



2017
CSR REPORT



JSR Micro 
MATERIALS INNOVATION

/ABOUT THIS REPORT



FEEDBACK

If you have suggestions or questions about this report or about our CSR program, please do not hesitate to contact our CSR coordinator.
Contact: Katleen Gorissen
E-mail: CSR@jsrmicro.be

GRI-G4

This report has been prepared 'in accordance' with the core option of the Global Reporting Initiative (GRI) G4 guidelines*.

REPORTING PERIOD

This CSR report covers the period from April 1, 2015, to March 31, 2017.

ASSURANCE

We did not pursue external assurance. However, most of the data contained in this report was tracked in management systems that are certified by independent 3rd parties.

EXPLANATORY NOTE

JSR Micro denotes the JSR Micro NV operations located in Leuven, Belgium. JSR may represent a broader selection of JSR group companies, including JSR Micro NV.

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* The GRI content index is located on our website: http://www.jsrmicro.be/sites/default/files/attachments/gri_content_index_2017.pdf. In this report we abbreviate JSR Micro NV to JSR Micro, not to be confused with our sister company JSR Micro Inc. in California, USA.

/LETTER FROM OUR CEO

In our first CSR report, we made an inventory of our CSR-related initiatives between 2002 and 2014, and we were somewhat surprised to see that we had such a long list.

These activities asked a lot of our people, both from the experienced ones who were engaged in these projects and from the many new colleagues who were facing a steep learning curve.



Against **such a background, any artificial effort to superimpose CSR on a business would fade quickly.**

Looking back now on the initiatives that were undertaken during the last two years, we can confirm that CSR is **in our genes**, no fading away.

Throughout the projects, **new activities reflected our respect for the environment, safety and health, and sustainability.** The awareness that emerged from our first report was secured in our organization by putting CSR explicitly in department goals.

The seeds that were planted some six, seven years ago in the areas of Life Sciences and Energy storage technology are now growing rapidly and need a lot of resources.



That exercise revealed that **CSR in its many aspects was already in our DNA** all those years. Now in 2017 we are reporting about the last two years, a different situation.

The company has evolved fast, faster than ever.

The seeds that were planted some six, seven years ago in the areas of life sciences and energy-storage technology are now growing rapidly and need a lot of resources.

Moreover, whereas our semiconductor materials production was stable but hardly growing and based on mature technology, a new production line for the very latest generation of products, extreme EUV products, is starting up as I write this.

Of course, all of this internal CSR focus would be one-sided without your feedback. We were pleasantly surprised by the amount of feedback that we received on our first report, not so much through awards or publicity but from you, reader, stakeholder in our activities. We thank you for helping us set our course by answering our survey. I hope that you enjoy this second report as much as or even more than you did the first, and look forward again to your feedback and suggestions.

Sincerely,
Bart Denturck
 CEO JSR Micro

/INTRODUCING JSR MICRO



JSR Micro is located in Leuven, Belgium, from where we serve customers in Europe. We achieve a global reach through close collaboration with our parent and sister companies in Japan and the US. JSR Micro's core competency is our expertise in polymer chemistry. Since 1985, our mainstay has been specialty chemicals for the semiconductor industry. During the last 8 years, we have branched out into the life sciences to deliver bioprocess materials and research and diagnostic kits for pharmaceutical markets. In 2008 Lithium Ion Capacitors (LICs) were introduced to the European market, which we supply to industrial customers in need of uninterrupted power supply systems (UPS) and to customers that develop electric transportation systems.

GOVERNANCE AND MANAGEMENT APPROACH

JSR Micro is a fully owned subsidiary of JSR Corporation. Our daily operations are run by a 6-person executive committee. A supervisory board with members from Belgium and Japan oversees performance, long-term decisions and strategy development.



JSR Micro uses a common system in which the Executive Committee develops strategy, which is translated into departmental and individual goals. Because of

our recent growth these systems are being updated and we are transitioning towards a more formal Balanced Score Card system. In addition, all of our company processes are captured in certified management systems that have an inherent focus on continuously improving performance: the ISO 9001 system for quality management, ISO 14001 for managing environmental aspects and OHSAS 18001 for occupational health and safety.

“Because we work with chemical substances, we are highly aware of what we waste. If we can use fewer products, we will always do so. In our labs we are also very conscious about the consumption of electricity, room temperatures and turning off lights.” – Dominique

OUR APPROACH TO CSR AND ETHICS

CSR is a mindset that comes naturally to JSR Micro. In order to deliver high-quality products while maintaining superior standards of accountability towards all of our stakeholders, we must care for the safety and well-being of our employees and the environment. The Japanese aspect of our company adds an extra focus on efficiency and elimination of waste in every form, minimizing environmental impacts.

In light of the transformation at JSR Micro, during the reporting period the main focus of the CSR program has been to carry existing CSR standards and performance through the many changes. To meet the increasing workload, we had a hiring rate of 28 percent in the past 2 years. As our workforce grows, we must ensure that new employees are familiarized with these standards.

CSR encompasses many topics; Environment and Health and Safety (EHS) activities are a core part of this. At JSR Micro, the EHS department and the CSR coordinator are the driving forces behind CSR improvements.

ETHICS

JSR Micro adheres to [The JSR Group Principles of Corporate Ethics](#), which outlines the basic standards of business conduct to which we hold ourselves accountable. We also endorse the comprehensive [code of conduct of the Electronic Industry Citizenship Coalition](#) (EICC).

CSR PRIORITIES

As part of the reporting process, the CSR team conducted a survey for internal and external stakeholders and multiple in-depth interviews with stakeholders, during which material topics were also reviewed. Based on these reviews, the topic ‘Economic Performance’ did not come up in the priority list. Because we also do not report on this topic for confidentiality reasons, we have decided to remove the topic from the priority topics list.

These are the topics that are of high concern to JSR Micro as a company, as well as to our stakeholders:



COMMANDEUR DE L'ORDRE DE LEOPOLD GRANTED BY THE KINGDOM OF BELGIUM TO MITSUNOBU KOSHIBA

On May 12, 2015, JSR Corporation's CEO, Mitsunobu Koshiba, received this honorable decoration for outstanding achievements and JSR Micro's continuous excellence in Belgium over the last 30 years. The ceremony was hosted by Prime Minister Charles Michel and Deputy Prime Minister and Minister of Economy, Labor and Foreign Trade Kris Peeters. They stressed that the decoration is not meant for any individual but for the company as a whole and everyone involved with it.



From left to right: Bruno Roland, former CEO of JSR Micro; Mitsunobu Koshiba, CEO of JSR Corporation; Kris Peeters, Deputy Prime Minister and Minister of Economy, Labor and Foreign Trade

Celebrating 30 years of JSR Micro

To celebrate our 30th anniversary, we organized a JSR Family Day. Employees and their families, including children and grandchildren, were invited. They enjoyed a fun fair with many activities: face-painting, a bouncy castle, a carousel, a clown and much more. The families were invited for a tour through the factory and received their own JSR safety glasses. Company leaders made speeches and we said our farewells to Bruno Roland, our president of over 30 years. The employees gave him a standing ovation. At the end of the day we all enjoyed dinner, live music and dancing. The company provided chauffeurs from the NGO 'Responsible Young Drivers' to drive the party-goers home safely.

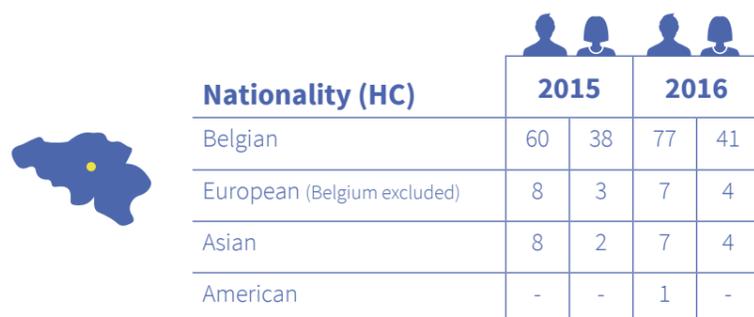
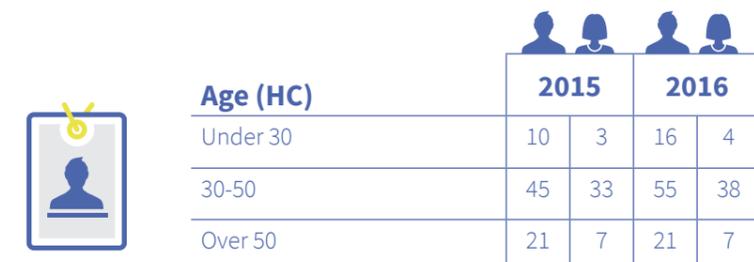


Some Family Day impressions

/OUR EMPLOYEES

EMPLOYEES, OUR GREATEST ASSET

Only with a very strong team can we grow successfully and effectively. JSR Micro prides itself on our engaged and committed workforce and as we grow, we must ensure that new employees feel just as engaged as those who have been part of our team for years.



Data reported in fiscal years that run from April 1 to March 31.

INTRODUCING NEW EMPLOYEES

During the reporting period, JSR has grown from 102 to 141 employees, which means a shift in how JSR Micro operates. In the past, everyone knew the names and faces of all of their coworkers. And during previous, slower phases of growth, new employees were immersed in a firmly established company culture. During this time of rapid growth, this is no longer possible. Now that the ratio of 'old' versus 'new' employees is approaching 2:1 at some departments, we can no longer assume that new employees will automatically adopt the 'JSR mindset': a quality- and customer focus and an open, respectful and responsible attitude.

Because of this, management recognizes the need to formalize some of the communication and processes. To ensure that new employees integrate smoothly, we provide support in various ways:

- An official training trajectory for all new employees, that includes a company introduction, safety training, quality training, company tour and other training required for the job profile
- Mentoring program
- Free Friday lunches, during which department managers present on the activities of their department
- An informal breakfast with the executives for all newcomers

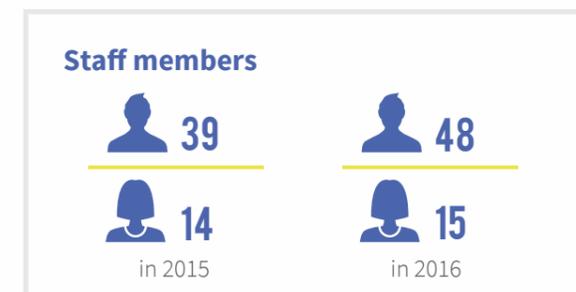
EMPLOYEE COUNCIL

When an organization surpasses 100 employees, Belgian legislation requires the establishment of an employee council that also includes members of the management. The JSR Micro employee council also includes four members that represent the labor union. The labor union representatives are elected, so that they represent the entire workforce. The council discusses company topics that concern employees, such as labor contracts, work hours, facilities and collective working agreements.

- 100% of the workforce is represented by the employee council.
- 100% of the employees are covered by collective bargaining agreements.

DEVELOPMENT AND ENGAGEMENT

As JSR Micro operates on the leading edge of technology, it is impossible to stay in the same job without developing new skills. During the annual performance review, managers and employees collaboratively set goals, and identify education and training needs. Management is very open to education requests and it is rare that a request is denied. The goals are tied to the company's strategic objectives, so that it is clear to each employee which role they play in contributing to JSR Micro's success.



JSR Micro turnover



JSR Micro new hires



Extracurricular fun

Having fun together outside of work is a great way for the team to build camaraderie. As a company, we also simply want to offer our employees a good time to thank them for their contributions. JSR Micro organizes several fun, social events for employees every year.

Beach volleyball

In July 2015 and 2016, JSR Micro participated with a volleyball team and supporters in Leuven's annual Beach Volley Tournament. For the occasion, Ladeuze Square in the city center is turned into a beach with several volleyball courts. It is a festive, family-oriented event, with lots of activities for children.

THE WARMEST MONTH: FUNDRAISING FOR "HONK"



'De Warmste Week' is an annual philanthropic event organized by radio station Studio Brussel. During that week, people from Flanders are invited to organize actions to collect donations for charitable causes of their choice. Participants are invited to talk about the causes they support on the radio. In 2015 alone, 3,345 actions were organized for 1,045 causes.

JSR Micro's Personnel Club (PC), a group of enthusiastic JSR employees that organizes events throughout the year for all employees, extended the week to a month in 2016.

They participated by selling snacks, such as grilled cheese sandwiches, hot dogs, soup, spaghetti, hot chocolate and cake. JSR Micro donated the groceries and the proceeds were donated to an organization called 'HONK.' HONK was founded by parents of disabled children, with the aim to collect money to buy a house in which the children can live, under supervision, when they grow up. In this way, the children can be part of society, instead of spending their lives in a nursing home. The NGO also organizes meaningful activities for the children. Instead of giving Christmas presents to customers, JSR Micro also donated to this good cause.

LEVENSLLOOP

Levensloop, or 'race for life' is a 24-hour sponsored run in support of the battle against cancer. JSR Micro employees show solidarity by participating in this challenge as a team.

In 2015, 46 JSR Micro employees and their friends and family participated, collecting 510 Euro, JSR Micro added 1.000 Euro to this amount. In 2016 JSR Micro and participants together collected a total of 1500 Euro's.



JSR MICRO SUPPORT TEAM

DEPARTMENTAL CSR GOALS

To engage employees in finding sustainable improvements, departments were invited to set CSR goals. This led to many proposals and plans: optimizing the SAP software for leaner planning, a Lithium Ion Capacitor (LIC) system in the new building, real-time monitoring of high energy consumers, an on-site car-sharing car, e-invoicing and many more.

JSR Micro encourages employees to give input in various ways:

- Open-door policy
- Idea box
- Award for safety and quality incident reporting

JOB-LINK

In 2016 JSR Micro hired one Job-Link candidate. Job-Link connects employers to people that want to work, but are challenged when they try to re-enter the job market because of a disability, long-term unemployment, recovery after a disease, etc.

ENTREPRENEURS IN FRONT OF THE CLASS

During the annual educational project 'entrepreneurs in front of the class', 13,000 students attended guest lectures by over 650 entrepreneurs. In January 2017, JSR Micro's CEO, Bart Denturck, gave a guest lecture to students of the secondary school Don Bosco in Haacht.

After learning about the importance of chemistry in creating everyday products such as smart phones, the students were eager to hear about what employers are looking for during job interviews and possible career trajectories. We hope that some have been enticed to pursue a career in chemistry.



/ FROM OUR EMPLOYEES

HOW OUR EMPLOYEES DESCRIBE JSR MICRO

"We have a respectful culture and an open, honest way of interacting. The management listens to the needs of employees and are flexible in adapting schedules when there are health or family issues."

- Dominique

"The company is familial, human-centered; people are passionate about their jobs and each other."

- Sofie

"Familial and cooperative. People are here for the long-term commitment."

- Paul

"A positive, comfortable, family-like culture. Pleasant to work in."

- Geert



/QUALITY

QUALITY, OUR CULTURE AND MINDSET

FUTURE CULTURE
ASSURANCE COMPLIANCE
ANALYSES TRAINING AUDIT
ISO STANDARDS
QUALITY
PROCESS FOCUS
CUSTOMER MINDSET DEDICATION
NEEDS PRODUCTS
APPROACH MANAGEMENT
EFFICIENCY

At JSR Micro, quality is our number one differentiator. Quality does not only mean delivering an excellent product, it also means anticipating customer needs, proactively identifying any issue before it becomes a problem and closely working with anyone involved when

issues do arise. It entails delivering product specifications and consistent performance of the product over time. As such, our quality management system is much more than a formality.

Because we manufacture materials that work on a nanoscale, the smallest mistakes have large repercussions. Everyone that contributes to the creation of JSR Micro's products is deeply aware of this, so a quality mindset is ingrained in anyone who works at our company.

“Quality remains the most important topic. It means doing your work in a good, conscientious and efficient manner.” - **Fabienne**

SHARING OUR QUALITY FOCUS

To ensure a company-wide dedication to quality, training on quality management is a big part of the introductory activities with new employees. The quality training covers topics such as Failure Mode Effect Analyses (FMEA), process control, change control and complaint handling.

Free Friday lunch sessions and a breakfast with executives provide more informal platforms during which we share JSR Micro's approach to quality.

QUALITY IS OUR NUMBER ONE DIFFERENTIATOR

Furthermore, during the bi-annual Global Quality Meeting, we gather with our sister companies from the US and Japan to exchange best practices and learn from each other.

UPGRADE FROM ISO 9001:2008 TO ISO 9001:2015

In 2016, we upgraded our quality management system to the ISO 9001:2015 standard. The renewed version of ISO 9001 has expanded with a focus on stakeholders and risk management. These aspects were already covered in JSR Micro's existing quality management system, which contains many elements of TS16949, the quality standard for the automotive industry. TS16949 and our own quality management system include risk management, FMEA analyses, minimization of process variance, reduction of spills and prevention of errors.



The internal audit team was trained to audit according to the new standard. In addition, the team worked with all departments to chart process flows in 'turtle diagrams'. These diagrams facilitate the auditing process by breaking down complex processes in a simple visual.

SCQI AWARD



In 2016, JSR won the prestigious Supplier Continuous Quality Improvement (SCQI) award from Intel for the 6th consecutive time. The SCQI award recognizes JSR's industry-leading commitment not only to quality and technological excellence, but also to the environment, labor, human rights and ethical performance.

COST OF QUALITY

We track our quality performance by calculating the cost of quality (CoQ). The CoQ balances the cost of preventing and detecting defects with the cost of failure. We aim to keep our CoQ minimal. By focusing on the optimization of the first two elements, we try to bring the cost of the latter down. After 4 years of tracking our CoQ, we have managed to get it down to less than 2.5% of our gross revenue, which was our goal from the start and hold it there for two years and counting.

4.05 %	2011
4.63 %	2012
5.08 %	2013
3.45 %	2014
2.26 %	2015
2.08 %	2016

“We have a 5S system through which we can work in a clean, efficient, orderly way. In a lab, that is very important because you'll put away anything that is not needed. In that way it also contributes to safety.” - **Dominique**

AUTOMATION

During the reporting period we initiated four projects to automate various process steps:

- implementation of an improved CIP Skid system to clean biotech process equipment and piping,
- automation of the KrF production process,
- installation of a 'kill tank' that destroys GMO waste,
- installation of a drum-turn machine, formerly a manual operation.

The automation increases control of the processes, thereby reducing the chance of human error and spills, and improving the safety of the process. Additionally, the reduction in errors and increased efficiency result in a reduction of waste. The new CIP Skid system requires fewer chemicals and produces better results. Through the automation of the KrF process we are able to track much more data, enabling the quick identification of root causes when an error occurs.

/INNOVATION ONE-ON-ONE

JSR Micro is a research-oriented organization that specializes in polymer chemistry. We develop our products in close collaboration with leading innovators. Through listening and anticipating our customers' needs, we use our expertise to create materials that enable technological breakthroughs by solving our customers' innovation challenges.

We call this approach **'innovation one-on-one'**.

MINIMIZING THE IMPACT OF OUR PRODUCTS

All of JSR's innovative endeavors are informed by our parent company's mission:

"We create value through materials to enrich society, people and the environment."

Awareness of the CSR impacts of our products, and efforts to anticipate and minimize them, are part of JSR's DNA. Without naming it as 'CSR', managing environmental and social performance has always been a part of our operations.

Before any product enters the company, our regulatory affairs department will review scientific research and existing and upcoming legislation to ensure selection of materials with minimal environmental concerns. This process entails weighing different, optimal alternatives.

The Environment, Health and Safety (EHS) department assures that all products are handled safely and that emissions to the environment are avoided at all costs. Hazardous waste is disposed of by certified waste processors. All products that leave the company are accompanied by safety data sheets that detail how to handle, store and dispose of the product.

ELECTRONIC MATERIALS

Innovative advances in the semiconductor industry roughly follow the prediction of Moore's law: that the numbers of transistors on a microchip will double every two years. Progress was delayed for some years because of technical challenges with the next-generation technology, extreme ultraviolet lithography (EUV). JSR Micro is very proud to announce that we are the first to produce EUV photoresists for high-volume manufacturing globally through EUV RMQC.



JOINT VENTURE WITH IMEC

In addition to technological challenges, producing EUV is also economically problematic. Because the technology requires quality testing on an almost molecular scale of 7nm, investments in the tools that are able to do these tests skyrocket. To solve this challenge we have leveraged our long-term partnership with imec, the world-leading nanoelectronics R&D center, and founded the joint venture EUV Resist Manufacturing & Qualification Center NV (EUV RMQC). EUV RMQC will provide two crucial roles for EUV lithography: superior, high-quality manufacturing by JSR Micro and expertise and services for quality control by imec. In addition to the manufacturing of JSR-branded photoresists, the joint venture will also offer toll-manufacturing to other material suppliers.

ENVIRONMENTAL BENEFITS OF EUV

The current ArF technology works at a 14nm scale. Through double patterning technology it is possible to make these prints finer. However, this increases the number of process steps. The EUV technology achieves the same or better results in a single process step, thus drastically reducing electricity use and waste created during the production process.

EMERGING TECHNOLOGIES: ENVIRONMENT AND ENERGY

JSR Corporation has developed two green energy applications that are sold through JSR Micro to the EU market: the ULTIMO™ Lithium Ion Capacitor (LIC) and water-based binders.

ULTIMO™ LIC

The ULTIMO™ LIC combines the electrical storage capacity of a battery with the capacitor's capability to quickly store and discharge a high flux of energy. ULTIMO™ LICs are used in transport systems, such as trams, trains and buses, and in uninterruptible power supply (UPS) systems.

LICS IN CATENARY-FREE RAILWAY SYSTEMS IN THE SOUTH OF FRANCE

One of the leading companies in sustainable mobility and integrated railway systems has integrated JSR's ULTIMO™ LICs in its catenary-free charging system. The LICs are installed on the roof of the tram and in tram stops. Through a contact block under the tram, the LICs can charge within 20 seconds during tram stops.

UPS SOLUTIONS FOR UNSTABLE POWER GRIDS

With the increase in renewable energy supply to power grids, these grids are becoming increasingly unstable. Power outages, lasting from a few seconds to several minutes, or fluctuations in energy supply may cause damage, loss of production and an increase in costs for applications and processes sensitive to short duration downtime. Think for example of the sensitive equipment used in the semiconductor industry or in hospital operating rooms.

JSR's LICs are integrated in Socomec's innovative UPS solution, the 'Li-ion Capacitor UPS'. This solution protects power supply by ensuring optimal availability and equalizing power fluctuations.

In addition, a Li-ion Capacitor UPS has a very short recharging time that requires low maintenance and provides constant monitoring. We use the Li-ion Capacitor UPS at our own facility in Leuven to protect our chemical process installation and compressed air production system from frequent outages.



Watch the movie clip <https://www.youtube.com/watch?v=hbWrUL-DSM0&t=59s>



AQUEOUS BINDERS FOR BATTERY ELECTRODES

JSR's water-based binders for batteries offer a cost-effective and environmentally friendly alternative to the highly toxic solvents that are more commonly used in battery production, such as N-Methylpyrrolidone (NMP) or N-Ethylpyrrolidone (NEP). The water-based binders can be used for both the anode and cathode electrodes. Because they do not contain organic solvents, processing the materials is clean and pollution-free.

JSR MICRO PARTICIPATES IN EU-FUNDED BASMATI PROJECT TO SCALE UP PRODUCTION OF ENVIRONMENTALLY FRIENDLY INKS FOR PRINTED BATTERIES



Novel types of Li-ion batteries are essential for the rise of so called Internet of Things (IoT). IoT requires flexible, stretchable batteries which can be easily applied to different materials. One easy way to do this can be by printing the battery layers with conventional printing technologies.

However, to do this, large quantities of functional inks are required. Until now, the majority of functional inks are based on toxic organic solvents. A consortium of industrial and academic partners joined the EU-funded BASMATI project to develop and scale up production of more environmentally friendly water based inks.

JSR Micro participates in the BASMATI project in two ways: firstly, by providing JSR Micro's water-based battery binders as an ingredient in ink formulations.

Secondly, we share our expert knowledge and experience by formulating environmentally friendly water-based slurries (inks) for Li-ion batteries.

[More information regarding this topic can be found here](#)



LIFE SCIENCES



JSR Life Sciences

In search of new growth markets, JSR Micro entered the life sciences sector eight years ago. With a growing and aging population the demand for affordable and accessible healthcare increases. This requires new and innovative solutions in pharmacology and research and diagnostics. We are convinced that JSR Micro is creating synergies in the life sciences industry by leveraging our materials expertise, a customer focus and semiconductor level quality standards.

To accelerate JSR's entry into the life sciences market and optimize drug development and manufacturing programs, JSR Corporation acquired KBI Biopharma Inc. in February 2015. In April 2016 JSR took a majority share in MBL to extend its reach into the diagnostics and research markets.

This strategic expansion of life sciences activities is strongly felt at our site in Leuven: we are expanding our production activities of Amsphere™ A3 Protein A, building an extension of our offices to house the European branch of KBI and setting up the sales, technical and marketing support for MBL's 7000+ products.



ENTREPRENEURS CAFE

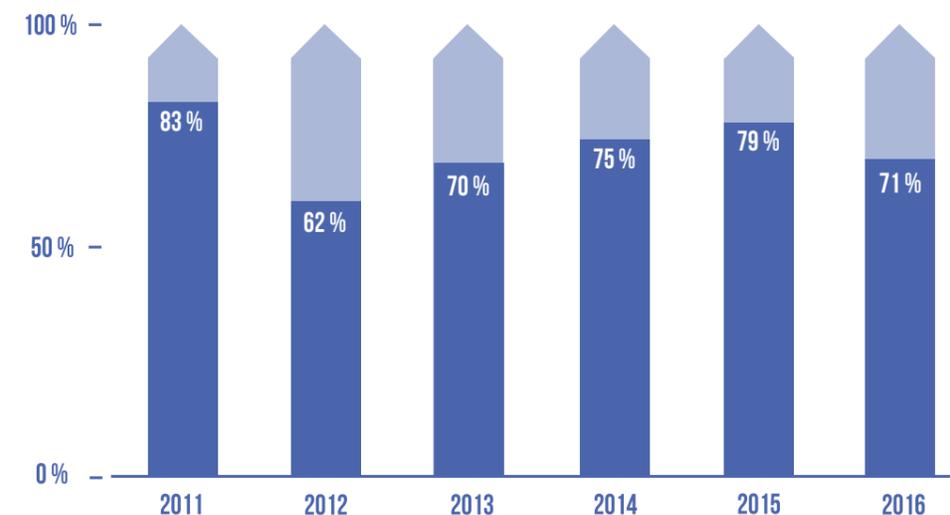
In May 2015, JSR Micro hosted an 'Entrepreneurs Café' for the business network Leuven Inc. Through its networking events, Leuven Inc. connects scientists, start-ups and tech companies. At the event, Executive Vice President Paul Buysse and CEO Bart Denturck provided presentations on JSR Micro and its approach to technology development and strategic growth, followed by a company tour that attracted great interest. We concluded this networking event with healthy, organic and fair-trade drinks and snacks.



MEASURING PROGRESS ON INNOVATION

To measure progress on innovation, we track a range of indicators covering prospective customers for innovation projects or new products and joint research and development. The 'progress on business development' indicator measures the percentage of goals that have been achieved.

PROGRESS ON BUSINESS DEVELOPMENT



We replaced the indicator 'number of publications' with the indicator 'progress on new business development'. The new indicator better conveys advances of our innovative progress.

/ENVIRONMENTAL IMPACT

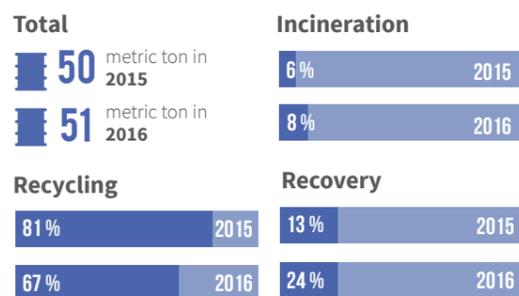
MANAGING OUR ENVIRONMENTAL IMPACT

Careful management of JSR Micro's environmental impact is an intrinsic part of being a responsible corporate citizen. For this reason, since 2005 we have had a certified ISO 14001 environmental management system. A built-in aspect of this system is that JSR Micro is always looking for ways to reduce our environmental impact.

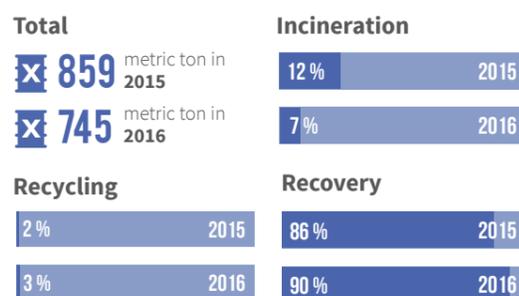
ENERGY AND WASTE

Reducing environmental impacts constituted a challenge during the reporting period: the company's growth resulted in an increase in electricity use and waste. In addition, we started a new product line for EUV photoresist. At the start of a new product line, there is always an increase in waste and energy use; after the process is set up, it is made more efficient, and impacts decrease. The challenge during this reporting period, and in the near future, is maintaining the baseline that we have achieved so far.

NON-HAZARDOUS WASTE (CY)



HAZARDOUS WASTE (CY)



REDUCING GMO WASTE

JSR Micro's Protein A is manufactured in a fermentation process using Genetically Modified Organisms (GMO). This creates GMO waste, which is currently our biggest waste stream. As we are moving to higher production volumes, we have optimized and streamlined production processes. In addition, we started to neutralize parts of the waste onsite. Together, these efforts resulted in a 65 percent reduction of our GMO waste in 2016.

ENERGY STUDY

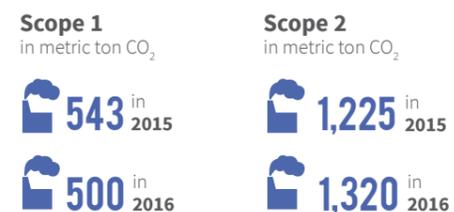
The EU directive concerning energy efficiency in large organizations requires companies beyond a certain size to perform an energy audit every four years. In 2015 JSR Micro invited SGS to perform this energy audit.

In the first category, SGS recommended a transition to using only LED lighting. In terms of moving to more renewable energy sources, cogeneration and use of geothermal power were proposed. We have started with replacing lighting with LEDs. The other proposals have a long payback time and would also increase the workload of our employees. Therefore the management has chosen not to invest in these technologies at this moment.

ENERGY USE (FY)



GHG EMISSIONS (FY)



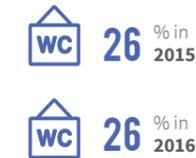
WATER

Although worldwide access to fresh water is becoming an increasingly pressing issue, within Belgium this topic has relatively little impact. JSR Micro filters municipal water to create 'ultrapure' water, which is used in semiconductor and life sciences processes. The remaining non-pure water with a high mineral content is used to flush our toilets.

Water consumption



Water reuse



GLOBAL EHS MEETING

In June 2016 we held the first two-day global EHS summit in Japan. It was a valuable opportunity to exchange information, best practices and perspectives with JSR employees from different continents. We covered a wide range of topics: preventive approaches to safety, waste management, reduction of energy use, aligning reporting on greenhouse gas emissions, regulatory affairs and process studies.

SUSTAINABLE END-OF-LIFE SOLUTIONS FOR JSR MICRO'S HAZARDOUS WASTE

Because we run into limits when attempting to further reduce waste within our own operations, we have explored opportunities to reuse or recycle some of JSR Micro's waste streams. In addition, we understand that careful management of our waste streams does not end at our manufacturing site.

Most of JSR Micro's waste is treated by physicochemical and biological wastewater treatment technology, resulting in clean water, and so-called filter cakes.

To learn more about the end-of-life of JSR Micro's hazardous waste streams, we visited our waste management supplier Indaver. JSR Micro's waste is transferred from Leuven to Indaver's integrated waste site in Antwerp. Indaver assesses the optimal processing method for each waste stream, balancing risk, cost and environmental benefit. Opportunities for more optimal ways of processing and disposing of JSR Micro's waste are reviewed periodically.



By dewatering the sludge, the volume to be transported away for final treatment is substantially reduced. The hazardous waste that cannot be recycled or recovered is incinerated in a high-temperature incinerator. The energy created by the process is recovered and used for onsite purposes and heating of industrial buildings of neighboring companies. Metals are recovered from bottom ashes, and the exhaust gases are thoroughly cleaned in several process steps. In the end, what is released in the air is a mix of water vapor and carbon-, nitrogen-, and sulfur dioxide, well below European standards and legal levels. The residue that cannot be recovered is disposed of in the onsite landfill, which acts as a 'safe sink'.

/BUSINESS CONTINUITY

BUSINESS CONTINUITY PLANNING AND RISK MANAGEMENT IN A COMPLEX GLOBAL ENVIRONMENT



Business continuity planning (BCP) is planning for 'black swan' events: incidents that are unlikely to occur but that would have a large impact on business operations. A good BCP plan allows the company to maintain critical operations

when adversity occurs. Events such as the terrorist attack in Brussels and attacks elsewhere in Europe have sharpened our awareness of unplanned and disruptive events.

After the Brussels attack, many flights were re-routed and we had to ensure that our goods were getting through. Neither we nor our customers experienced delays. The event was a real-life test of JSR Micro's BCP plans and proved that our plans are working. Nonetheless, we re-evaluated all backup routes and airports and updated our logistics policy.

LOCAL RISK MANAGEMENT

For the site of JSR Micro in Leuven, we annually review our BCP plans together with an external expert. It is a thorough review of all risk factors, for example strikes, epidemics, terrorism, volcano eruptions and economic instability. Based on the analyses, we identify actions to reduce the risks.



WE ANNUALLY REVIEW OUR BCP PLANS

GLOBAL COORDINATION OF BCP PLANS



As a global company, BCP planning is a joint effort of the JSR sites in the US, Asia and Europe. Based on the risk analyses of the JSR group, the sites have developed different scenarios which are tested in annual drills.

For example, how can we assure continuous supply of products to all if a natural disaster brings down one of our sites. These scenarios are not just paper-tested, but tried in real-life drills.

CREATING REDUNDANCY

Spreading risk and creating redundancy was one of the major reasons to expand life science activities into Belgium. Specific steps in the manufacturing process of our Amsphere A3 protein A resin that were formerly conducted at sites in Japan will now also be performed in Leuven.

/A SAFE WORKPLACE

A SAFE AND HEALTHY WORKPLACE: A PREREQUISITE OF RESPONSIBLE OPERATION

"JSR Micro is committed to providing and ensuring a safe and healthy environment for all personnel, contractors, visitors and other third parties." - Bart



The EHS department ensures a safe work environment in many ways: by providing safety trainings, performing safety assessments for products and processes, doing safety risk analyses, conducting safety awareness campaigns, communicating about safety issues and performance and much more. All activities are embedded in the continuous improvement cycles of our certified OHSAS 18001 occupational health and safety management system.

COMMITTEE FOR PREVENTION AND PROTECTION AT WORK

Every four years, employees are elected to represent the workforce in the committee for prevention and protection at work. During monthly meetings, the employer, EHS manager and employee representatives review and discuss performance and other topics related to safety and environment. The committee is also involved in identifying the focus of the 5-year EHS plans.

100% of the workforce is represented by the committee for prevention and protection at work

PREVENTIVE APPROACH TO ACCIDENT REPORTING

To avoid accidents it is important to understand the causes. Smaller incidents, even if they do not lead to direct accidents, can be indicative. That is why JSR Micro puts an incentive on incident reporting.

Incidents are collected in a database that is easily accessible to all employees. The EHS department, in collaboration with the management team, regularly awards a prize to employees who reported an incident.

COMPANY HEALTH PLAN

Our award-winning company health plan is a comprehensive program that integrates various efforts to promote employee health and wellbeing. The keystone of the plan is the 'Health Compass', a voluntary assessment of physical and psycho-social wellbeing. The assessment is performed by the external medical service Premed. The participants receive their individual results in total confidentiality from Premed. Collective data is provided to JSR Micro, which provides input for the focus of the wellbeing activities.

Other parts of the company health plan include providing fresh fruit to employees, encouraging exercise through the company bike program and ergonomic furniture, organizing trainings on ergonomics, installing ergo software on computers and promoting awareness of a healthy lifestyle.

In past years, this has resulted in improved wellbeing and health of our employees, which is reflected in the annual measured health parameters.



/SUSTAINABLE MOBILITY

JSR COMPANY BIKE

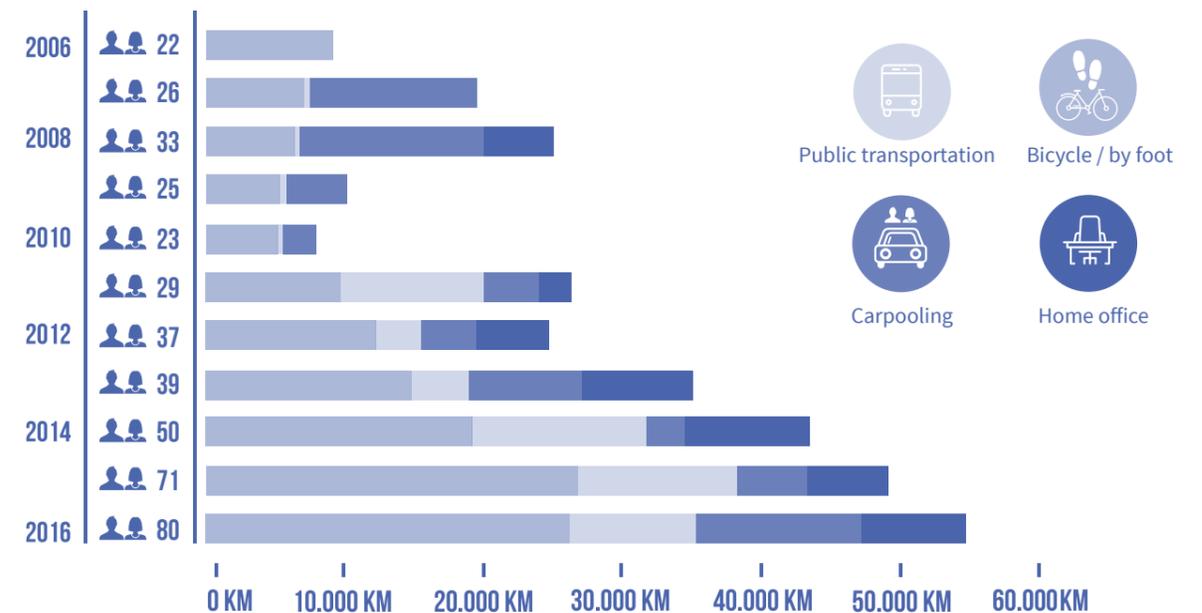
Mobility is a pressing issue for JSR Micro. A recent study that investigated the traffic around the Haasrode industrial park, where we are located, showed that 87 percent of commuters arrive by car. There are often traffic jams – the average speed during rush hour is 27 km/hour. More than half of the employees live within 15 km of the site, which makes using a bike an attractive alternative. JSR Micro encourages employees to use alternative modes of transport in various ways, such as through the company bike plan and Ik Kyoto campaign.

CAR FLEET

Looking forward to new ways of stimulating sustainable transportation, we are currently researching the possibilities for greening our company car fleet. Four employees took the initiative to select hybrid company cars when their old cars were up for replacement. We encourage other employees to follow their example.

IK KYOTO

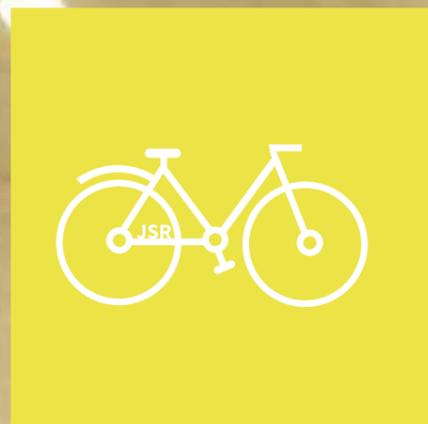
During the annual Ik Kyoto campaign, which runs in the months when the weather is best to bike, we track all kilometers that employees travel with sustainable transport: biking, public transport, home office and carpooling. The campaign is a fun way to engage employees in our CSR efforts and to create more awareness around the topic. We celebrate the end of the period with a breakfast for all participants and raffle prizes among them. In 2016, the RA department, which made up only 5 percent of the total participants, achieved 15 percent of the total CO2 reduction.



Winner of the Business Mobility Award

To reduce impacts on the environment and society, and provide a healthy alternative to commuting by car, JSR Micro initiated the company bike program in 2015. JSR Micro financially supports the leasing of a bike for all employees who commit to biking to work on a regular basis. In the same year, we received the Business Mobility Award from VSV, The Flemish Foundation for Traffic Knowledge. Many of our neighbors and other businesses have shown interest in our program and our CSR coordinator has given presentations at various sustainability networking events and mobility coordinator training sessions to share this best practice.

JSR Micro financially supports the leasing of a bike for all employees who commit to biking to work on a regular basis



80 employees lease a company bike



/COMPLIANCE

COMPLIANCE: TAKING A PROACTIVE APPROACH



As a chemical company, our license to operate is contingent on our compliance with legislation. Compliance is managed by both the Regulatory Affairs (RA) and EHS departments. The RA department is concerned with all legislation pertaining to the EU market; the EHS department is charged with acquiring relevant permits and compliance with the legislation that is reviewed in the ISO 14001 and OHSAS 18001 management systems.

All materials that enter the company are accompanied by Safety Data Sheets (SDS) that list information about potential hazards (health, fire, reactivity and environmental) and how to safely store, handle and dispose of the product.

Based on a review of the SDS and hazard assessment, the EHS department conducts a risk assessment and takes appropriate measures to assure that products are handled safely with minimal risk for employees and the environment.

A PRECAUTIONARY APPROACH TO MATERIAL SELECTION

The last decade saw a steady increase of chemical legislation worldwide but particularly in the EU. We expect this growth to continue. To anticipate legislation, many of our customers compile their own 'blacklists': lists of materials that they wish to avoid. Because the EU has such stringent chemical legislation, its directives serve as a canary in the coalmine for other regions.

To anticipate regulatory trends, our RA department plays an active role in various working groups of Essencia, the Belgian Federation for Chemistry and Life Sciences. It takes years to move from product development to high-volume production, therefore it is of pivotal importance that we select materials that are not just allowed on the market now but will be allowed in the future.

Consequently, the RA department is always consulted early in the design process so that we can avoid developing products that may be cause for concern in the future.

For every material that enters the EU market, the RA department conducts a hazard assessment, in which the intrinsic properties of the product are evaluated. The department also reviews which types of legislation apply to the material and if there are concerns for which the scientific evidence is not yet conclusive. If there are concerns, the R&D department is advised to find alternative materials.

REGULATORY AFFAIRS DIRECTOR CATHERINE JAKUS NAMED "MOST ACTIVE MENTOR"



The introduction of the chemical legislation REACH in 2007 meant a great administrative burden for the European chemical sector, especially for Small and Medium Enterprises (SME) that usually do not have internal compliance experts. In 2008, Essencia initiated 'VLARIP' (REACH Implementation Projects in Flanders) to guide SMEs in implementing REACH and other legislation through monthly workshops. In 2017, Catherine Jakus, JSR Micro's Regulatory Affairs Director, was awarded as the most active mentor in this project for having shared her knowledge and experience with SMEs in a total of 46 workshops.

100% COMPLIANT WITH:

- Chemical legislation
- Environmental legislation
- Labeling requirements

/SUPPLY CHAIN

EXTENDING OUR RESPONSIBILITY TO OUR SUPPLY CHAINS

About 60 percent of a chemical company's CSR impact takes place within its supply chain. That is why a CSR program is only complete when it includes efforts to minimize impacts outside a company's concrete boundaries. JSR Micro initiated several projects during the reporting period to improve CSR performance in our supply chains.

ELECTRONIC INDUSTRY CITIZENSHIP COALITION (EICC)

The EICC is a voluntary initiative by major companies in the electronics industry to foster CSR performance in global electronic supply chains. The initiative consists of a code of conduct, risk assessments and independent audits, which encompass topics such as management systems, ethics, labor, environment and health and safety.

In 2011, JSR Micro adopted the EICC code of conduct. In 2016, we asked our key suppliers to comply with the code as well.

INTEGRATING CSR IN OUR PURCHASING PROCESSES AND SUPPLIER MANAGEMENT

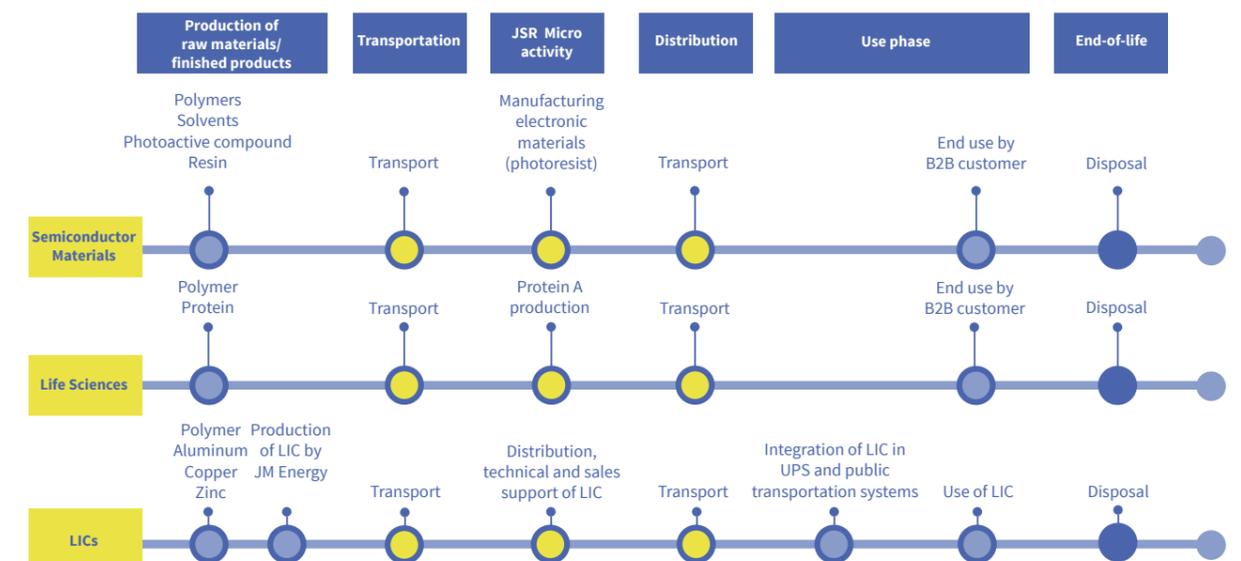
In 2016, the purchasing department developed a flowchart for all important purchases, such as investments, raw materials, packaging materials, service contracts, etc. In this flow, CSR is more prominent, and is integrated in the purchasing decisions from the start. In addition, we also expanded the CSR criteria in our supplier evaluation forms and audit protocols.

SUSTAINABLE PURCHASING TRAINING

To create awareness of sustainable alternatives when purchasing materials and services, we organized a training in which 20 employees participated. The workshop sparked a lot of creative ideas, such as centralized buying, working only with organic caterers, buying FSC-labeled paper, setting emission thresholds for company cars and more.

- 74% of key suppliers have signed the EICC code of conduct
- 66% of the audits during the reporting period included CSR aspects

OUR VALUE CHAINS



**QUESTIONS OR
SUGGESTIONS ABOUT
THIS CSR REPORT?**

Contact: CSR@jsrmicro.be



**WINNER OF THE
JSR MICRO CSR
PHOTO CONTEST
2017**



JSR Micro NV Researchpark Haasrode 1019, Technologielaan 8, B-3001 Leuven (Belgium)
+32 (0)16 832 832 - jsrmicro@jsrmicro.be - www.jsrmicro.be