, which is significantly different than what has been found in Europe. Currently, Dynamis has developed more than 40 plants of such kind, using from RDF (WDF) to shredded tires, solid, liquid and paste wastes.



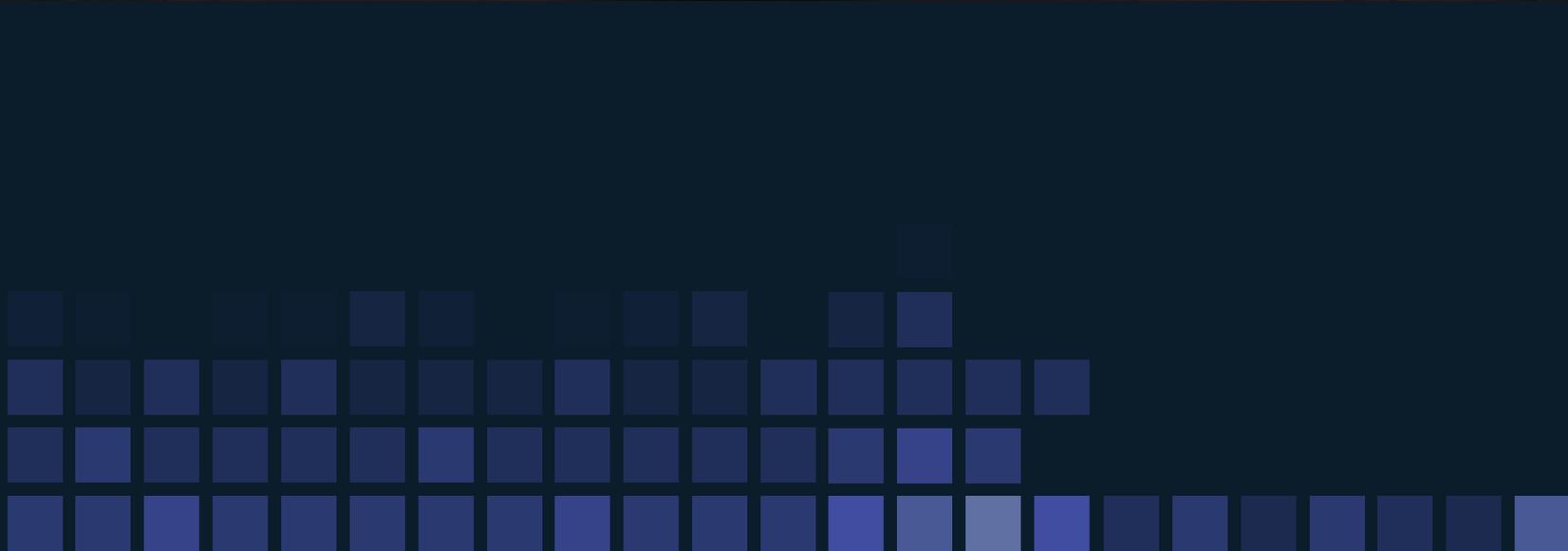
Industrial Plants

Dynamis performs investment studies and conceptual projects of Green Field plants for the Cement and Mining industries, with supplier analysis, technical specifications and technology comparison.



Equipment Integration

Some clients have preferred to buy main equipment (e.g. mills, kilns and coolers) for new industrial plants from different traditional suppliers. In these cases, Dynamis has developed detailed engineering solutions to integrate the equipment and related peripherals like conveyor belts, reclaimers, silos, elevators and dedusting systems.





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