Design

research lines

Instituto de
Tecnología Cerámica

The Instituto de Tecnología Cerámica (ITC) is a concerted mixed Institute, established by agreement between the Ceramic Industry Research Association (AICE) and Universitat Jaume I of Castellón, which originated in 1969 in response to the needs of companies from the Spanish ceramic cluster. During its more than 40-year history, ITC has articulated a successful university–business cooperation system that has borne its fruits, witness the significant development of the Spanish ceramic tile manufacturing industry.

ITC is committed to providing solid support for Spanish ceramic companies in the defence and enhancement of their strategic positioning in the current global context, principally through innovation-enabling research and development actions, but also through whatever activities might serve to foster the competitiveness and growth of the sector, always based on sustainability criteria and commitment to societal well-being.

ITC's mission is focused on spearheading technology innovation and design processes in the Spanish ceramic sector, anticipating market and consumer needs regarding the uses and applications of ceramic materials, through professionalised management of a qualified human team committed to excellence in the sector.

The competence attained through ITC's wide-ranging research activity enables ITC today to extend its field of action to other types of processes and materials. Particularly noteworthy have been ITC's actions in the field of energy efficiency and the minimisation of industry's environmental impact, as well as in the functionalisation of ceramic surfaces and the achievement of new technical performance and aesthetic features of products related to the habitat hyper-sector and to other industries, such as the high-tech tool, advanced ceramics, automotive, petrochemical sectors, etc.

design

The ITC Area for Design and Architecture (ALICER) works in several design-related fields: ceramic products and systems and their communication, design management, computer tools, as well as custom training.

The team engaged in this area comprises specialists from various disciplines: architects, industrial designers, graphic designers, communication experts, product designers, computer engineers, as well as chemical engineers specialising in ceramics. This enables projects to be undertaken from a multidisciplinary standpoint and appropriate solutions to be put forward from a functional and formal, as well as from an emotional viewpoint.

Analysis of the current habitat situation, communication keys, and consumer habits are provided by the Habitat Trends Observatory®, which is made up of the Institute of Ceramic Technology (ITC), the Technology Institute of the Furniture, Wood, Packaging, and Related Industries (AIDIMA), and the Textile Industry Research Association (AITEX).

OVER 1000 R&D PROJECTS DEVELOPED THROUGHOUT THE HISTORY OF ITC, AMOUNTING TO ALMOST 40 MILLION EUROS.

Research lines

Urban actions based on accessibility criteria, universal design, and integration of the action in the surrounding urban setting, all focused on enhancing end-user well-being. In this context, ITC work encompasses different fields of action, such as design and development of urban elements adapted to new spatial functions, urban furniture design, decorative murals, emblematic works, and urban signalling. This line further includes the study, analysis, development, and execution of spatial renovation with the application of new technologies, materials, and production processes.

Design and development of ceramic products and systems, taking into account technological advances, industrial and decorating processes, user needs, and today's aesthetic currents in the habitat.

Product and communication audits and strategies. The product portfolio is analysed, based on the trends detected by the Habitat Trends Observatory® and market data, in order to define the structure of the product range. The aim is to facilitate and optimise corporate decision-taking in accordance with the business situation and the targeted company positioning, by helping to generate new products, rationalise existing ones, and appropriately communicate the offer.

Interstice, covering with ceramic pieces for outdoor signs.

Zenith Piece, grain in the form of transparent glass drops.

Design and Organisation of events. One of ALICER's objectives is to foster and to participate in international design, architecture, and interior design events, the common nexus being industrial ceramics and their use in the habitat and in urban development. Particularly to be noted is the Trans/hitos Exhibition, which has been organised for the Cevisama trade fair since 2005, showcasing some of the most innovative proposals in design, architecture and technology for ceramic applications.

Graphic programs for design and manufacture. This line focuses on equipping ceramic design instruments with the necessary tools to enhance their efficiency, speeding up their processes by developing ceramic design applications and adapting existing commercial programs. Colorimetry and its practical adaptation to development processes for desktops and inkjet-based production machines are particularly being studied in this field. This line also develops graphic interfaces for specific prototypes and machine control applications. de control de máquinas y prototipos específicos.

Transhitos 2009 Exhibition, located in the centre mall of the Cevisama trade fair in Valencia.

ITC IS A REFERENCE PARTNER IN DIFFERENT NATIONAL AND INTERNATIONAL NETWORKS AND TECHNOLOGY PLATFORMS.

Design management is a discipline that helps develop, organise, plan, and control a company's design resources in order to:

› Distinguish itself from the competition.

› Transmit company values.

› Communicate with customers/users.

› Reinforce the organisation's image or brand.

› Adjust production costs/reduce costs.

› Offer products/services better adapted to customer/user needs.

› Open up new markets.

› Innovate in products, concepts, and processes.

› Reposition the brand-product.

The analysis and redesign of existing design management methodologies are, at ITC, deemed to assist in bringing this discipline closer to companies, in which the urgency of operational issues usually tends to overshadow strategic considerations. Establishing agile and simple methodologies is considered to help businesses implement these processes, thus optimising the role of design and enhancing its competitiveness in the middle term.

Collaborations. Top designers, as well as companies and schools, customarily collaborate with ITC to generate innovative initiatives that provide added value for sector companies. Particularly to be noted are the collaborations with designers and architects such as Matali Crasset, Javier Mariscal, Fabio Novembre, Jean Louis Schmitt, José Durán, Adrián Blanca, Rosina Reig, and Simonetta Carta, among others. To be highlighted among the collaborative projects undertaken by companies with professionals from these fields is the Con.nexus project, an initiative aimed at bringing professionals from design, architecture, or photography-related disciplines into contact with top ceramic companies. Examples are the collaborative work performed by architect Héctor Ruiz with Saloni Cerámica, photographer Michael Banks with Ceracasa, designer Karim Rashid with Tau Cerámica, and Sam Baron, the creative director of Fabrica, with Gaya Forés. In regard to the collaborations with industry, ITC's contribution in the design phase to the achievement of five Alfa de Oro awards by the Spanish Ceramics and Glass Society deserve to be noted. These include: Civis Ágora, Consillium Kerapolis, Taumorph, all for the company TAULELL, as well as the Macedonia project, for FABRESA, and the Marathon project for GRES DE NULES. Further to be highlighted is the work done with ASCER, the tile manufacturers' association, through which the ITC Design and Architecture team has delivered courses and workshops at design schools, such as IADE, Institución Artística de Enseñanza (Madrid), IED, Instituto Europeo di Design (Madrid and Barcelona), Elisava (Barcelona), and EASD, Escola d´Art y Superior de Disseny of Castellón.

Workshops. With a view to energising company activities and encouraging meetings between professionals, workshops are organised with companies and creative spirits of high international repute from different disciplines and countries, in order to work together with ceramic sector companies. Such events are also regularly attended by students from various fields, with a view to broadening their vision with relation to ceramics and possible ceramic applications. Particularly noteworthy are the workshops (with designers and companies) held at the Alicer facilities, Alicer being the ITC Area for Design and Architecture, with the collaboration for example of Matali Crasset, Sam Baron, José Durán, Jean Louis Schmitt, and Swarovski, among others, attended by professionals from the ceramic companies.

Picture of the Porcelain as ornamental element workshop with Jean Louis Schmitt.

Modular piece designed with Matali Crasset.

Piece made in collaboration with Fabio Novembre.

Picture of the workshop delivered by Matali Crasset at Alicer headquarters.

The Habitat Trends Observatory® has, since 2006, been engaged in observing, analysing, and studying habitat trends, since understanding how people live and knowing what their lifestyles, needs, and living environments are like are essential to designing objects and services that effectively respond to their needs.

Trends are thus analysed in depth and reliable, verified information is provided by the research specialists in design, architecture, markets, and advertising. There are further collaborations with outside experts, such as sociologists, anthropologists, psychologists, etc. In addition, what happens on the Internet is also 'scanned' and trade fairs, conferences, and events are attended across Europe. An own methodology has been developed, which allows all the gathered information to be analysed and synthesised in order to provide full, useful knowledge for companies and for design and marketing professionals.

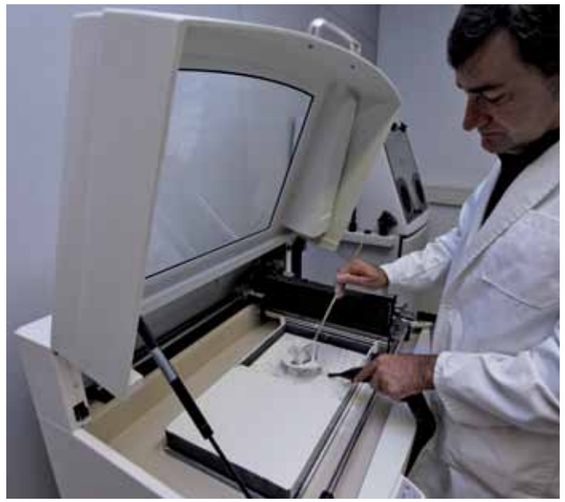
The information is disseminated through own publications, informative lectures, and on-line media.

Companies and professionals from the different disciplines are assisted in applying trends by means of workshops and infodays on creative investigation with a view to generating innovative results from the trends information. These include, for instance, the updating WAKE UP! Sessions at the Valencia trade fair (Ideas & Passion 2009 and Cevisama 2010), courses on investigating trends and cool hunting, and the development of a special board game for generating new products.

www.tendenciashabitat.es

available equipment

ITC sets at the disposal of companies a great technological infrastructure of technical competence endorsed by both ITC's high number of external accreditations and its highly qualified human and instrumental resources, which assure total reliability with regard to the results obtained in the characterisation of raw materials and end products, and in the determination of their behaviour during the production process.



ITC CURRENTLY HAS
TECHNICAL AND SCIENTIFIC EQUIPMENT
FOR CONDUCTING R&D VALUED AT
OVER 9 MILLION EUROS.

- Z-Corp Z-printer 310 plus three-dimensional printer.
- GALILEO RI Nº1/2 three-dimensional laser digitiser.
- Epilog Helix 24-75W laser engraving and cutting system.
- MBR ELECTRONICS USS-9500 ultrasonic soldering system.
- CNC GALILEO R31Nº212 metal-milling machine.
- KERAJET 40P inkjet printer.
- 2D and 3D design programs.
- Nanetti mignon/SSEA press.
- Pujol H7 furnace.
- Nanetti CV rapid furnace.
- Muffle kin, 500x600x400.
- Dalmonte extruder.
- Laminating machine.

IN THE COURSE OF ITS 40-YEAR HISTORY, ITC HAS CARRIED OUT ABOUT **150,000 ANALYSES AND TESTS** OF THE MORE THAN **475 DIFFERENT TYPES** THAT IT CURRENTLY OFFERS.

technical references

ITC has the capability to transfer the knowledge acquired through the ongoing training of its team of qualified human resources, who keep their knowledge up to date by conducting various R&D&I actions and studies, in addition to participating in numerous science and technology forums worldwide and in different international platforms and consortia. This knowledge, together with that acquired or assimilated from other production sectors, serves to generate the innovation that is transmitted to the companies, which need this to maintain or to enhance their competitiveness.

R&D&I projects co-financed with public funding

IMIDIC/2009/11. New ceramic products for architecture and interior design (2009).

IMPCDF/2009/6. International collaborations with designers (2009).

IMPSDF/2009/4. Product design and promotion for new markets (2009).

IMFDIA/2008/2. Design management for more closely approaching user perceptions and needs (2008).

IMPCDA/2007/20. Dissemination of methodologies for ceramic product innovation (2007).

IMPCDA/2007/19. Design management for more closely approaching user perceptions and needs (2007).

IMPYPD/2007/17. Range diagnostics and user-oriented methodology: development and implementation of actions for diagnosing the company and its product range in accordance with the results of the project (2007).

IMPYPA/2005/41. Range diagnostics-generation of actions for the enhancement of competitiveness and positioning (2005).

IMPCDA/2006/12. Study and adaptation of aesthetic streams in the ceramic sector (2006).

IMIDIC/2005/60. Robotics, artificial intelligence, and computer vision applied to ceramic processes (2004).

FIT-38000-2004-126 Cerevid. Advanced ceramics for glass relief engraving (2004).

IMDITB/2004/55 Aesthetic trends and new uses of ceramics in architecture (2004).

IMPYGA/2002/72 Development and implementation of computer technologies for improving design and production processes (2003-2004).

IMPYGA/2003/42. New mechanical machining materials for processing press rubbers (2003-2004).

FIT-020200-2003-75. PROFIT New ceramic designs by high-speed laser machining (2003).

IMPYPD/2003/11 Methodology for the implementation of the design process in integral design: Product design, development, and communication (2003).

IMPYGD/2003/29 High-resolution inkjet technology for obtaining photolithos (2003).

G12345807/02. PROFIT Ink separation system applied to the ceramic sector (2002).

GIST-CT-2001-50135 CRAFT (VPM) Digital moulding in the ceramic industry – a contribution to mass customisation. Digimould, (2001-2004).

IMIDIC/2001/87 Application of laser technology in the development of decorating techniques for ceramics (2001).

IMDITB/2001/78. Trends: New ceramic applications in architecture (2001).

IMPRDA/2000/14. Development of a model for design planning analysis for the ceramic sector (2000).

IMITEA/2000/103. Trends analysis in ceramic floor and wall tiles (2000).

G12345807/00. Ministry of Science and Technology. PROFIT programme. Development of DAO programs applied to the ceramic sector (2000).

C1999/1282 and C2000/1236 FORCEN Design of an auto-forming tool (1999-2000).

THE DISSEMINATION OF THE RESULTS OF THE STUDIES CONDUCTED BY ITC FROM THE OUTSET HAS LED TO 600 PUBLICATIONS OF SCIENTIFIC ARTICLES IN SPECIALISED JOURNALS, 700 COMMUNICATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES, AS WELL AS THE DEVELOPMENT OF 31 PATENTS.

Publications

OBSERVATORIO DE TENDENCIAS DEL HÁBITAT. *Cuaderno de Tendencias del Hábitat 2010/2011.* Valencia, IMPIVA, 2010.

OBSERVATORIO DE TENDENCIAS DEL HÁBITAT. *Nuevas formas de habitar.* Valencia: IMPIVA, 2009.

C. SERRANO, A. PIÑOT, L.ORTIZ , A. BELTRÁN, M. PAYÁ. Diagnóstico de la gama de productos. En: *Qualicer 2008: X Congreso mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación Vol.II, 2008, P.BA 297-306.

OBSERVATORIO DE TENDENCIAS DEL HÁBITAT. *Cuaderno de tendencias del hábitat 2008-2009.* Valencia, IMPIVA, 2007.

MIRA, F.J.; CLAUSELL, J.J.; NOGUERA, J.F. Desarrollo e implantación de tecnologías informáticas para la mejora de los procesos de diseño y producción. En: *Qualicer 2004: VIII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. I, 2004, p. GI175-GI188.

NOGUERA-ORTÍ, J.F.; PAYÁ, M.; LÁZARO, V.; BOU, E.; MORENO, A. Aplicación de la tecnología laser al diseño cerámico. En: *Qualicer 2004: VIII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón. Cámara Oficial de Comercio, Industria y Navegación, Vol. I, 2004, p. GI 189-GI197, 2004.

LÁZARO, V.; GARCÍA, A.; FUENTES, I.; CLAUSELL, J. Tecnología inkjet de alta resolución para la obtención de fotolitos. En: *Qualicer 2004: VIII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. I, 2004, p. GI199-GI212.

MUSEROS, LL.; MIRA, J.; SANZ, V.; MONZÓ, M.; BERNDT, D.; SCHMIDT, N.; BRÜCHER, M. Digimould. Moldeo digital para la industria cerámica. Una contribución a la fabricación en serie personalizada. En: *Qualicer 2004: VIII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. I, 2004, p. GI213-GI228.

CHIVA, R.; DIÉGUEZ, A.; GOBERT, D. Gestión del conocimiento y planificación del diseño de producto: estudio de un caso exploratorio en el sector cerámico español. En: *Qualicer 2002: VII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. II, 2002, p, GII75-GII81.

CHIVA, R.; ALCÁNTARA, E.; DIÉGUEZ, A.; GOBERT, D. Implantación de la semántica de productos en el sector cerámico. En: *Qualicer 2002: VII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. II, 2002, p. GII111-GII122.

DIÉGUEZ, A.; JOLI, C.; COLL: J. La Ruta de la Cerámica: el balance de un proyecto. *A.CO.PA.H.*, 9, 76-78, 2001.

CAMISÓN, C.; CHIVA, R. Gestión del conocimiento: un reto competitivo para la empresa cerámica. 1ª parte. *Ediceram*, 4, 54-60, 2001.

PICAZO, D.; LÁZARO, V. Procesos de elaboración de planchas de fotopolímero. *Ediceram,* 4, 48-53, 2001.

DIÉGUEZ, A.; GOBERT, D.; CHIVA, R. Desarrollo de un modelo de auditoría de gestión del diseño para el sector cerámico. En: *Qualicer 2002: VII Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. III, 2002, p. GII117-GII119.

LÁZARO, V.; PAYA, M.; GARCÍA, M. Control del proceso de transmisión de información gráfica de la decoración serigráfica. En: *Qualicer 2000: VI Congreso Mundial de la Calidad del Azulejo y del Pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. II, 2000, p. GI285-GI297.

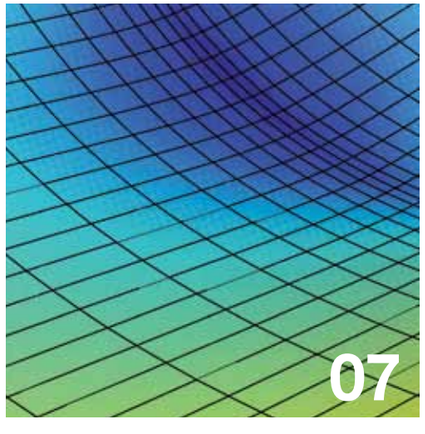
COLLADO, E. Proyecto DISCER: estudio sobre viabilidad de las estructuras, recursos y rentabilidad de la formación en diseño cerámico. *Informa ATC*, 33, 24-26, 2000.

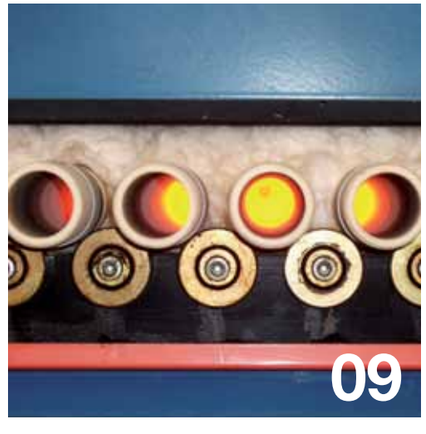
DIÉGUEZ, A.; PAYÁ, M.; MIRA, J. Tendencias en el sector de pavimentos y revestimientos cerámicos. En: *Qualicer 98: V Congreso Mundial de la Calidad del Azulejo y del pavimento Cerámico.* Castellón: Cámara Oficial de Comercio, Industria y Navegación, Vol. II, 1998, GII55-GII72.

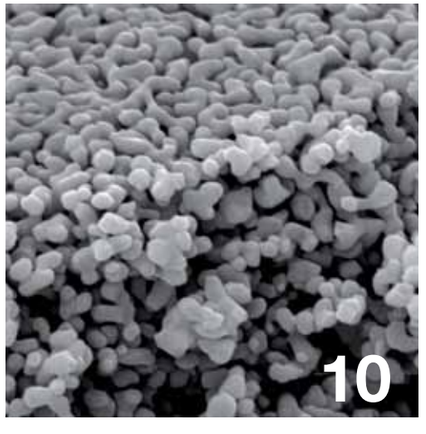
MIRA J.; PAYÁ, J. Combinaciones de formatos. En *GARCÍA VERDUCH, A. (coord.). Colocación de pavimentos y revestimientos cerámicos*. Castellón: Instituto de Tecnología Cerámica, 1993, p. 73-89.

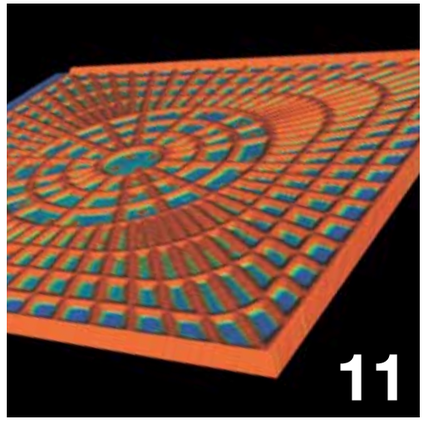
Azulejos y pavimentos cerámicos españoles. Madrid: ASCER, 1991.

MARTÍNEZ, C.; MIRA, J. Aplicaciones del diseño asistido por ordenador a los pavimentos y revestimientos cerámicos. *Técnica Cerámica.,* 170, 31-36, 1989.









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