LFOUNDRY ANNUAL REVIEW FOR THE YEAR 2016

LFOUNDRY

Solutions
for great visions

A SMIC COMPANY

01 INTRO

BIG CHANGES, GREAT CHALLENGES, A SHORT TIME.

THIS IS THE SPIRIT DRIVING US TOWARD OUR NEXT SUCCESS.

2016 was a crucial year for LFoundry. On June 24, 2016, Semiconductor Manufacturing International Corporation ("SMIC), one of the leading semiconductor foundries in the world and the largest and most advanced foundry in mainland China, jointly announced with us the signing of an agreement to purchase a 70% stake in LFoundry.
This acquisition benefits both SMIC and LFoundry, by increasing the combined scale, strengthening overall technology portfolios and expanding market opportunities for both parties to gain footing in new market sectors. This also represents the Mainland China IC foundry industry's first successful acquisition of an overseas-based manufacturer, marking a major step forward in internationalizing SMIC; furthermore, through this acquisition, SMIC has formally entered the global automotive electronics market.
SMIC has a diversified technology portfolio, including applications such as radio frequency ("RF"), connectivity, power management IC's ("PMIC"), CMOS image sensors ("CIS"), embedded memory, MEMS, and others — mainly for the communications and consumer markets. Complementarily, LFoundry's key focus is primarily in automotive, security, and industrial related applications including CIS, smart power, embedded memory and others. Such consolidation of technologies will broaden the overall technology portfolios and expand the areas of future development for both SMIC and LFoundry.
The semiconductor industry is one of the most globalized industries; the successful establishment of a multi-country manufacturing base sets a precedent in the mainland Chinese IC foundry industry. The union of Chinese and Italian enterprises in the semiconductor industry will bring Chinese market opportunities to LFoundry and more potential European customers to SMIC. Both SMIC and LFoundry can further develop the business potential of the Euro-Asia market.
This event marked the beginning of a new era for LFoundry and our Italian fab. Together with SMIC we can further improve LFoundry's strengths in optical sensor related technology, which is well recognized worldwide, and continue to contribute to the growth of technology in Europe, thanks to our partnerships with many key players. We see great value in the union with SMIC, enabling both companies to continue to grow and prosper.

- For LFoundry: strengthening manufacturing base, stability, access to Chinese markets, expanded resources.
- For SMIC: access to world class imaging technology, establishing the first fab outside China, ability to develop business in Europe and focus on the worldwide Automotive and Industrial Market, becoming a truly global company.
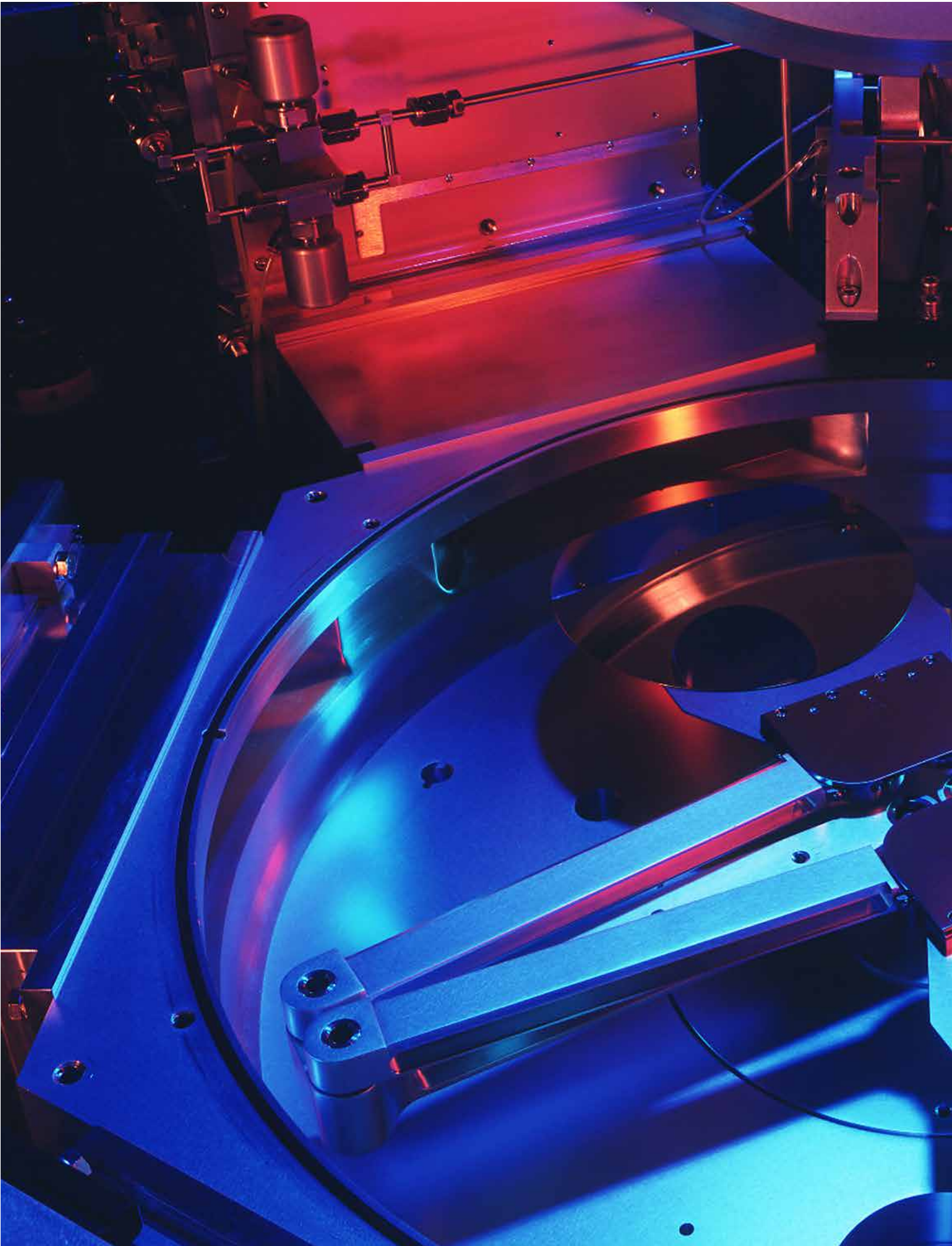
The agreement with SMIC has given us a stronger playing field in Europe, and it will further enable us to better use our own manufacturing capacity and have access to SMIC's extremely diverse range of technology while taking advantage of SMIC's commercial network and overall capacity.
Many results have already seen after the acquisition of LFoundry, but now we have to work on integration and face new challenges. In particular, in the coming years LFoundry is set to become the SMIC center of excellence for CIS (CMOS Image Sensors) and Auto Electronics. This is a big challenge. We are faced with highly competitive internal benchmarks and we have to be very careful to control our costs and organize our resources efficiently and effectively. But we believe we have all the features to meet the challenge and make LFoundry and its employees increasingly proud to be able to contribute to innovation worldwide.

Günther Ernst (CEO) & Sergio Galbiati (Vice-Chairman)

" **THE UNION OF CHINESE AND ITALIAN ENTERPRISES IN THE SEMICONDUCTOR INDUSTRY WILL BRING CHINESE MARKET OPPORTUNITIES TO LFOUNDRY AND MORE POTENTIAL EUROPEAN CUSTOMERS TO SMIC. BOTH SMIC AND LFOUNDRY CAN FURTHER DEVELOP THE BUSINESS POTENTIAL OF THE EURO-ASIA MARKET. "**

" **MANY RESULTS HAVE ALREADY SEEN AFTER THE ACQUISITION OF LFOUNDRY, BUT NOW WE HAVE TO WORK ON INTEGRATION AND FACE NEW CHALLENGES. "**

02 OVERVIEW

THIS IS US

IT IS NOT ALWAYS EASY TO EXPLAIN THE TRUE MEANING OF WHAT WE DO. IT IS INSEPARABLE FROM THE HUMAN BEING, INTERTWINED WITH THE FUTURE, INEXTRICABLY LINKED TO THE HIGHEST EXPRESSION OF MAN'S EVOLUTION.

OUR COMPANY

From the heart of ancient Europe, LFoundry, a SMIC majority-owned company, provides innovative solutions reaching around the world, breathing life into our customers' visions. Fully committed to finding the best solutions to satisfy every specific need, LFoundry creates innovation to bring our partners' projects to life. When it comes to transforming innovation into reality, this is what makes LFoundry a world-class player. Our leading and highly specialized foundry has an advanced 200mm manufacturing fab and proprietary technologies at 150 and 110 nm nodes, with MPW and MLM services available. We provide special capabilities and know-how for CMOS Image Sensors through CIS optimized processes down to 90nm, as well as Back Side Illumination technology, Secure Microcontrollers, Smart Power, and CMOS-MEMS Integration.

OUR PLACE

In Avezzano (AQ - Italy), LFoundry is enabling innovation worldwide. We have a continuous commitment to guaranteeing a secure environment in which our customers can realise their ideas to the highest standard, relying on LFoundry as an indispensable partner to unleash their full potential.

OUR WORDS

These are the words we choose to name our spirit and introduce LFoundry to the world. This is what we are, where we go, what we do and how we do it. Put simply, this is us.

MISSION

WE CREATE INNOVATIVE SOLUTIONS TO BRING OUR CUSTOMERS' VISION TO LIFE, SHAPING STRONG PARTNERSHIPS IN A HIGHLY SECURE ENVIRONMENT

VALUES

RESILIENCE

Resilience expresses the ability to go up against significant change and come out victorious. Rooted in LFoundry's history, this value lays a strong foundation for the company to overcome the technological and circumstantial challenges of the future.

INITIATIVE

LFoundry promotes a spirit of initiative to find high-performance solutions. Driven by creativity to create value for and with its customers, making the right decisions at the right time.

FAIRNESS

LFoundry works alongside its customers to create tailor-made solutions, establishing highly collaborative relationships founded on its dignity and integrity as a technology partner.

SECURITY

A continuous commitment to guaranteeing a secure environment in which customers can realise their ideas to the highest standard, trusting in LFoundry as a valued partner to unleash their full potential. Embodies the concept of protection, both in terms of the products themselves and the intellectual property rights associated with them.

INTERDEPENDENCE

Conveys the ideas of interdependence and cooperation, specifically in the foundry-customer interrelationship, in individual work teams and between each member of LFoundry's workforce. This value underlines the importance of the single parts of a larger system comprised of the foundry, its customers and its employees, simultaneously evoking their connection to the working process with a view to reaching a common goal.

03

FOCUS
2016/2017

SO MANY FACTS, SO MUCH INFLUENCE
LFOUNDRY IS MADE UP OF EVENTS, PEOPLE, PROJECTS AND NEWS. HERE IT ALL IS.

2017

14
FEBRUARY

Charter of Pescara: LFoundry reaches the "Advanced Level"

At the headquarters of FATER company in Pescara, saw the presentation of the "Charter of Pescara", drafted by the Abruzzo region with companies, universities and social partners, at the request of the Vice President of the region and Alderman for Economic Development, Giovanni Lolli. Speakers included the Undersecretary to the Presidency of the Council of Italian Ministers, Claudio De Vincenti, the President of the Environment Committee of the Chamber of Deputies and President of Symbola-Foundation for Italian qualities, Ermete Realacci and Giovanni Lolli. The "Charter" represents a pact between enterprises and the Region, and is the first joint act for Abruzzo focusing on a more conscious industry aiming at environmental, social and economic sustainability. It is of strategic importance, and represents an advanced project both for the method by which it was made that for the results achieved, in terms of a more sustainable and livable society. An innovative and shared tool, consistent with EU policies, for a circular and green economy that may also be an inspiration for other regions. Based on environmental, social and economic sustainability requirements, the Charter gives access, according to one of three levels (Basic, Intermediate and Advanced), to a series of economic and administrative advantages. LFoundry is part of the Coordination Table, and by subscribing to the Charter, according to its sustainability parameters, was entitled to be registered under the "Advanced" level.

2016

27 JANUARY

LFoundry is the coordinator of *Life Bitmaps:* a project co-funded by the EU life program. The LIFE BITMAPS project will establish a pilot plant to demonstrate a new and never-before attempted process for the treatment of effluents from electronics and semiconductor manufacturing. The project will contribute to the implementation of the EU Water Framework Directive 2000/60/EC by introducing more efficient treatment technologies to help reduce Tetramethylammonium hydroxide (TMAH) pollution at source. By recycling wastewater, it will also demonstrate the practical application of the circular economy priority of water reuse and savings in industrial processes.

20 OCTOBER

LFoundry at 2016 Image Sensors Conference
LFoundry participated in the 2016 Image Sensors Conference (25-26 October – San Francisco). This event attracts a wide range of companies from across the digital imaging supply chain. From end users in all the main applications to camera system suppliers, sensor design houses and technology developers, optics suppliers, chip foundries, as well as testing, calibration and other peripheral services.

20 SEPTEMBER

LFoundry at NanoInnovation
LFoundry is a co-organizer of NanoInnovation. The event represents an unmissable opportunity for Universities, Researchers and Entrepreneurial systems to meet, providing a platform for discussion where researchers, technologists, managers, entrepreneurs and investors can meet and share experiences, opinions and expectations about the growing role of nanotechnology in the KETs evolution. NanoInnovation took place on September 20 - 23 in the Renaissance Cloister by Sangallo at the Faculty of Civil and Industrial Engineering, Sapienza University of Rome.

2016

19 APRIL

LFoundry Announces Availability of *Interoperable Process Design Kit (iPDK)*
Landshut & Munich, Germany: LFoundry announces the availability of an OpenAccess (OA) based interoperable process design kit (*iPDK*) for high performance analog and RF design using Keysight Technologies' Advanced Design System (ADS) EDA software. The iPDK was validated jointly with Keysight to ensure compliance with ADS 2016 and to provide customers access to the full unabridged set of ADS dedicated RF design flow tools in a Linux or Windows environment.

14 APRIL

LFoundry and *Caeleste*: a new step towards European independence for future space imaging applications
The European Space Agency has awarded and funded a contract to a European industrial consortium, led by *Caeleste*, to develop a new CMOS image sensor entirely designed, manufactured and tested within Europe. *Caeleste* contributes to the project with over 250 man-years of experience in the custom design and realisation of CMOS image sensors for various application domains, including space and astronomy applications.
LFoundry, with its wafer fab facility at Avezzano, is responsible for the manufacturing of the image sensor. LFoundry is able to manufacture sensors that respond to very stringent specifications such as cryogenic environments (at temperatures as low as -180 degrees).
Airbus Defence and Space provides fifteen years' experience in CMOS image sensors development for space applications and will carry out a characterisation campaign in parallel with *Caeleste*.

29
MARCH

Cadence User Conference 2016
LFoundry participated in the 2016 *CDN Live (Cadence User Conference 2016)* from 2nd to 4th May in Munich.
Each year, CDN Live EMEA brings together a record number of *Cadence®* technology users, developers, and industry experts to network, share best practices on critical design and verification issues, and discover new techniques for designing advanced silicon, SoCs, and systems.

27
JANUARY

Project *INPS In House*: success at LFoundry
And so concludes the **My pension - INPS In House** project at LFoundry and Micron, Avezzano. The initiative included a series of meetings and consultations hosted by Avezzano's INPS staff for LFoundry's employees. The project was a great success with over 350 consultations carried out, more than 1,500 people (including Micron and LFoundry employees) participating in plenary meetings and 375 personal PIN numbers issued to access INPS services in the months of December 2015 and January 2016.

12
JANUARY

LFoundry participates in the 2016 *Image Sensors Conference*
Held in London, the 2016 Image Sensors Conference attracts a wide range of companies from across the digital imaging supply chain.
From end users in all the main applications to camera system suppliers, sensor design houses and technology developers, optics suppliers and wafer foundries.
The 2016 ISC is the most important conference in Europe in the image sensor industry. Therefore LFoundry's presence was of key importance as the company wants to remain in the vanguard for 200mm technology for image sensors, staying up to the minute with the latest trends and feeding them back into their technology development roadmaps.

04
COMMITMENT TO OUR TERRITORY

LFOUNDRY'S CODE OF ETHICS
ETHICAL PRINCIPLES ARE CRUCIAL DRIVERS ON OUR PATH TOWARD A SUSTAINABLE FUTURE.

The Code of Ethics represents an unavoidable management tool for ethical conduct in business affairs, together with the rules and agreements in force in the countries where LFoundry is operating, both directly and indirectly, or through its subsidiaries and / or affiliates. The Code is also an effective element of corporate strategy and organization and is an integral part of the Organisational, Management and Control Model pursuant to Legislative Decree no. 231/01 (hereinafter the "Model").

The ethical principles inspiring LFoundry, and from which its models of conduct derive, in order to effectively and fairly compete in the market, improve the satisfaction of its customers, increase the value and develop people's skills and the professional growth are following:
• compliance with the laws
• ethics, fairness, professionalism
• impartiality
• people's honesty
• transparency and completeness of the information

All people at LFoundry, without any distinction and exception, undertake therefore to observe and enforce these principles, as part of their duties and responsibilities. This commitment requires that the persons, with whom the company is in relationship for whatever reason, act towards it according to the rules and methods based on the same values. In particular, the belief of acting to the benefit of the company shall not justify in any way behaviors that conflict with these principles.

In this scenario, LFoundry is responsible for:
• promoting propagation of the Code among the recipients so that they can contribute to improve its principles and contents

• taking into account recipients possible suggestions and observations, in order to confirm or integrate the Code
• controlling the compliance with the Code by providing suitable information, prevention and control tools
• and procedures, and ensuring the transparency of operations and behaviors, implementing corrective actions, if necessary

The verification of compliance with the Code is performed by the Supervisory Body pursuant to Legislative Decree. 231/01 of the Company (hereinafter "OdV").

Bringing such principles and conduct to life is the essential element for the responsible growth of our company, whose aim is to be one of the best examples of business ethics at international level.

LFoundry's Code of Ethics and Model of Organization, Management and Control were approved by the Board of Directors of LFoundry S.r.l. on April 29, 2014; the 2nd version of both the Code of Ethics and the Model of Organization, Management and Control were approved by the BoD of LFoundry S.r.l. on June 16, 2016.
In 2016 we collected 1 hour of salary from any of the Avezzano members willing to contribute in order to support the recovery from the earthquake in central Italy.
The company contributed with an additional 40%. 21,737.71 EUR were collected and donated by LFoundry for the reconstruction of a school in Amatrice.

BRINGING THE CODE OF ETHICS PRINCIPLES AND CONDUCT TO LIFE IS THE ESSENTIAL ELEMENT FOR THE RESPONSIBLE GROWTH OF OUR COMPANY, WHOSE AIM IS TO BE ONE OF THE BEST EXAMPLES OF BUSINESS ETHICS AT INTERNATIONAL LEVEL.

EUROPEAN PROJECTS

THE SEMICONDUCTOR BUSINESS HAS BEEN IDENTIFIED BY THE EUROPEAN COMMISSION AS ONE OF THE KEY ENABLING TECHNOLOGIES FOR EUROPEAN INDUSTRIAL DEVELOPMENT. LFOUNDRY CONTRIBUTES BY DEVELOPING RESEARCH PROJECTS OF EUROPEAN INTEREST THROUGH ITS PARTICIPATION IN SCHEMES LAUNCHED BY THE COMMISSION TO ADDRESS THE IDENTIFIED AREAS OF DEVELOPMENT.

ONGOING PROJECTS

LIFE-BITMAPS - Pilot Technology for Aerobic Biodegradation of Spent Tmah Photoresist Solution In Semiconductor Industries

The LIFE BITMAPS project will establish a pilot plant to demonstrate a new and never-before attempted process for the treatment of effluents from electronics and semiconductor manufacturing. The project will contribute to the implementation of the EU Water Framework Directive 2000/60/EC by introducing more efficient treatment technologies to help reduce Tetramethylammonium hydroxide (TMAH) pollution at source. By recycling wastewater, it will also demonstrate the practical application of the circular economy priority of water reuse and savings in industrial processes.

SUPERTWIN - All Solid-State Super-Twinning Photon Microscope

The goal of this project is to develop the technology foundation for advanced optical microscope imaging at a resolution beyond the Rayleigh limit, utilizing super-twinning photon states (N-partite entangled states) with de Broglie wavelength at a fraction of the wavelength of a photon in a classical state.

NanoStreeM - NANOmaterials: Strategies for Safety Assessments in Advanced Integrated Circuits Manufacturing

The purpose of this project is to promote best practices (for example, by following up standards) and identify gaps in methodologies and potential directions for further investigation to support risk assessment in order to protect human health. The project also aims to initiate communication with stakeholders to support informed decision making and the governance of risks related to the handling of nanomaterials and medical surveillance of the workforce in the semiconductor fabrication process.

CLOSED PROJECTS

INTEGRATE - Integrated Solutions for Agile Manufacturing in High-mix Semiconductor Fabs
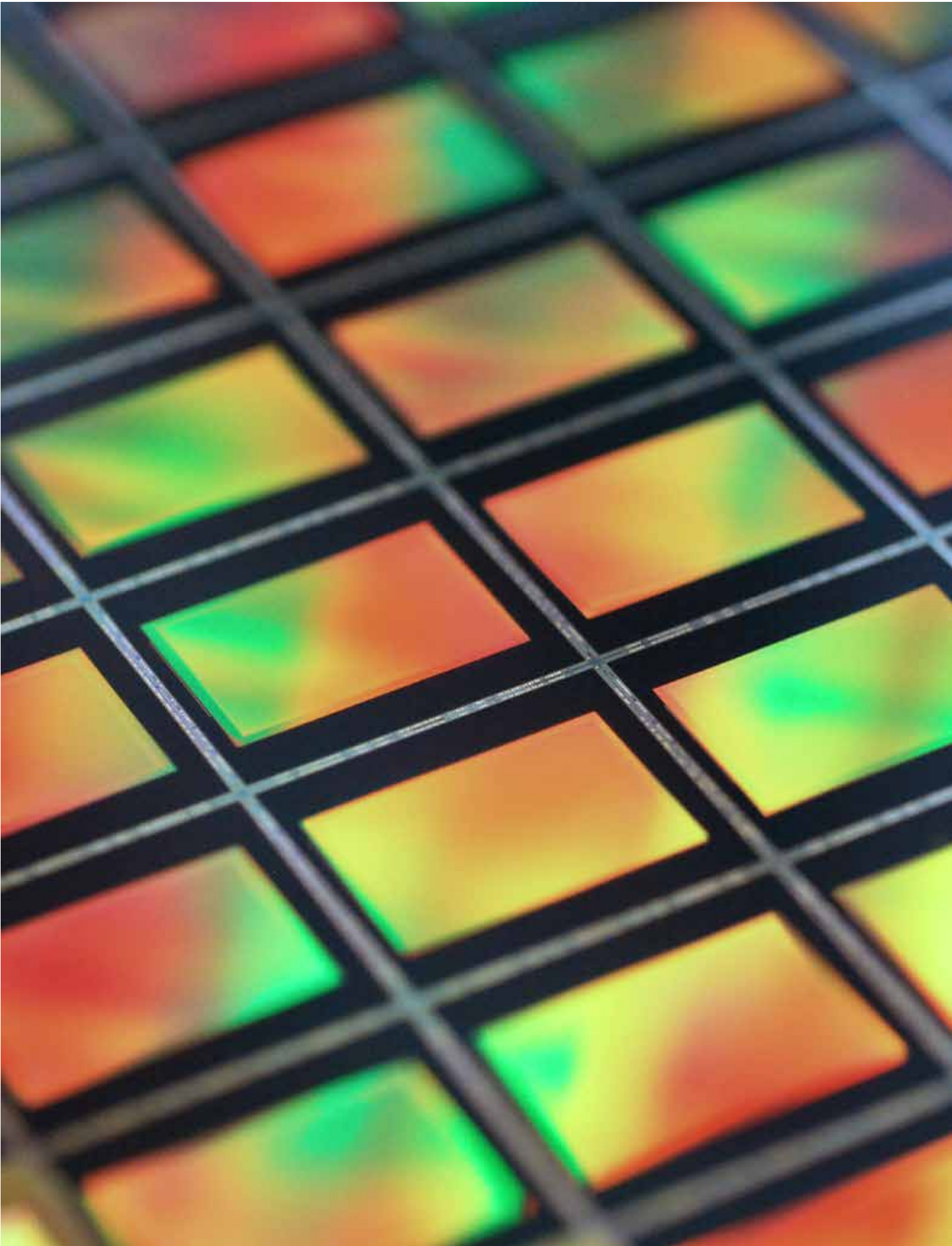
INTEGRATE will consider the development of integrated process control and equipment control optimization tools, together with advanced lot flow control techniques that interact with lower and upper decisions levels but also consider various elements of the fab.

SILVER - Semiconductor Industry Leading towards Viable Energy Recovery

The objective of the SILVER project is the design, development and assessment of innovative and comprehensive approaches to reduce the environmental impact of existing semiconductor manufacturing. The project will focus on the development of innovative solutions for the reduction of water and energy consumption.

LASSIE-FP7 - Large Area Solid State Intelligent Efficient Luminaires

The main objective of the LASSIE-FP7 project is to implement large-area and low-cost intelligent SSL modules with high efficiency and high lighting quality, while assessing environmental impact throughout their life cycle.

05 FINANCIAL DATA

2016

THE PROJECTED PERFORMANCE AS FORECAST IN THE CORPORATE BUSINESS PLAN WAS GREATLY SATISFIED IN WHAT HAS BEEN A YEAR OF STABILITY FOR LFOUNDRY.
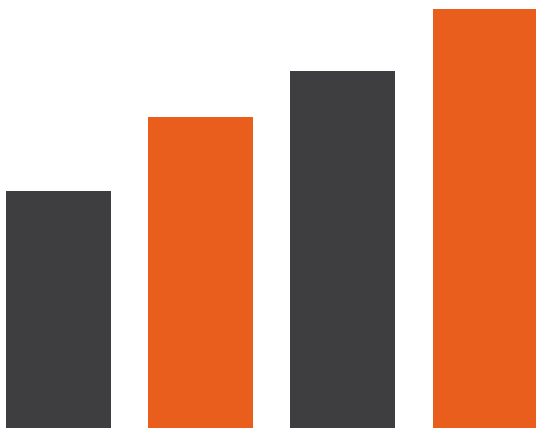
TURNOVER

ACTUAL DATA

+0,5%

GUIDELINE

NET PROFIT

**FOURTH
CONSECUTIVE
PROFITABLE YEAR**

06 **PEOPLE**

HR & CORPORATE AFFAIRS: ACCOMPLISHMENTS AND FUTURE CHALLENGES

2016 ACCOMPLISHMENTS

In 2016 we implemented several activities started the previous year and laid the foundations for new implementations this year and beyond.

For the very first time for us, we designed and implemented the so-called "company welfare" system. It is the modern trend, today used widely to provide more efficient support to employees given the pressure on the state welfare system almost everywhere in Europe, and beyond. In Italy, for instance, this kind of parallel system has been supported also thanks to the resolution of 2017 budget law and, extremely interestingly, thanks also to the latest metalworkers' collective bargaining contract.

Each role in the company has a set of distinctive technical competencies and knowledge needed to play at its best; the proficiency required of junior roles is expected to differ from that of senior ones. We have mapped and formalized the technical competencies and knowledge with the expected proficiency by career. We now have a complete picture of professional and engineering levels. This map will enable us to better target our research during agency recruitment, to improve our capability to assess during in-house recruitment and, above all, will enable us to assess the expected competencies against those effectively used, enabling development actions where needed. This is a pivotal need, as competencies and their proficiency change over the time, and we need a system that enables us to keep in step with business needs, in order to compete with the best. This process will also be supported by the developments being implemented by our supplier on the software platform we are going to use.

From a Corporate Affairs view point, we have completed the company rebranding, launching the new logo, vision, mission and communication statements and publishing our new website. Today we are recognized as a valuable partner in addressing the innovation challenges in Europe, and in the past couple of years we have received invitations to join R&D programs funded by the European Commission and other relevant agencies. We have also had a positive contribution within the Abruzzo Region, taking part in some of the policy making activities the Region has decided to open to the local industrial network: we have been one of the main contributors in finalizing the so-called Charter of Pescara, of which today we are "Advanced members". This means that in future we will have some facilitation for the paperwork needed to obtain certain authorizations in relevant fields like safety, environment and others. Also we have supported the Abruzzo Region in identifying the direction of regional ICT development, accordingly to the requirements of the EU S3 strategy.

2017 CHALLENGES

Last July we became part of a new family: SMIC. This is a great opportunity for us, and we expect it will change our perspective as a former standalone company, providing more opportunities for the future. Being part of a wider community, there are rules to be followed and processes to integrate. Some joint activities, like technology transfer, started the day after closing the deal. Some functional integration also started in recent months, and in 2017 we will see more on-going activities.

From an internal point of view, we are designing a large-scale program for leaders to review the best HR management practices. An external advisor will be selected to help us design a tailored program.

We will also perform an evaluation of technical competencies, leveraging on the background developed last year: this will also enable us to better identify any training gaps and therefore better use the financial resources to focus on priorities for technical training. Furthermore we will extend the identification of technical competencies to teams not yet covered last year.

We also have high expectations for Corporate Affairs activities. LFoundry is part of the core team working to find a practical application of the so-called European Project of Important Common Interest (acronym: IPCEI). The IPCEI in our relevant field, microelectronics, is one of the first on-going projects for application and 2017 could be the year in which the new tool will materialize, providing new opportunities for investments in Europe. We are also working on the submission of new innovation projects to be funded with the current available programs, including H2020.

5

07
EHSS
ENVIRONMENT, HEALTH, SAFETY & SECURITY

CORPORATE SOCIAL RESPONSIBILITY
BEING A LEADING COMPANY MEANS BEING AN EXAMPLE TO THE WORLD WE LEAD.

HEALTH AND SAFETY

The Occupational Health and Safety (OHS) Management System, established at LFoundry according to standard OHSAS 18001:2007 is periodically audited and recertified by a Third Party. The company's performance in these disciplines demonstrates the effectiveness of the preventive and protective measures we adopt to safeguard and protect employees, visitors and contractors from occupational risks as well as those risks associated to any emergencies.

LFoundry received a 5% reduction of the annual premium due to the public national insurance institute for work-related injuries in accordance with its certified Occupational Health and Safety (OHS) Management System performances and related continuous improvement activities in place.

SECURITY

According to the contents of its security policy, the Security Management System in LFoundry is intended to "safeguard people, information, goods and business continuity, guaranteeing an environment that infuses trust to investors, suppliers and customers." LFoundry is deeply committed to the protection of the Confidentiality, Integrity and Availability of Information,
Goods, Processes, Materials and Products. Its aim is to reach this goal through the suitable use of technologies, methods, and trained personnel.

In order to reach and keep this goal LFoundry is involved in a Site Security Certification process, in accordance with the standard ISO 15408.

This certification path is under the control of the Italian Body for Security Certification (OCSI: Organismo di Certificazione della Sicurezza Informatica: under the MISE (Italian Ministry for Economic Development).

The plan for LFoundry is to reach an EAL5+ level certification. When success is achieved, we will be the first Italian company to be awarded this certification level.

To meet customer requirements in the Information Security Management System, in the second half of 2016 LFoundry began the process for ISO/IEC 27001 certification. This certification demonstrates the Company's commitment to protecting the Confidentiality, Integrity and Availability of physical and logical information.

ENVIRONMENT

The Environmental Management System established at LFoundry according to standard DIN ISO 14001:2004 is periodically audited and recertified by a Third Party; this demonstrates the effectiveness of the systems and methods we adopt as well as the continuous commitment to the environment as proof of our consistent compliance with regulations and the achievement of significant results in reducing the use of natural resources, energy consumption, raw materials and chemicals, waste disposal and employee transportation.

LFoundry's commitment to environmental sustainability is further demonstrated by the implementation of the IECQ QC 080000 Hazardous Substance Process Management (HSPM) system, aiming to minimize or eliminate hazardous substances from the products supplied to our customers. According to standard DIN ISO 14001:2004 and European and National environmental policies, LFoundry strives for environmental improvement and the sustainable use of waste and secondary raw materials, in order to prevent the depletion of natural resources.

This is the case of sulfuric acid solution (H_2SO_4 70%wt), a raw material widely used in the manufacture of semiconductors, for the cleaning process, recovered from industrial water and sent for recycling, and put on the market as secondary raw material. The total quantity of recovered acid at this stage is about 80 tons/year.

ENERGY

Energy Management plays a key role in supporting our plans to maximize profitability, strengthen our competitive position and provide customers with the highest quality products through the implementation of Best Key Methods (BKM). This has allowed LFoundry to become a benchmark company in terms of the rational use of energy, increasing the efficiency of energy production and utilization and the process management of the main sources of energy through a solid management of conventional and innovative activities and projects, while maintaining the conformity with laws and codes.

The energy screening performed by LFoundry in compliance with the guide UNI CEI 16247, strives to:

- maximize its energy performance, reducing operating expenses and increasing shareholder value by actively and responsibly managing energy consumption;
- demonstrate commitment to our community and leadership in our industry, by reducing the environmental impacts associated to energy use
- identify strategic projects to achieve our energy management mission
- The site Qualification as an Equivalent Energy Efficient Utility System (SESEEU-A) awarded by the Energy Authority allows the Company to:
  - Pay only 5% of grid taxes on self-consumed (produced and consumed on site) energy. Cost Savings 4,250,000 €/year
  - Supply the Gas plant utilities by our cogeneration. Cost Savings ~1,000,000 €/year

Based on the Kyoto protocol, the National Electricity and Gas Authority has developed a mechanism to incentivize energy efficiency activities to achieve the energy saving targets based on the European agreement (2020). The following energy saving projects have been funded.

- Steam turbine chiller (heat recovery from cogeneration)
  Grant amount (2013)
  Phase 1: 640 k€
  Phase 2: 440 k€
- High efficiency electrical chiller
  Grant amount (2013-2018)
  15k€/year
- Fab remodeling (cmos)
  Grant amount (2014)
  7.6 M€

WASTE MANAGEMENT

Waste is one of the focal areas of the LFoundry environmental policy. Semiconductor manufacture generates a large amount of hazardous and non-hazardous waste that contributes to environmental pollution, as well as resulting in costs for correct disposal. In order to effectively address the above issues, LFoundry coordinates a Consortium including other companies and the University of l'Aquila, focused on the LIFE BITMAPS project funded by the European Community. The main objective of LIFE BITMAPS
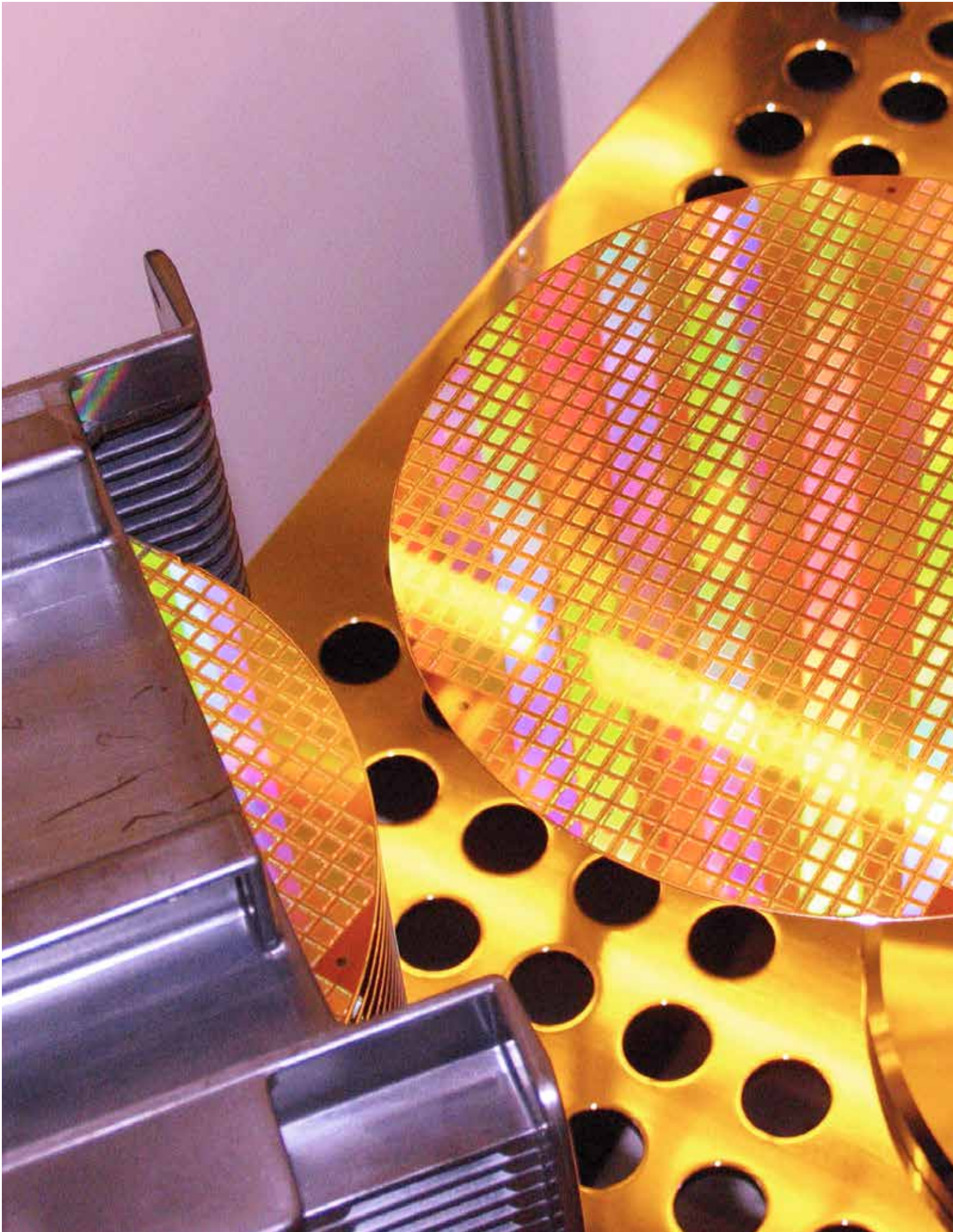
is to demonstrate a viable industrial solution for the aerobic biodegradation of TMAH (Tetra- Metyl Ammonium Hydroxide) which is a hazardous substance used in the Photolithography process. The project began in July 2016 and will be completed by December 2018. Total Budget of the LIFE BITMAPS project: € 1,676,923.00; EU contribution: € 1,003,753.00

WATER MANAGEMENT

Water is a key resource for semiconductor production. A large amount of ultrapure water is needed to run a production Fab, and same quantity is released as waste water at the end of the production cycle. LFoundry is actively investigating a solution to improve water usage efficiency, to reduce input needs at the facility, as well as aiming to release less polluted output water for the benefit of the environment. In order to effectively address the reduction of water consumption, the LIFE BITMAPS project funded by the European Community has included as additional objective: recycling of the main waste water stream at the Avezzano Wafer Fab.

MAJOR ACCIDENTS

The company complies to a dedicated Policy for the prevention of Major Accidents as defined by the "Seveso" Directive 2012/18/EU which applies to the Plant in Avezzano. This Policy is fulfilled by implementing the Environmental and Health & Safety Management Systems and guaranteeing a continuous improvement program to conduct operations as well as maintain and design our systems and plants. The vulnerability of the plants and structures to earthquakes and landslides identified as possible scenarios for Major Incidents at the Avezzano site were evaluated during 2016. It was assessed that landslides cannot be the root cause for a Major Incident, while an improvement plan according to current technical standards was approved to eliminate the possible effects due to earthquakes.

08 QUALITY

QUALITY CULTURE
MOVING FORWARD

LFOUNDRY QUALITY POLICY

"We are committed to partnerships with our customers to exceed their expectations.
Our competent and motivated team is engaged in providing the best innovative and reliable foundry solutions, in a continuous effort to achieve zero defects and quality excellence."

While consolidating and continuously improving our areas of strength, LFoundry is moving forward to meet new challenges, to ensure the outstanding quality levels our customers will require in the coming years.
The fertile terrain for growing new capabilities lies in our structured management systems, our advanced methodology to safely launch new products, our steadfast application of the best methodologies and quality tools, our innovative internally developed solutions, our focus on continuously improving our processes and customer products, our advanced systems to develop error prevention and advanced process control, the commitment to protect our customers, our competent and motivated workforce.
The nourishment enabling our growth is the partnership with our customers, the ability to listen to their needs, understand megatrends and predict future customers' needs.

In this fertile environment, our production processes and our product lifecycle management are demonstrating the ability to challenge performance and further advance our new requirements:

- Automotive safety grades
- Zero defects, variability reduction, reliability that have always been part of our DNA, are evolving to provide further guarantees for our customers.

More and more of our electronic devices can be found in safety applications for automotive needs, and we are striving more and more to reduce any potential failures and transform our continuous improvement into exceptional quality performance that can further safeguard our loved ones at the wheel.

THE QUALITY YOU NEED

The ability to personalize development solutions is helping to consolidate our performance in scientific and medical applications where we can satisfy very specific requirements with customized solutions..

TELECOMMUNICATION

Our management systems are under certification to satisfy telecommunication market requirements

LFOUNDRY QUALITY MANAGEMENT SYSTEM

- WE HAVE BEEN CERTIFIED ISO 9001 SINCE 1994 AND ISO TS 16949 SINCE 2009.

- WE PLAN TO BE CERTIFIED ISO TL9000 IN 2017.

SAFE LAUNCH OF TECHNOLOGY AND PRODUCTS

- PROPRIETARY TECHNOLOGY PROCESS QUALIFICATION STRATEGY ACCORDING TO JEDEC JP-001 AND AEC-Q-100-REVG (AUTOMOTIVE ELECTRONICS COUNCIL).

- STAGE AND GATE NEW PRODUCT INTRODUCTION ACCORDING TO APQP METHODOLOGY.

FULLY AUTOMATED PRODUCTION ENVIRONMENT TO PREVENT PROCESS DEVIATION AND DETECT PRODUCT ANOMALIES:

- ELECTRONIC CONTROL PLAN (PAPERLESS) AUTOMATED PROCESS CONTROL ARCHITECTURE

- REAL TIME SPC SYSTEM FOR CONTROLLING CRITICAL INLINE PARAMETERS

- FDC (FAULT DETECTION AND CLASSIFICATION) TOOLS TO DETECT PROCESS VARIATIONS

- APC (ADVANCED PROCESS CONTROL AND AUTOMATIC ADJUSTMENTS) TO REDUCE PROCESS VARIATIONS

- OCAP TREATMENT AND DOCUMENTATION, INCLUDING NON-CONFORMING PRODUCT SEGREGATION

- QUALITY CHECKS FOR PRODUCTION EQUIPMENT AUTOMATICALLY CONTROLLED BY STRUCTURED QC MODELS

- SAFE PROCESS RECIPE MANAGEMENT

- FULLY AUTOMATED POKA YOKE TOOLS TO PREVENT MISPROCESSES AND MIS-OPERATION

ADVANCED ANALYTICS FOR EARLY DETECTION AND FAILURE ANALYSIS

- DATA MINING

- STRUCTURED YIELD MANAGEMENT

- FAILURE ANALYSIS, PRODUCT AND ANALYTICS LABS

ADVANCED QUALITY TOOLS

- RISK ANALYSIS

- CULTURE OF PREVENTION

- LEARNING FROM PROBLEMS VALUING FEEDBACK FROM OUR CUSTOMERS AS A
- CRITICAL INPUT FOR OUR LEARNING CYCLE