



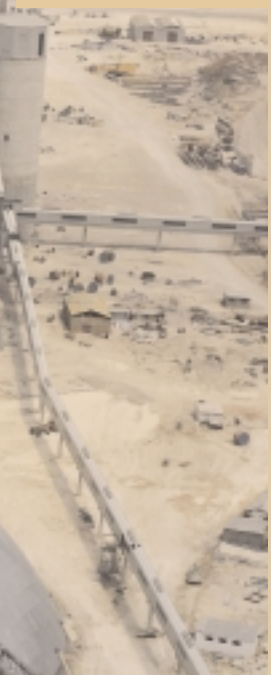
PORCELAIN TILE PLANTS

*PORCELAIN TILE
PLANTS*

CENTUNION

International experience

CENTUNION, Española de Coordinación Técnica y Financiera, S.A. is an independent Spanish engineering company that undertakes responsibilities of general contractor, coordinating the various technical, economic and financial matters for the performance of industrial plants, from the project stage up to their start-up.



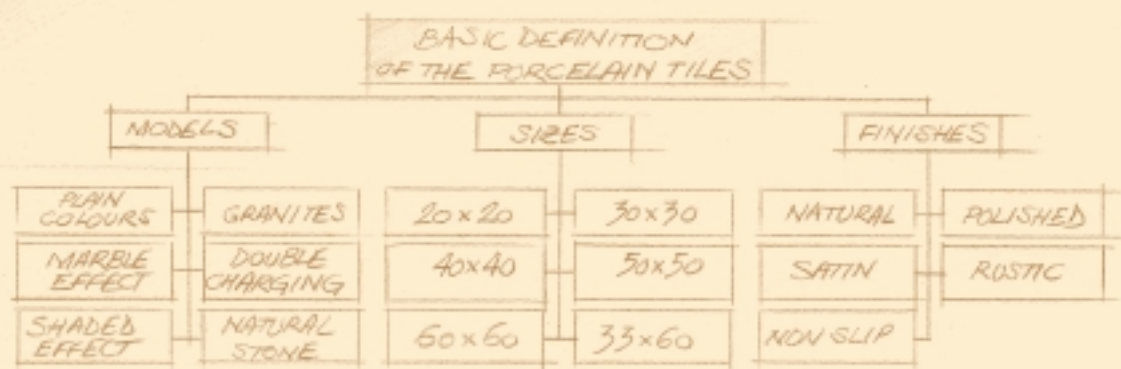
Engineering

CENTUNION's experience in the porcelain tile industry goes back to 1986 when we developed our own porcelain tile factory, **ALCALAGRES**. More than 30 years expertise in the engineering, design, procurement and construction of industrial projects, plus the experience gained on the management, production and marketing of porcelain tiles, has placed **CENTUNION** in an advantageous position in the porcelain tile industry.

CENTUNION offers the study and development of complete new plants, expansion and modernization of existing facilities for the manufacturing of porcelain tiles, adaptable to the needs and characteristics of each client and environment.



PORCELAIN TILES



Definition of the product

The use of different coloured powders, regranulated to different degrees, stratified, correctly distributed in the moulds with extremely sophisticated systems, with pressing textured surfaces and a wide range of sizes and formats, lead to an increasingly more refined final appearance, only limited by imagination.

The recovery of the taste of tradition, the appreciation of naturalness and the intimate affinity with stone, have given rise to further opportunities and new surfaces for the porcelain tile: marble and stone have found a fearsome competitor.

CENTUNION's permanent contact with industrial associations and with firms renowned for their state-of-the-art technology, on the one hand and the successful international and domestic experience of ALCALAGRES in the porcelain tile industry on the other, meet in order to define a well studied product that has already been tested in the markets.



CERAMIC PROCESS

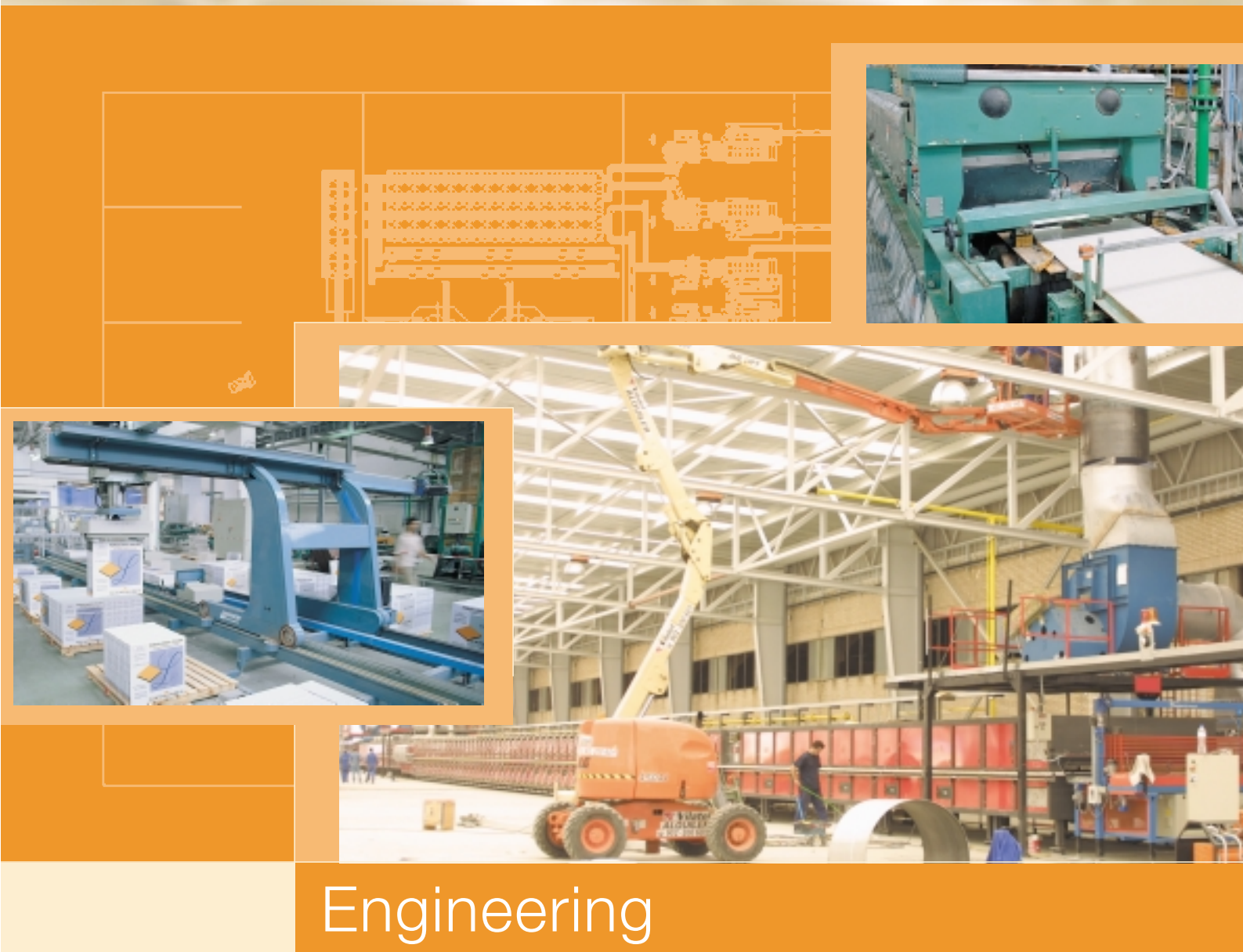


Chemistry and Physics

of the Ceramic Process

- Study of raw-materials.
- Definition of the body composition.
- Chemical and mineralogical composition study.
- Grinding and pressing behaviour tests.
- Fired analysis.

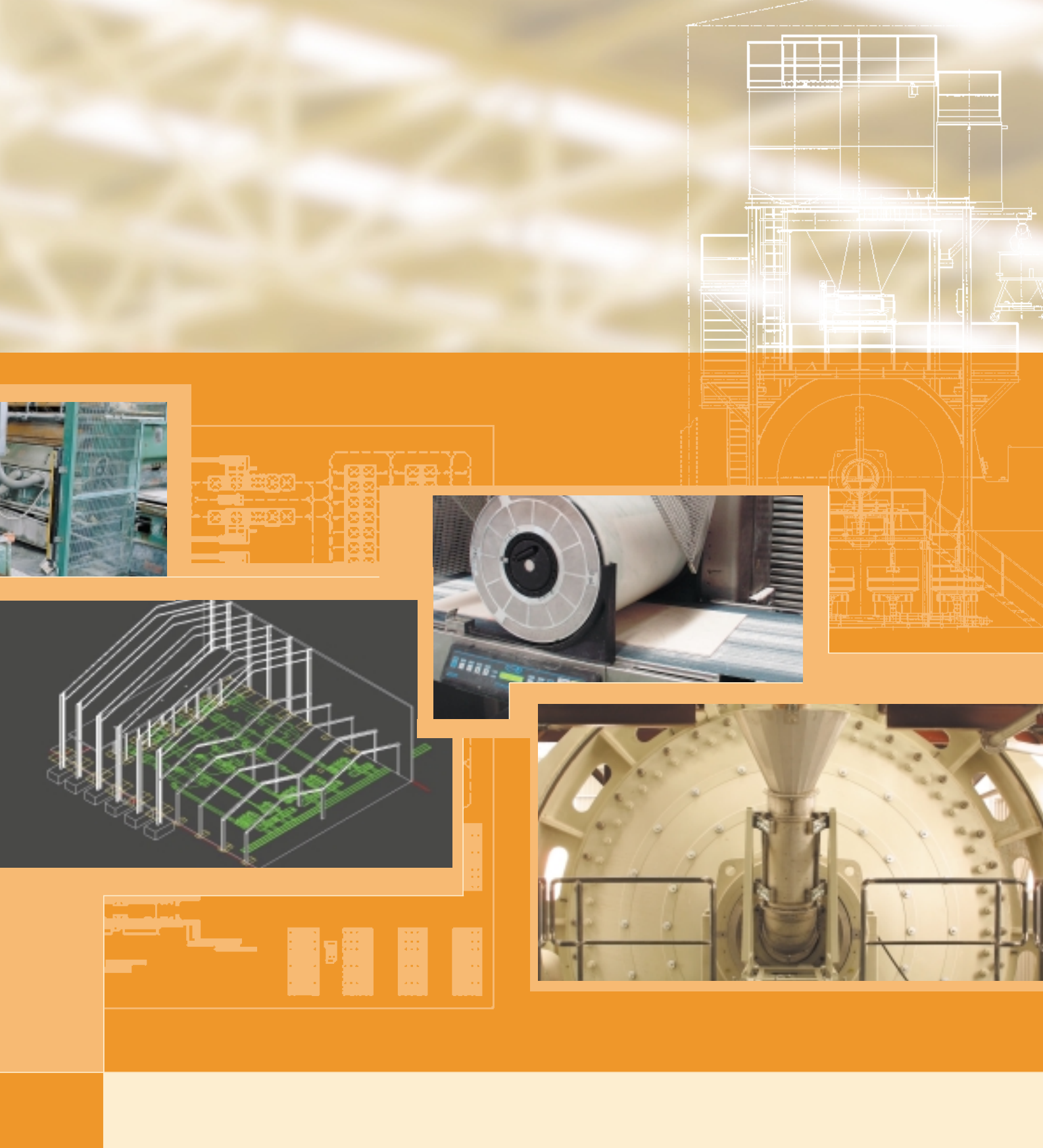
ENGINEERING



Engineering

Design and lay-out of the plant
Specification of the production machinery

- | | |
|--|-----------------------------|
| ■ Raw Materials Storage | ■ Serigraphy and Glazing |
| ■ Grinding | ■ Firing |
| ■ Spraying | ■ Storage of Fired Products |
| ■ Storage and Blending of Sprayed Ware | ■ Laboratory |
| ■ Pressing | ■ Selection |
| ■ Drying | ■ Polishing Lines |
| ■ Dry Ware Storage | ■ Handling and Packing |



For new installations, modernization and expansion of existing plants.

CENTUNION's independence from the manufacturing industry warrants absolute impartiality in selecting the most appropriate suppliers for the different components of the plant.

CENTUNION's porcelain tile plants will guarantee the manufacturing of a product that will fulfil the most demanding international requirements.

FINANCING



Financing

- **Technical and economic data for the feasibility study.** In support of its technical activities CENTUNION provides a range of services including feasibility studies, economic and financial analysis of the projects it undertakes.
- **Financial advice.** Optimisation of financial packages available, preparation of the necessary documentation in support of credit applications, and coordination between the different types of financing applicable to the planned investment.
The wide experience obtained in this field guarantees efficient coordination between official export credits and the purely commercial loans which may be negotiated in domestic or international markets.

EQUIPMENT SUPPLY



Equipment Supply

CENTUNION

- **Undertakes the purchasing** of equipment and materials, whether in Spain or abroad. These activities are complemented by inspection and expediting services.
- **Performs and supervises** expedition and transportation of equipment and materials from workshop to plant sites.

TECHNICAL ASSISTANCE

Training Programs



Technical Assistance

- **Technical assistance for the erection, commissioning and start-up.**
- **Training programs for production's personnel and for maintenance of the plant.**
- **After sales services.**

At our own facilities in ALCALAGRES we can offer an indoor training program during the construction of the factory, so that production personnel will be already trained when the plant enters in production.

Training may continue at the new facilities during the first stages of operations.

REFERENCES

CENTUNION has worked on projects in different countries of the world, such as China, Russia, Iran, India, Indonesia and Spain. We would like to highlight our projects for:

ALCALAGRES, S.A. a 5.000.000 m²/year plant in Camarma, Spain.



SHIRKOOK TILE CO. a 2.000.000. m²/year plant in Yazd, Iran.



Main systems installed in Camarma, Spain	
9 Discontinuous Mills	20.000 l/u.
5 Discontinuous Mills	38.000 l/u.
1 Continuous Mill	140.000 l/u.
1 Spray Drier	4.500 l/h
1 Spray Drier	2.000 l/h
5 Presses	1.700 t/u.
1 Press	2.800 t/u.
2 Presses	4.600 t/u.
1 Serigraphic Line (silk screen)	90 m
1 Serigraphic Line (rotative screens)	90 m
3 Kilns	1.000.000 m2/year/u.
1 Kiln	2.000.000 m2/year
Automatic Fired Ware Storage System	5 LGV
3 Polishing Lines	3.000 m2/day, 2 sheets
3 Polishing Lines	6.000 m2/day, 2 sheets
2 Sorting Lines with Automatic Sorting Devices and Palletizing Machine for Polished Tiles	
3 Sorting Lines with Automatic Sorting Devices and Palletizing Machine for Unpolished Tiles	
Ceramic Laboratory	
Computerized Water Jet Cutting Machine	
Sand Blasting Decoration System	

Main systems installed in Yazd, Irán	
6 Discontinuous Mills	34.000 l/u.
1 Spray Drier	6.000 l/h
4 Presses	2.000 t/u.
2 Kilns	1.000.000 m2/year/u.
3 Box Automatic Handling System	3 LGV
4 Polishing Lines	750 m2/day, 2 sheets
4 Sorting Lines with Automatic Sorting Devices and Palletizing Machine for Polished Tiles	
2 Sorting Lines with Automatic Sorting Devices and Palletizing Machine for Unpolished Tiles	
Ceramic Laboratory	
Screen Laboratory	



Española de Coordinación Técnica y Financiera, S.A.

Marqués de Villamagna, 3 • 28001 Madrid (Spain)
Tel: +34 91 432 31 00 • Fax: +34 91 436 06 41
e-mail: centunion@centunion.com
Internet: www.centunion.com



Landmark Tower A, 15th - Floor suite#1504
JL.Jend.Sudirman n° 1, Yakarta 12910, Indonesia
Phone: +62 21 570 54 94 • Fax: + 62 21 570 54 96
e-mail: centrade@dnet.net.id