



SUSTAINABILITY REPORT 2019









ABOUT US

Armacell is the inventor of flexible elastomeric foams for equipment insulation. We develop innovative and safe thermal, acoustic and mechanical solutions that create sustainable value for our customers. Day in, day out, our products make a significant difference around the world. As a multi-material and multi-product company, we operate two main businesses: Advanced Insulation and Engineered Foams. Our product focus is on insulation materials enhancing the energy efficiency of technical equipment, high-performance foams for sophisticated and lightweight applications, 100% recycled PET products and next-generation aerogel technology.

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OUR VISION IS TO BE THE GLOBAL
LEADER IN PROVIDING INNOVATIVE
TECHNICAL INSULATION SOLUTIONS
AND COMPONENTS TO SAVE
ENERGY AND MAKE A DIFFERENCE
AROUND THE WORLD.

2019 FINANCIAL RESULTS

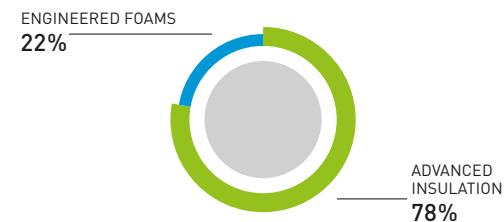
€ 644.4m
Total Net Sales

€ 133.5m
Adjusted EBITDA

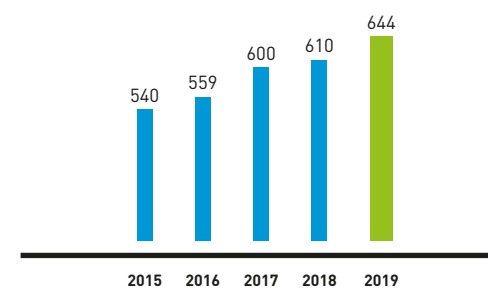
20.7%
EBITDA margin

3,135
employees

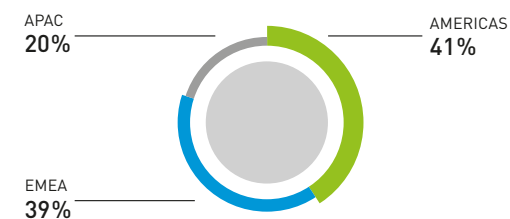
NET SALES by business division



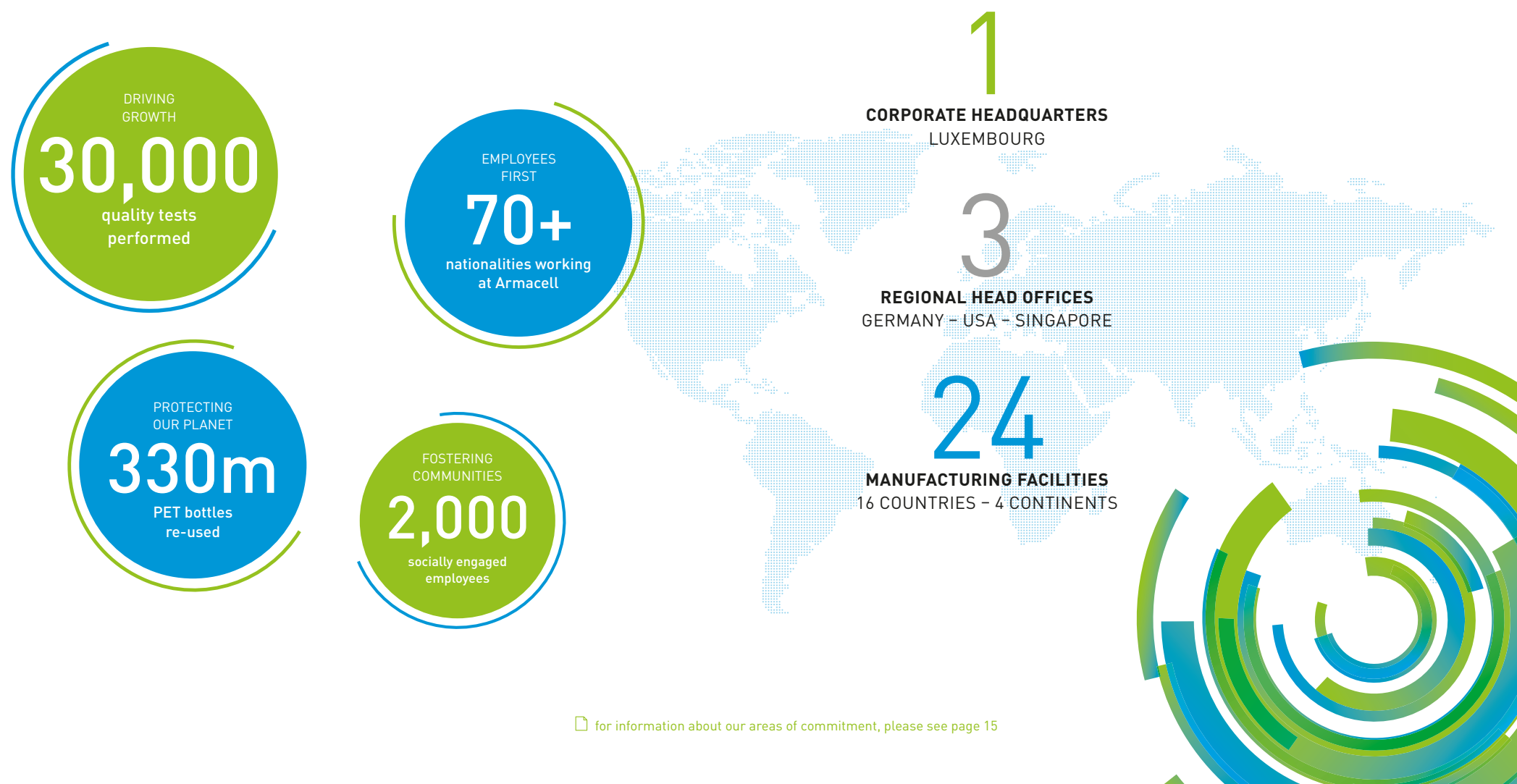
NET SALES in € million



NET SALES by region



2019 SUSTAINABILITY INDICATORS



LETTER FROM THE CEO



DEAR READERS,

Sustainability is embedded in our everyday work. Armacell has identified several areas of commitment covering various topics of importance to us in sustainably running our business for our customers, employees, shareholders and other stakeholders.

Topics such as climate change and conserving resources are addressed throughout this sustainability report. We prioritise our efforts and focus on where we can make the most impact with our business as the main driver for shaping the world we want to live in.

The United Nations' Sustainable Development Goals (SDGs) outline a common agenda for 2030. We are committed to three goals linked to our business. Several topics, such as gender equality

and quality education, are universally applicable. Beyond these universal responsibilities, we focus on the goals where our business activities are making a difference around the world.

Armacell's four areas of commitment

At Armacell, our environmental, social and governance (ESG) commitment is intrinsically linked to our strategic concept of sustainability: the triple bottom line People–Planet–Profit. This is mirrored in the four areas we commit effort and energy to: driving growth, putting employees first, protecting our planet and fostering local communities.

The focus of corporate governance at Armacell is on human rights, fair practices, consumer-related topics and labour practices. Our governance principles are designed to safeguard ethical conduct, ensure compliance with legislation and human rights, enhance accountability, prioritise stakeholder interests and promote dialogue. The implementation of our corporate governance principles and our four areas of commitment was supported in 2019 through internal guidelines, such as the Armacell Code of Conduct, the UN Global Compact initiative and various local partnerships.

Our continued support for the Global Compact is expressed in an annual Communication on Progress Report and specific activities to comply with the UN Principles [see page 36](#).

Making a difference around the world

For 2019, I am once again proud to report that Armacell employees around the world are making a difference in their local communities through their volunteering work. This goes hand in hand with our efforts as a company to prioritise the health and safety of our employees, to discover how we can best ensure good working conditions and value-adding vocational training, and enhance our employees' well-being.

Armacell's DNA is energy conservation and hence a reduction of the global carbon footprint. Our portfolio is principally composed of energy-saving products and solutions, and significant progress in advancing resource management was again made in 2019. We have an unequivocal commitment to driving sustainable growth through the highest possible product quality and innovations that green our product portfolio and promote the responsible use of resources.

As a company – and I am speaking for all our 3,100+ employees – we are determined to improve our sustainability performance year after year. Although the current corona crisis will affect our activities in 2020, we still see this as an opportunity to strengthen our efforts.

Sincerely,

Patrick Mathieu
President and CEO
Armacell Group


OUR SUSTAINABILITY COMMITMENT

08 SUSTAINABILITY MANAGEMENT

09 SUSTAINABLE DEVELOPMENT GOALS



OUR APPROACH TO SUSTAINABILITY

The strategic sustainability concept of the triple bottom line **People-Planet-Profit** has been guiding Armacell for many years. We report yearly on our ESG performance (environmental, social and governance,  see Annual Report 2019 pages 34 – 39) and focus on four areas of commitment:

- DRIVING GROWTH
- EMPLOYEES FIRST
- PROTECTING OUR PLANET
- FOSTERING COMMUNITIES

Sustainability is spread across the company. Some activities, such as corporate governance, health & safety and environmental management are deeply integrated into our daily operations across the Armacell organisation.

Several projects were driven ahead in 2019 such as our Global Armacell Day and the launch of sustainable products across our destination end markets. Creating sustainable value for our customers is our overarching goal. That is why sustainability is rooted in our business strategy and at the heart of our innovation and our product portfolio.

// CODE OF CONDUCT

Our Code of Conduct governs the framework for our employees to establish a positive, customer-centric culture and expresses our compliance with the laws and regulations applicable in every country where we do business.


// INITIATIVE AND ALLIANCES

Armacell works across multiple initiatives and alliances to promote sustainability and more efficient use of energy in buildings that account for over a third of global CO₂ emissions.

// CORPORATE GOVERNANCE

Corporate governance focuses on human rights, anti-corruption, the protection of our environment, fair practices, consumer-related topics, labour practices (workplace conditions and relations) as well as involvement in local communities. The governance principles upheld at Armacell safeguard ethical conduct, compliance with legislation and human rights, accountability, and the prioritisation of stakeholder interests and dialogue. Guidelines, including Armacell's Code of Conduct, as well as international memberships and local partnerships support the implementation of the company's corporate governance and our four areas of commitment.

// UN GLOBAL COMPACT

Responsible and ethical conduct is fundamental to the way we do business. Our accountability and commitment to a better and cleaner future date back to 2006. Since then Armacell has been committed to the Global Compact and reports annually on its progress  see page 36.



CORPORATE GOVERNANCE

Human rights
Anti-corruption
Environmental topics
Fair practices
Consumer-related topics
Labour practices
Local community activities

OUR COMMITMENT TO THE 2030 GLOBAL SUSTAINABILITY AGENDA

We are committed to three Sustainable Development Goals (SDGs) that are linked to our business. Several topics, such as gender equality and quality education, are universally applicable. Beyond these universal responsibilities, we focus on the goals where our business activities can have the biggest impact. In future, we will be defining the goals we want to reach by 2030 as our contribution to the SDGs. Armacell contributes to the following goals:



WHY IS IT RELEVANT TO US?

Innovation and technological progress are key to finding lasting solutions to both economic and environmental challenges, such as increasing resources and energy efficiency.

Armacell is a highly innovative company committed to creating value for customers through solutions for global challenges.

ARMACELL'S KEY CONTRIBUTIONS

Our innovation focus is aligned with the goal of accelerated, sustainable growth. Our innovation approach involves engaging all our employees to deliver creative ideas and turning these ideas into solutions that benefit people everywhere and our planet. The products and solutions we offer in response to global megatrends are positively impacting our business and making a sustainable difference around the world, e.g. by enhancing energy efficiency, improving working conditions in manufacturing industry or enabling lightweighting solutions in industries such as automotive, transport and wind energy.



WHY IS IT RELEVANT TO US?

The Paris Agreement aims to strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2°C above pre-industrial levels.

Armacell's products contribute to improving energy efficiency and lowering CO₂ emissions in a wide range of industries. We are also addressing our own carbon footprint, and in 2017, targeted a 20% reduction in CO₂ emissions by 2022.

ARMACELL'S KEY CONTRIBUTIONS

ArmaFlex®, the world's first flexible insulation foam, is the brand name of a wide range of insulation products enhancing energy efficiency in residential and commercial buildings as well as in manufacturing facilities around the world. Armacell's high-performance and custom-engineered Component Foams products, including ArmaComp EnsoLite® and ArmaComp Monarch®, make climate action possible by supporting the greening of the automotive industry where many factors, including lightweighting, are forecast to lower CO₂ emissions by up to 40% by 2050.



WHY IS IT RELEVANT TO US?

Increasing levels of debris in the world's oceans are having a major environmental and economic impact; the goal is to prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including plastic waste.

Armacell's rPET foams are reducing plastic waste and contributing to a circular economy in plastics.

ARMACELL'S KEY CONTRIBUTIONS

Our structural PET foams are made entirely of recycled PET bottles and used as a core material in a wide range of composite sandwich structures. Over the past years, more than 1 billion PET bottles (2019: 330 million) have been re-used to manufacture these ArmaForm® products – plastic waste that may well otherwise have ended up in the oceans. By 2025, we expect to have re-used 3 billion PET bottles for ArmaForm® products. As these re-used PET bottles have already saved more than 40,000 metric tons of CO₂ emissions, this also pays into SDG 13.

The United Nations' 17 Sustainable Development Goals (SDGs) are the blueprint to achieve a better and more sustainable future for everybody. They address global challenges and call players across the world, including companies, to contribute to achieving these global goals by 2030. For more information on the SDGs, please visit: www.un.org

OUR SUSTAINABLE PRODUCT PORTFOLIO

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- 12 ARMACELL IS EVERYWHERE
- 13 ARMACELL INSIDE



SUSTAINABLE SOLUTIONS FOR GLOBAL MEGATRENDS

Armacell's energy-saving and noise- and vibration-attenuating solutions are principally addressing six global megatrends.



SUSTAINABILITY: ENVIRONMENTAL PROTECTION AND CLIMATE CHANGE MITIGATION ARE GAINING GROUND IN PUBLIC AWARENESS WORLDWIDE. THAT OPENS UP OPPORTUNITIES FOR ARMACELL TO INCREASE ITS MARKET SHARES IN SUSTAINABILITY-ORIENTED APPLICATIONS.



GLOBALISATION OF FOOD SUPPLY CHAIN: AS THE DEMAND FOR FRESH FOODS RISES, THE NEED FOR LIGHTWEIGHT, COST-EFFICIENT, END-TO-END INSULATION SOLUTIONS IS GROWING. EVEN DURING THE COVID-19 PANDEMIC, THE GLOBAL FOOD SUPPLY CHAIN HAS REMAINED ROBUST.



URBANISATION: THE UN FORECASTS THAT

68%

OF THE WORLD'S POPULATION WILL BE URBANITES BY 2040. EVERY YEAR, TENS OF MILLIONS ARE MOVING FROM RURAL TO URBAN AREAS. THE DEMAND FOR HOUSING IS INCREASING ENERGY DISTRIBUTION REQUIREMENTS AND THE NEED FOR HIGH-PERFORMANCE INSULATION PRODUCTS.



ACOUSTIC COMFORT AND VIBRATION CONTROL:

20%

OF EUROPE'S POPULATION IS EXPOSED TO HARMFUL NOISE LEVELS. THE MEGA-CITIES OF ASIA, AFRICA AND THE AMERICAS ARE EVEN LOUDER. MORE AND MORE NOISE POLLUTION REGULATIONS REQUIRE THE KIND OF CUSTOM SOLUTIONS ARMACELL CAN PROVIDE.



ENERGY EFFICIENCY: ACROSS THE GLOBE, EVER-STRICTER LEGISLATIVE AND REGULATORY REQUIREMENTS TO ENHANCE ENERGY EFFICIENCY ARE DRIVING THE DEMAND FOR ARMACELL'S ADVANCED EQUIPMENT INSULATION SOLUTIONS.

// Technical equipment: **Second-most important source of energy losses worldwide.**

// Effective insulation: **#1 energy-saving opportunity to reduce greenhouse gas emissions.**

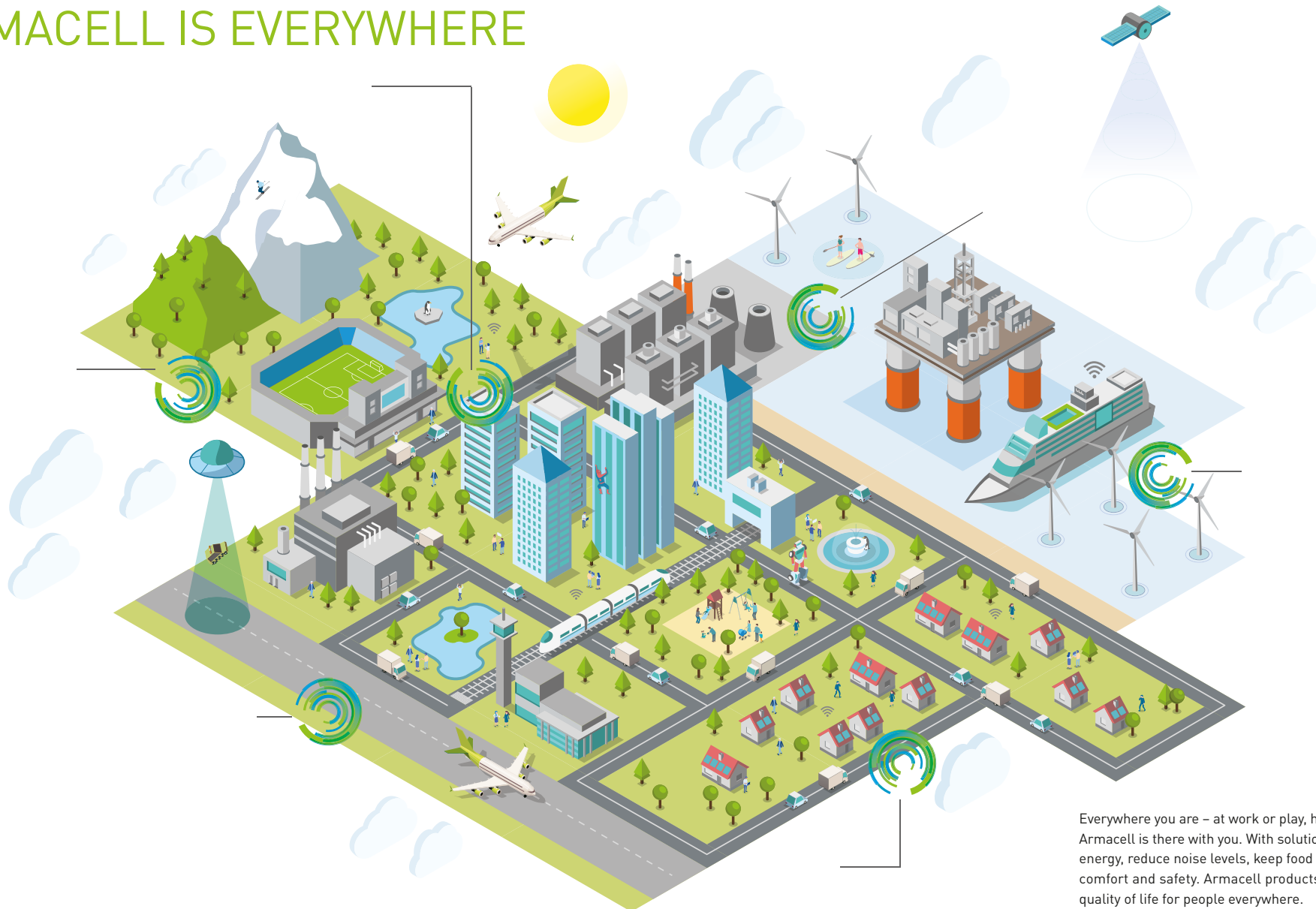
// EU Directive target: **At least a 40% reduction in CO₂ emissions by 2030.**



LIGHTWEIGHTING: IN MANY INDUSTRIES LIGHTWEIGHTING IS A MUST TO REDUCE CO₂ EMISSIONS AND USE RESOURCES MORE EFFICIENTLY. CARS, FOR EXAMPLE, WERE 38% HEAVIER IN 2015 THAN IN 1970. REDUCING THEIR WEIGHT TO 1970 LEVELS WILL SAVE 1,219 MEGATONS OF CO₂ BY 2050, LOWER FUEL COSTS FOR CONSUMERS, AND HELP ACHIEVE EMISSION AND ENVIRONMENTAL FOOTPRINT TARGETS.

Armacell is everywhere

ARMACELL IS EVERYWHERE



Everywhere you are – at work or play, home or leisure – Armacell is there with you. With solutions that conserve energy, reduce noise levels, keep food fresh or add comfort and safety. Armacell products improve the quality of life for people everywhere.

ARMACELL INSIDE

MULTI-PRODUCT, MULTI-MATERIAL, MULTI-FUNCTION

Armacell's innovative and safe thermal, acoustic and mechanical insulation solutions are key to a wide range of everyday applications that bring sustainable added value to people's lives. Our products and solutions help to improve the quality of life for people everywhere – and make that quality of life more sustainable.

OUR AREAS OF COMMITMENT

- 15 OVERVIEW
- 16 DRIVING GROWTH
- 21 EMPLOYEES FIRST
- 25 PROTECTING OUR PLANET
- 31 FOSTERING COMMUNITIES



ARMACELL'S FOUR AREAS OF COMMITMENT

1



DRIVING GROWTH

The pillars of sustainable growth at Armacell are our commitment to the highest product quality and innovations that consume resources responsibly and green our product portfolio.

Product quality

- Durable raw material quality and processes
- World-class Armacell Mindset (WAM)
- ISO 9001 certifications
- Product testing

Innovation

- Employee engagement
- Roadmap

3



PROTECTING OUR PLANET

Our energy-saving products and solutions, our efforts to boost the circular economy, better resource management and multiple environmental initiatives, we are helping to protect our planet.

Resource management

- Environmental goals and measures
- Reduction of energy consumption and CO₂ emissions
- Waste management

Recycling plastic

Plant certifications

- ISO 14001, ISO 50001

2



EMPLOYEES FIRST

We prioritise our employees' health and safety by engaging in an interactive dialogue to ensure good working conditions, enable training, enhance well-being and improve the work-life balance.

Health & Safety

- Health & Safety goals and measures
- Training

Internal dialogue

- Working conditions
- Well-being
- Work-life balance

4



FOSTERING COMMUNITIES

In 2019, the Armacell family donated time and energy to their local communities to help children and the elderly. As a company, we facilitate and fully encourage our employees' volunteering efforts.

Support local communities

- Helping children
- Caring for people
- Donating time and money

Support global communities

DRIVING GROWTH



Product quality and innovation – driving sustainable growth

In 2019, we continued to invest in product quality and innovation. Consistent raw material quality and processes, our World-class Armacell Mindset (WAM) program, product testing and plant certifications ensure compliance with the highest product standards. Our innovations deliver solutions in response to global megatrends: development of flexible foam systems preventing corrosion under insulation, development of low-smoke elastomeric foams, development of green structural core foam from recycled PET bottles, and use of alternative raw materials.

CREATING VALUE

Armacell's innovative and safe thermal, acoustic and mechanical insulation solutions create sustainable value in six destination end markets:



COMMERCIAL EQUIPMENT



RESIDENTIAL EQUIPMENT



ENERGY



INDUSTRIAL



TRANSPORTATION



SPORTS & LEISURE

Quality management

30,000

individual quality tests performed in four different categories in 2019

R&D

€30m

invested in research and development over the past three years

Innovative leadership

300+

active patents in 50 patent families – evidence of Armacell's innovative strength

GROWTH STRATEGY

CREATING SUSTAINABLE VALUE

At Armacell, we focus on creating sustainable value. Our vision is to be the global leader in providing innovative technical insulation solutions and components to save energy and make a difference around the world. Our strategy outlined below is fully supported by our executive management team as well as by the company's majority shareholders, PAI Partners and KIRKBI.



// GROWTH

ARMACELL HAS BECOME THE GLOBAL LEADER IN FLEXIBLE FOAMS BY ENABLING ENERGY EFFICIENCY FOR TECHNICAL EQUIPMENT. DRIVEN BY GLOBAL MEGATRENDS, WE PURSUE A MULTI-PILLAR GROWTH STRATEGY AND AIM TO GROW SUSTAINABLY. OUR PREVAILING GOAL IS TO DRIVE THE ADOPTION RATES FOR INTELLIGENT ENERGY-SAVING SOLUTIONS.



// MEGATRENDS

Armacell's product portfolio is strategically oriented to respond to six global megatrends [see page 11](#). Our exposure to a broad range of end markets and our diversification across equipment verticals provide multiple sustainable growth opportunities.



// PROFITABILITY

Profit drives the people-planet goals. Armacell's financial strategy is the motor for dynamic growth based on best-in-class profitability levels. We strive to optimise the use of raw materials, natural resources and energy in order to maximise operational efficiency and minimise production costs.



// EXCELLENCE

ARMACELL PROVIDES ENERGY-EFFICIENT SOLUTIONS OFFERING RELIABLE, CERTIFIED PERFORMANCE AND EXTENDED LIFETIME TO CUSTOMERS WORLDWIDE.

24

MANUFACTURING FACILITIES IN 16 COUNTRIES DELIVER CERTIFIED OPERATING EFFICIENCY, CUSTOMER SERVICE AND EXECUTION EXCELLENCE.



// MULTI-MATERIALITY

AS A MULTI-MATERIAL AND MULTI-PRODUCT COMPANY, ARMACELL HAS A SUCCESSFUL TRACK RECORD OF EXPANDING INTO ADJACENT TECHNICAL INSULATION SECTORS, E.G. BY REGULARLY EXTENDING THE TEMPERATURE RANGE AND APPLICATION HORIZON OF OUR MATERIALS.



// INNOVATION

After more than half a century as the industry and technology leader, innovation and entrepreneurship have become an integral part of the Armacell DNA. That drives the launch of new and sustainable technologies involving industry-leading solutions.

WORLD-CLASS ARMACELL MINDSET (WAM)

DELIVERING EXCELLENCE

Armacell launched WAM in 2013 to encourage a global mindset of continuous improvement at all levels of the company. The aim is to improve the daily performance through continuous, structured and objective analysis.

Consistent standards, improved processes

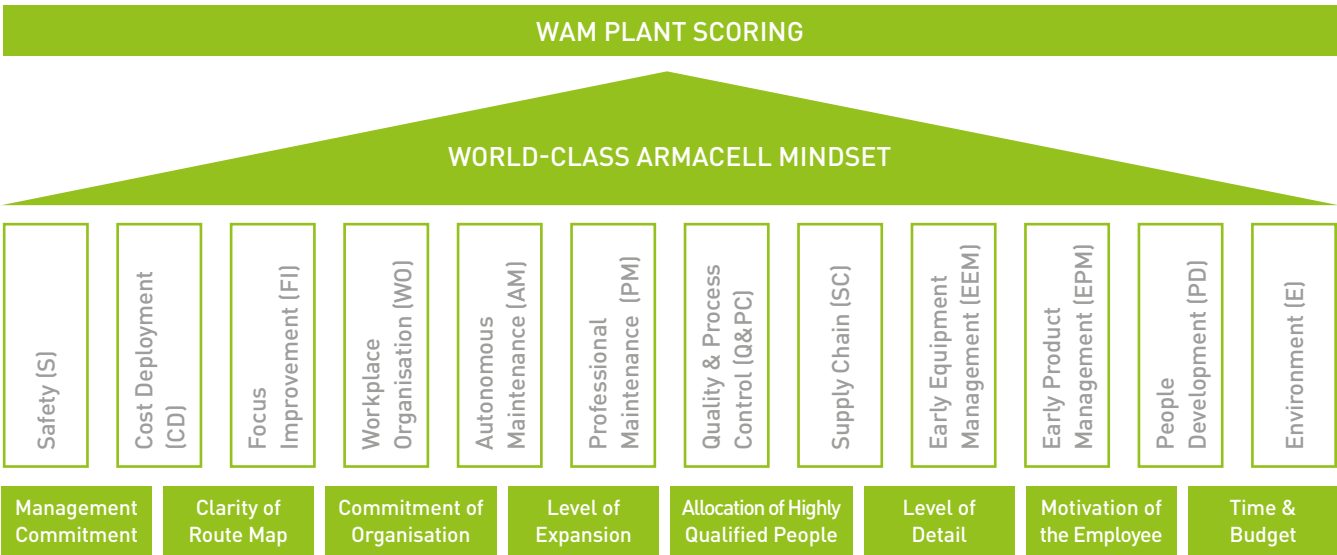
In the two areas of WAM Manufacturing and WAM Sales & Marketing, this program maintains consistency in standards and sustains the implementation of improved processes. WAM Manufacturing is based on the systematic identification of losses and non-value-added tasks at Armacell’s multi-technology sites. WAM Sales & Marketing focuses on the competencies, behaviour and expertise of Armacell’s commercial teams, who are evaluated on their understanding and maturity of their market as well as on their commercial success.

Outstanding achievements

In 2019, there was a high level of engagement and willingness to go the extra mile in the WAM teams around the world. In WAM Manufacturing the top-scoring plant in Pune, India, achieved Silver while Friesenhofen, Germany, and Panyu, China, were awarded Bronze. In Sales & Marketing, a total of six Armacell plants reached Bronze Level: Advanced Insulation (AI) France, AI Germany, AI India, AI Nordics, AI Spain & Portugal and Global PET Foams. The ongoing WAM program will continue to encourage consistency and raise standards across the company.



Daily briefing in Pune, India



The plant score is the sum of the score achieved in each pillar. Bronze, Silver, Gold, Platinum and World-Class Awards are earned when a plant reaches a certain score.

QUALITY MANAGEMENT

30,000
QUALITY TESTS
PER YEAR

ENSURING THE HIGHEST QUALITY STANDARDS

Armacell's market leadership in insulation materials and high-performance foams is a commitment to consistently high quality standards. Certified quality management systems ensure compliance with strict standards. 30,000 mechanical, chemical, physical and fire-relevant tests were conducted in 2019 at the main testing centre in Münster, Germany. Other Armacell facilities around the world also have state-of-the-art product testing centres. Around 100 researchers and technicians at sites in Belgium, Canada, China, Germany and the USA are driving innovation in quality-oriented production, product performance, new materials and pioneering technologies. By building on the sound foundations of quality and innovation, Armacell has a growth strategy that is both successful and sustainable.

INNOVATION



ULTRA-THIN,
ULTRA-LIGHT

SUSTAINABLE GROWTH BASED ON SOUND PILLARS

ArmaGel™ production expanded in South Korea

In the case of Armacell's ArmaGel™ range of aerogel blankets, the pillars certainly are robust:

- Successful response to the global megatrend of enhanced energy efficiency.
- Meeting the market's need for flexible, bendable, ultra-thin insulation.
- Revolutionising the aerogel manufacturing process by reducing production time from 72 to two hours.

These advances in aerogel technology were made possible by cutting-edge innovations developed at Armacell Jios Aerogels (AJA), a joint venture based in Cheonan, South Korea. Cheonan is one of Armacell's major multi-technology sites where production of the first ArmaGel™ aerogel blankets began in 2017.

The success of the ArmaGel™ product range meant the Cheonan plant had to be extended. The industrial-scale aerogel production line that began operating in August 2019 has tripled the plant's annual production capacity to 750,000 m² and enhanced operational safety. In November 2019, the importance of AJA's contribution to South Korea's economic development was recognised at the country's annual Foreign Company Day with the

award of the Commendation of the Prime Minister. A few days earlier, Armacell kicked off construction of a new office, manufacturing and warehousing facility at Cheonan that is due for completion in 2020. This will increase Armacell's manufacturing footprint in Asia and strengthen the company's presence in a fast-growing market.

The latest addition to the ArmaGel™ product family, ArmaGel™ DT, is a next-generation insulation solution for cryogenic and dual-temperature applications. Following the success of ArmaGel™ HT, which raised Armacell's temperature capabilities to +650°C, ArmaGel™ DT gives users the benefit of effective, versatile and ultra-thin cryogenic insulation at temperatures as low as -180°C.



Keeping equipment drier for longer, extending asset lifetime

Environmentally safe – ArmaGel™ is chloride-free and landfill-disposable

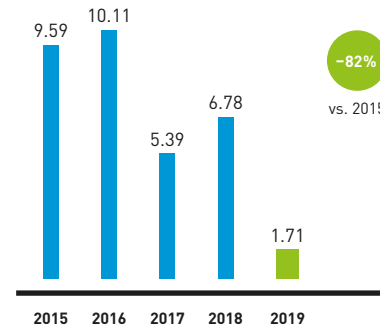
EMPLOYEES FIRST



Prioritising health, safety and training

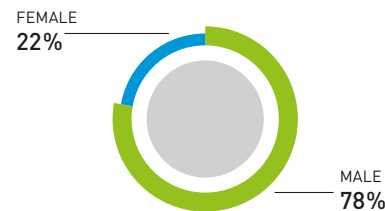
We create safe and healthy working environments for our employees, so they go home to family and friends as fit and well as they arrived at work. We are dedicated to developing the capabilities and competencies of our people through internal and external training programs. We are committed to ethical behaviour based on our Code of Conduct and global anti-corruption, anti-money laundering and sanctions policies. People matter to us.

GRAVITY INDEX OF LTA*

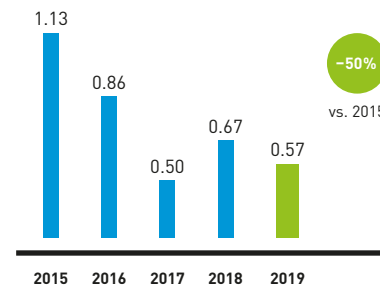


* Number of lost workdays per 100,000 working hours

GENDER DIVERSITY



MEDICAL TREATMENT FREQUENCY INDEX*



* Number of accidents with absence from work of ≤1 day per 100,000 working hours

Workforce

3,135

employees on 31 December 2019
(+12% compared to 2015)

Staff diversity

70+

nationalities working at Armacell sites
around the world

Safety at work

44%

fewer lost-time accidents (LTA) recorded
compared to 2015

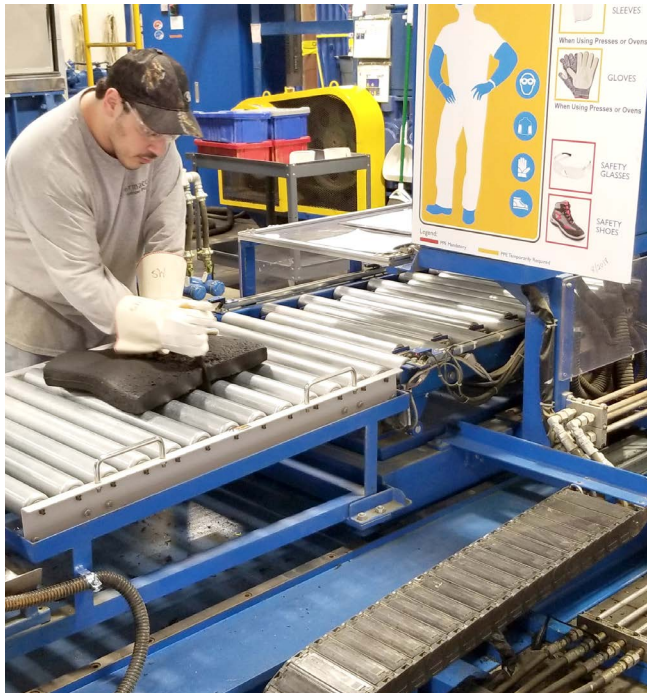
HEALTH AND SAFETY

ZERO ACCIDENT MINDSET

The health and safety of Armacell employees are our top priority. By encouraging a zero accident mindset, we make every effort to ensure our people go home to their family and friends as fit and well as they arrive at work.

We strive to achieve this goal by promoting adherence to all the relevant occupational health and safety standards at our sites and offices. We are proud of the fact that ten of our plants have been free of lost-time accidents (LTAs) for at least the past three years. Seven plants can point to five LTA-free years or more. In all, we recorded 44% fewer LTAs in 2019 than in 2015, and our group-wide occupational safety statistics point to a very positive trend [see page 21](#).

Other evidence of the success of our emphasis on safety at work comes from the various awards our plants have won. The Armacell plant in Banpong, Thailand, was honoured with a Gold Award for Good Practice in Occupational Safety and Health Management by Thailand's Ministry of Labour in May 2019. In China, our Guangzhou plant received the Model Plant Award for Safety Management in June 2019. The Armacell plant in Mebane, North Carolina (USA), was awarded the National Insulation Association's Safety Award in Gold, the only award for outstanding safety performance in the U.S. mechanical insulation industry. Another U.S. gold award for Best Practices in Safety came from the Midwest Insulation Contractors' Association (MICA) in June 2019. These awards mirror our achievements in safety at work and spur us on to get continuous improvement.



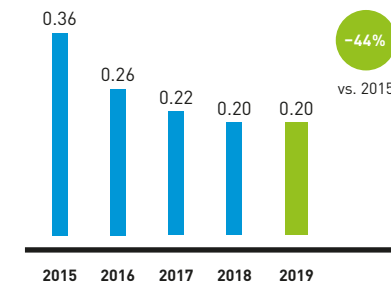
Safety is a top priority in Mebane, North Carolina.



Roberto Mengoli, Chief Technology Officer, Armacell Group

"Ten of our manufacturing facilities have been free of lost-time accidents for three or more years."

FREQUENCY INDEX OF LOST-TIME ACCIDENTS (>1 DAY)



PEOPLE MANAGEMENT IN PRACTICE

CARING FOR OUR PEOPLE

Our approach to people management includes giving employees clear guidelines on our values and expectations, ensuring their health and safety, and encouraging and enabling people in their career development through a variety of programs.

The Armacell Code of Conduct defines the responsibilities of all Armacell employees – from the executive team to the newest recruit. The Code of Conduct builds on our four corporate values, two of which, Empowerment and Integrity, are of particular relevance to people management. We give our employees operational responsibility and expect them to perform to the best of their ability.

Moreover, we recognise our corporate social responsibility in all our locations and aim to contribute to the quality of life of our employees in their working and living environment. In every

manufacturing facility, we have a local human resources officer with responsibility for all aspects of personnel management.

At Armacell, we offer all our employees the opportunity to take part in further training and personal development measures to advance their talents and skills. The courses deal with subjects as varied as shop floor safety, demand generation and strategic selling. In addition, each site focuses on measures of particular relevance and suitability to the local employment situation, conditions and requirements.

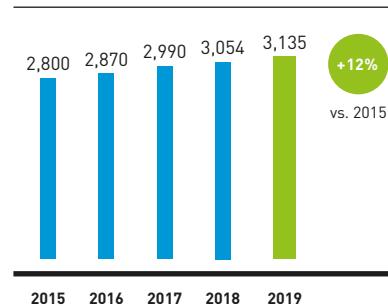
We place great emphasis on local personnel at all our locations. For example, at our new Bahrain plant, which was inaugurated on 6 February 2019 and where 12 nationalities work for Armacell, 30% of the workforce is to be made up of Bahrainis by the end of 2020. The local principle has the practical benefit of ensuring that the management in our plants and offices are particularly aware of local customs, conventions and cultural specifics. Moreover, employing people from the country or region in question also deepens the ties between our company and the locality.

“We prioritise our employees’ health and safety at work as well as their personal development by ensuring good working conditions, enabling training and improving their work-life balance.”

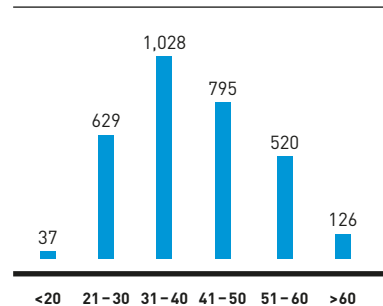
Sophie Ancelin

Chief Human Resources Officer, Armacell Group

EMPLOYEES



AGE DIVERSITY



Sophie fosters the talents of our employees and leads all training, talent acquisition and career development activities.

OUR PEOPLE

Security check and training in Pune, India

// DIVERSITY

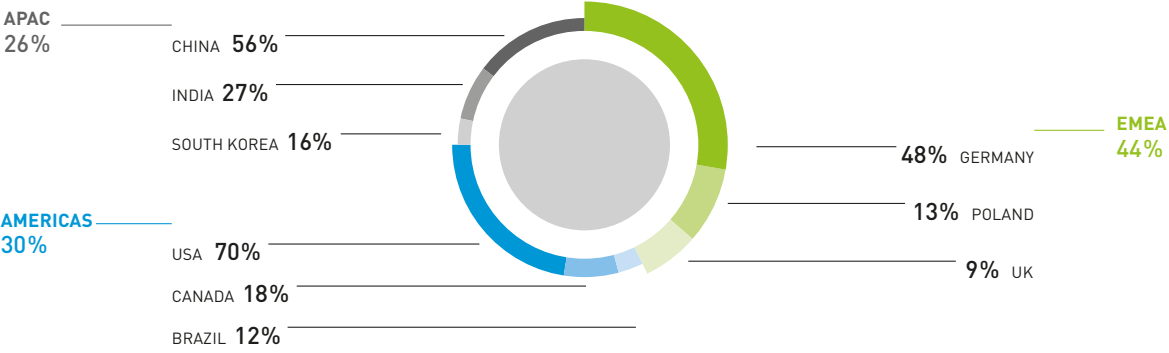
More than 3,100 employees, 24 manufacturing facilities, 16 countries, four continents – Armacell is a truly global operator with an internationally diverse workforce comprising 70 different nationalities amongst staff worldwide. Our employees are our most valuable resource and we always strive to develop their talents and further their skills – irrespective of gender, social or ethnic origin, sexual orientation, religion, ideology or age. We encourage our employees, for their part, to cultivate a work climate of mutual respect and trust to ensure diversity is lived out in practice.

70
NATIONALITIES

Innovation Centre in Münster, Germany

President's Award Ceremony in Sedona (AZ), USA

TOP 3 COUNTRIES BY REGION employees in %



PROTECTING OUR PLANET



Climate-friendly

33%

fewer CO₂ emissions through manufacturing products using recycled PET flakes

Saving energy

140x

more energy saved in an ArmaFlex® product lifetime than required to manufacture it

Recycling waste

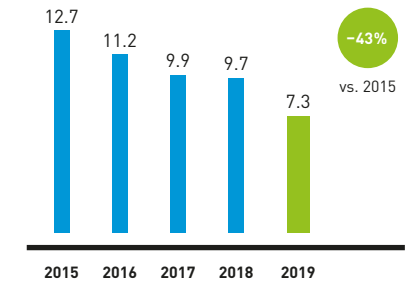
+26%

of production-related waste recycled over the past three years

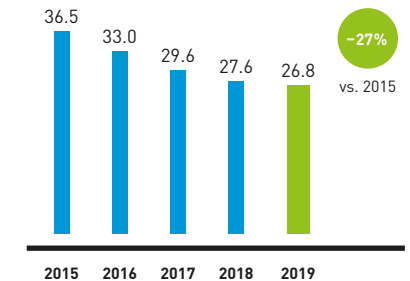
Saving resources and enhancing energy efficiency

Armacell products and solutions improve the management of finite resources by reducing energy consumption and CO₂ emissions. We give waste plastic bottles a second life and convert them into long-lasting, high-value foam core materials. 15 of our plants operate environmental management systems certified to ISO 14001:2015 or ISO 50001:2015.

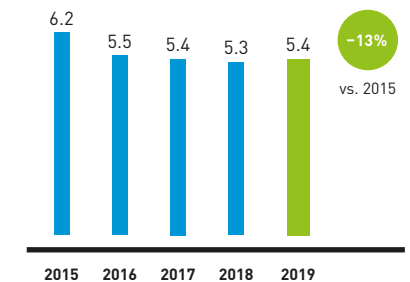
WATER CONSUMPTION* in l



ENERGY CONSUMPTION* in MJ



CO₂ EMISSIONS* in kg




* per metric ton of finished goods

ENVIRONMENTAL MANAGEMENT

ADVANCING SUSTAINABILITY

Environmental protection is integrated into the operations of our 24 manufacturing facilities and part of our daily business. We are committed to products and solutions that improve sustainability in different end markets and measure our own operations by the same standards. All our plants have environmental monitoring methods, with ideas and best practices exchanged via an internal network.

Energy consumption


Armacell's efforts to reduce its overall energy consumption  see page 25 and create more energy-friendly plants are based on encouraging every employee to individually take responsibility for energy consumption and proactively work to reduce it. The use of new technologies and renewable energy plays an important role in cutting energy consumption and the associated CO₂ emissions.

Seven steps are undertaken to achieve our goal of reducing energy consumption and creating more energy-friendly plants. A particularly important step is the Mutually Exclusive, Collectively Exhaustive (MECE) system for identifying energy losses. The broad range of countermeasures implemented in the following step is centred on Energy Cost Deployment. This procedure takes into account the losses related to the use of energy at Armacell plants and identifies losses associated with the energy efficiency of machines and processes as well as their energy management.

Some of Armacell's manufacturing facilities host solar panels on their roofs. At the Thimister plant in Belgium for example,

2,800 solar panels covering approximately 10,000 m² of roof generate 749 kWh of electric power. Solar power meets, on average, 10% of the plant's annual energy requirement, and on sunny summer days, it can be as high as 80%. At the Pune plant in India, solar panels generate the electricity required to provide the canteen and sanitary installations with hot water. Here, the ultimate goal is to have 30% of the plant's electricity generated by solar power.


Water consumption

In 2019, Armacell used 43% less water across its operations than in 2015  see page 25. The significant reduction in water consumption achieved over the past five years is largely due to a changed mindset among employees. This is where the WAM program is bringing concrete environmental benefits. Employees have recognised their individual responsibility for water use and see how they can make a difference in reducing a plant's water consumption. This positive mindset is enhanced by a detailed annual record of water consumption figures, which heightens awareness of where potential savings are possible.

Waste management

Between 2017 and 2019, Armacell recycled 26% more of its production-related waste. Good progress was made in reducing the amount of waste generated. For example, in Środa Śląska, Poland, 99.8% of the scrap from Armacell's polyethylene (PE) production process is recycled and returned to the production process to ensure virtually waste-free PE production. Moreover, Armacell has gone a significant step further by re-using elastomeric (EL) scrap to manufacture its acoustic insulation solutions. For example, EL scrap from Armacell's Spanish plant in Begur is shipped to Oldham in the UK for use in the production of ArmaSound®. Closing the loop is a key sustainability goal at Armacell that naturally applies to its manufacturing processes.

// KPIs AND CERTIFICATIONS

We collect key performance indicators (KPIs) on energy use, CO₂ emissions, water consumption and waste management in order to evaluate and continually improve our sustainability performance. 15 of our plants are environmentally certified to ISO 14001, and the energy management systems at our German facilities in Münster and Friesenhofen are certified to ISO 50001. A key component of environmental management at Armacell is the Environment pillar of the World-Class Armacell Mindset (WAM) program  see page 18.

SUSTAINABLE APPLICATIONS



612,000
BOTTLES –
ONE HOUSE

PET FOAM HOUSE IN NOVA SCOTIA, CANADA

A 186 m² house made entirely of PET foam cores – Armacell's Brampton team made it possible. The house was assembled in just 14 hours using 170 ArmaForm® panels that were laminated together without nails or spikes. The house's eco-footprint is impressive too: 612,000 recycled PET bottles went into its construction. Building more houses out of PET will nurture Armacell's sustainable business concept of combining environment-friendly production with customer value. In this way, we are contributing to reducing marine and coastal pollution in line with SDG 14: Life Below Water

📄 [see page 9.](#)

RECYCLED PLASTIC AS RAW MATERIAL

PUTTING PLASTIC WASTE TO GOOD USE

Armacell's unique recycled PET foam technology (rPET) grants plastic bottles a new life.

Working towards a circular economy

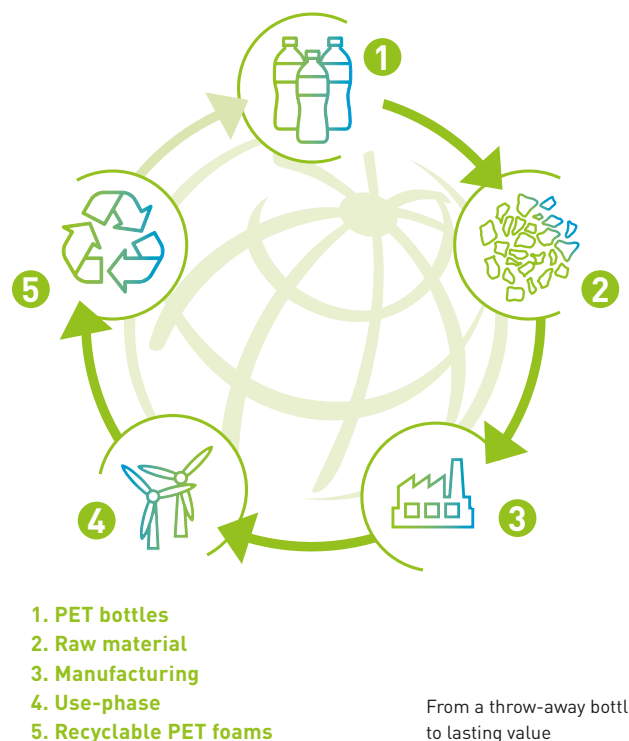
Plastics have beneficial properties that make life more convenient, simpler and safer. Single-use plastics also impact the environment. According to McKinsey, global plastic waste totalled 260 million metric tons in 2018 and is expected to rise to 460 million metric tons by 2030. Armacell's rPET foams are reducing that waste and contributing to a cleaner tomorrow.

PET pioneer

A decade of research went into developing rPET foam technology. Subsequent milestones included the first and only 100% recyclable thermoplastic foil product for recycled PET in 2015 and large-scale production of 3D-shaped PET foam cores in 2018. Armacell's PET foam products meet the stringent technical requirements of today's composite core materials and follow the circular economy guidelines to preserve the environment.

Environmental benefits

The entire Armacell rPET portfolio is 100% recyclable. This adds up to a sensible use of plastic waste and helps to save energy and reduce CO₂ emissions. Foam core materials using rPET technology generate over a third less CO₂ than those made of virgin PET, while PVC foams, a competing technology, typically cause twice the volume of CO₂ emissions.



Contribution to SDG 14

We are committed to SDG 14: Life Below Water and contribute to reducing marine pollution [see page 9](#). More than 8 million tons of plastic leak into the oceans every year. An integrated approach to address pollution from land to ocean is needed to sustainably manage marine and coastal resources. Through recycling plastic bottles, Armacell is part of the solution.

// CLOSING THE LOOP

Besides putting plastic waste to good use, Armacell is committed to closing the loop in polyethylene (PE) production. As PE is 100% reprocessable, it is the ideal material for re-use in the production process. In Środa Śląska, Poland, 99.8% of Armacell's PE process scrap is recycled and returned to the production process, guaranteeing virtually waste-free operations. Moreover, Armacell has gone beyond merely re-using process scrap by collaborating with two of its largest European converters to have sorted residual material returned from their operations. After reprocessing at Armacell's plant in Thimister-Clermont, Belgium, this material is re-used to limit waste generation along the value chain. Circular concepts translated into real business cases – the Armacell way.



High-value applications

rPET technology converts single-use PET bottles into long-life, high-value foam core materials for a wide variety of applications, e.g. 90-metre wind turbine blades, high-speed train body structures or the gilded roof of a cathedral in Paris. By giving PET bottles a new life, Armacell is making a sustainable difference around the world.

COMPONENT FOAMS

40%
LESS CO₂

AUTO LIGHTWEIGHTING, USA

In the USA alone, Component Foams products from the ArmaComp EnsoLite® and ArmaComp Monarch® lines are on the approved source lists of Ford, General Motors, Fiat Chrysler and Toyota. Lightweight materials such as Armacell's high-performance foams are supporting the greening of the automotive industry where many factors, including lightweighting, are forecast to lower CO₂ emissions by up to 40% by 2050.



GREEN BUILDINGS

Armacell points to a long tradition of sustainable solutions for the building industry. In 2009, Armacell became the world's first manufacturer of flexible technical insulation materials to carry out life cycle assessments (LCAs) and publish environmental product declarations (EPDs).

The construction industry is one of the world's highest consumers of energy and raw materials. With its extensive product range, Armacell is contributing to greener construction practices in many key industries. By publishing EPDs for its ArmaFlex® products, Armacell supplies architects, specifiers, builders and property owners with reliable, highly transparent information for designing green building projects and thus helps to improve a building's environmental footprint.

Healthcare sector

Medical facilities have strict temperature, humidity and air quality requirements. ArmaFlex® is the internationally trusted thermal insulation material for air ducts and chilled water systems in healthcare facilities. Infused with Microban® antimicrobial

// ENVIRONMENTAL PRODUCT DECLARATION

A neutral, independently verified document that provides information about the impact a product has throughout its life cycle, and in particular its impact on the environment. The comparability of EPDs facilitates product evaluation.

// LIFE CYCLE ASSESSMENT

Quantifies the direct and indirect environmental impacts during the life cycle of a product from the raw material extraction and processing to the manufacturing, distribution, use and ultimate disposal of the product.

product protection, ArmaFlex® inhibits the growth of stain- and odour-causing mould and mildew from growing on any surface of the insulation. Unlike disinfectants, this integrated antimicrobial technology works to continuously reduce the growth of microbes throughout the entire lifecycle of a product, making it the ideal option for cleanliness-critical environments. Moreover, ArmaFlex® has zero ozone depleting potential and global warming potential. Consequently, it meets the requirements for sustainable construction in leading green building standards such as LEED® and contributes to reducing emissions in healthcare facilities.

Empire State Building, New York

Sathorn Square, Bangkok

Healthier indoor air

One of the key criteria for green buildings is good indoor air quality. As bacteria are among the world's fastest-reproducing organisms, they are a potential health hazard in any building. ArmaFlex® FRV, a high-performance insulation product for air-conditioning, heating and refrigeration applications, is infused with antimicrobial Microban® to inhibit bacteria and mould growth. Moreover, formaldehyde- and fibre-free ArmaFlex® FRV is GREENGUARD® GOLD certified for low emissions of volatile organic compounds – and that adds up to safer indoor air quality.

FOSTERING COMMUNITIES



Global Armacell Day

2,000

Armacell employees worldwide engaged in charity activities

Community involvement

100+

countries we do business in and support local communities

UN Global Compact (UNGC)

10

principles of the UNGC we follow to support local communities

Donating time and energy around the world

In well over a hundred countries that Armacell operates in, our employees are working to improve the quality of life in their local communities. Through their volunteering activities, which the company facilitates and encourages, Armacell employees are primarily helping and caring for children and the elderly or supporting cancer charities.



HELPING CHILDREN – Team Iberia donated kids' bikes to NouSol, a local charity in Catalonia.



DONATING CLOTHES – German employees regularly support the local charity "The Little Prince".



RAISING FUNDS – The ArmaRunners supported the Polish Fundacja Everest foundation.

GLOBAL ARMACELL DAY

ARMACELL FAMILY GET-TOGETHER

For the fifth year in a row, colleagues around the globe got together for our much expected annual Global Armacell Day. Whether it is organising a zero-waste lunch in Spain or planting trees in Turkey, the Armacell family always finds creative ways to combine fun with socially responsible activities.



PRACTISED CORPORATE RESPONSIBILITY

REDUCING INEQUALITIES

At Armacell, we live out our corporate social responsibility through engagement and volunteering in local communities, and especially those where our manufacturing facilities are located. In addition to our corporate efforts, around 2,000 Armacell employees are engaged in charity activities worldwide. In all our activities to foster communities, we have been motivated by the UN's Sustainable Development Goal 10: Reduced Inequalities.

SUPPORTING ADULTS WITH SPECIAL NEEDS IN SOUTH KOREA

Armacell Korea proudly supports Durebox, a manufacturer of corrugated packaging products that works with Nuri Rehabilitation Centre to provide jobs and rehabilitation support to people with special needs. Durebox carton packaging is used for ArmaFlex® products from the Cheonan plant. The newly launched ArmaGel™

product range is also being shipped in Durebox packaging – a total of one million boxes over the past five years.

Durebox's comprehensive program includes life skills, social adaptation training and vocational rehabilitation support, e.g. on-the-job learning and problem-solving skills. The special needs of Durebox employees range from mental and physical disabilities to autism. With Armacell's support, Durebox is helping to reduce the inequality its employees might otherwise suffer.

// DUREBOX AND NURI REHABILITATION CENTRE

Durebox is a South Korean packaging manufacturer working with Nuri Rehabilitation Centre to provide jobs and rehabilitation support to people with special needs. In 2019, Durebox had 35 employees with differing special needs, e.g. intellectual and physical disabilities and autism. Durebox's comprehensive program covers both life skills and social adaptation training as well as vocational rehabilitation support, e.g. vocational adaptation, on-the-job learning and problem solving skills. Through this, their employees are helped in achieving economic independence and becoming more socially integrated.



Armacell's South Korean team is delighted to help adults with special needs.



A corrugated packaging production line at the Durebox factory in South Korea.

"These initiatives to support adults with special needs are perfectly aligned with Armacell's values. We are delighted to make a difference around the world through these partnerships."

Patrick Mathieu, President & CEO

DONATING TIME AND ENERGY AROUND THE WORLD

HELPING HANDS

BUILDING HOMES FOR THE DISADVANTAGED

As part of our community involvement campaign in the USA, employees at the Mebane plant in North Carolina came up with creative ways to make a difference in their local community. As a result, Armacell began partnering with and supporting several organisations, including the Habitat for Humanity project. This gave employees the chance to engage with the community to help in building homes for disadvantaged families. In all, there were five events of this kind in 2019, with three open to all employees and two for senior staff. This ongoing partnership is helping to reduce the housing inequalities of local families.



COVID-19 PANDEMIC

THE ARMACELL RESPONSE

The following actions outline Armacell's response to the spread and accel of the Covid-19 pandemic. The principle behind these measures is quite simple: Armacell's commitment to providing practical support to people everywhere - our employees, our customers and the general public.

Priorities

In Q1 2020, Armacell communicated to its worldwide workforce the strategy behind its business continuity structures and procedures. Various measures were introduced to implement this strategy.

- Safeguarding employee health.
- Maintaining operations, production and supplies.
- Continuing to serve customers.

Safeguarding employees' health

The lockdown and working-from-home measures implemented in numerous countries certainly helped to slow down the spread of Covid-19. Nevertheless, these measures also affected people in many ways and strict social distancing made life more difficult.

To support employees affected by Covid-19, Armacell launched a Solidarity Fund through which financial support and other kinds of tailored assistance were made available. The Fund was entirely financed by the company and the support assessed and distributed on a weekly basis by an internal committee. With working hours reduced or work having stopped at a few sites, the company's executive management team also decided to waive part of their salaries to support the joint efforts.

Supporting medical countermeasures

Armacell's regional organisations provided practical support and aligned with government efforts to stop the spread of Covid-19:

- **China:** Armacell donated approximately 7,500 m² of ArmaFlex® sheets for the insulation of HVAC systems to support the relief efforts and the building of two hospitals in Wuhan, Hubei Province.
- **Spain:** Armacell donated ArmaFlex® insulation material with Microban® antimicrobial protection for the manufacturing of 16,000+ face shields across the Iberian Peninsula.
- **USA:** Armacell partnered with diverse initiatives for the construction of medical facilities and manufacturing of personal protective equipment (PPE) in Illinois, Louisiana, New York and North Carolina.

In these three exemplary cases, Armacell's flexible equipment insulation products contributed to a safer and more comfortable environment for hospital patients, healthcare workers and the general public. All in all, the company's response to the Covid-19 pandemic was driven by the sentiment expressed in the 2019 Annual Report: CREATING (MEDICAL) VALUE FOR EVERYONE EVERYWHERE.

Huo Shen Shan Hospital

Dedicated to healthcare

5,000 shields produced daily

UN GLOBAL COMPACT COMMUNICATION ON PROGRESS REPORT 2019

Our commitment and support to the United Nations Global Compact (UNGC) dates back to 2006 when we joined the initiative.

This report details how we at Armacell work to comply with and embed the Ten Principles of the UNGC into our strategies and operations. The yearly Communication on Progress Report is a visible expression of our commitment to sustainability and fulfils the requirements of the UNGC for participating companies. We have cross-referenced to sources where applicable.

// HUMAN RIGHTS

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights;

The Armacell Code of Conduct, which is valid throughout the Armacell Group, defines the rules for our everyday work and includes our support for the Universal Declaration of Human Rights (UDHR). Our Sanctions Policy safeguards fundamental values, including human rights.

Principle 2: and make sure that they are not complicit in human rights abuses.

As in previous years, Armacell has not been subject to any investigations, legal cases or incidents involving human rights violations.

// LABOUR

Armacell supports the internationally recognised labour rights promoted by the International Labour Organization (ILO). As in previous years, Armacell has not been subject to any investigations, legal cases or incidents involving labour rights protection on one of the mentioned labour principles.

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4: the elimination of all forms of forced and compulsory labour;

Principle 5: the effective abolition of child labour;

We uphold the above-mentioned principles in our own operations. Armacell firmly dissociates itself from and will not do business with any organisation that upholds forced labour or child labour. We have informed all our suppliers worldwide about our support for the UN Global Compact's Principles and, step by step, are asking them to sign documents confirming that they comply with the principles, especially in eliminating all forms of forced and compulsory labour and abolishing child labour. Signing the Armacell Supplier Code of Conduct is part of a biennial evaluation process by Armacell's Corporate Purchasing Department.

Principle 6: and the elimination of discrimination in respect of employment and occupation.

Please see the 'Employees First' chapter on [pages 21-24](#) for our undertakings and their outcomes.

// ENVIRONMENT

Principle 7: Businesses should support a precautionary approach to environmental challenges;

Principle 8: undertake initiatives to promote greater environmental responsibility;

Principle 9: and encourage the development and diffusion of environmentally friendly technologies.

Please see the 'Protecting our Planet' chapter on [pages 25-30](#) for our undertakings and their outcomes. In the 'Driving Growth' chapter on [pages 16-20](#) and in more detail in our Annual Report 2019, we demonstrate how our product portfolio and strategies are linked to environmental principles.

// ANTI-CORRUPTION

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Across all our business activities we are committed to acting responsibly. We enacted an Anti-Corruption Policy that reflects our commitment to integrity. A key priority in our compliance efforts is the prevention of bribery and corruption where we operate a zero tolerance policy.

In 2017, Armacell enacted a new global Anti-Money Laundering Policy to raise staff awareness of the need to ascertain the identity of the business people they are dealing with and to be on their guard for any potential money-laundering activity [see page 8](#).

ABOUT THIS REPORT

This is the second Sustainability Report published by Armacell. The first report was published for 2018 in May 2019.

The Sustainability Report 2019 covers the operations of Armacell International S.A. (Armacell or Armacell Group) over the 12-month period from 1 January to 31 December 2019.

If not specified otherwise, the facts and figures presented include 24 manufacturing facilities in 16 countries [see Armacell Annual Report 2019 pp. 32–33](#). Local data is collected and consolidated through our management system.

The data on CO₂ emissions cover 20 of our 24 plants; the newly acquired plants in Canada (Insugard), China (De Xu), Denmark (Danmat) and Italy (Guarto) are excluded. Armacell calculates and discloses Scope 1 CO₂ emissions. The applied fuel types are converted into CO₂ equivalents through the conversion factors for global warming potential (GWP) published by the Intergovernmental Panel on Climate Change (IPCC) in its Second Assessment Report published in 1996.

This Sustainability Report is complemented by the content of our Annual Report 2019. The latter provides extensive insights into the development of the company, its strategic approach, and how business and sustainability are connected.

The annual report can be downloaded from our website:

<https://www.armacell.com/investors/annual-report-2019>

Further information on current sustainability projects can also be found on our website:

<https://www.armacell.com/sustainability>

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WE ARE COMMITTED TO



WE SUPPORT

