



# For a sustainable future

Consolidated Environmental Statement 2018  
Infineon Technologies Austria, Villach Site







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# Infineon at a glance

Facts and figures 2018



## Infineon Technologies AG

Sales €7,599 million

Employees throughout the Group 40,098

## Infineon Technologies Austria Group

Sales €2,960.8 million +17%\*

Earnings before tax €294.1 million +67%\*

Total investments €178.7 million

of which investments in property, plant and equipment €170.2 million +50%\*

of which investments in intangible assets €8.5 million

Total employees 4,201 +11%\*

Proportion of women overall 17% +0,5%\*

Employees in R&D 1,813 +17,2%\*

Employees in product and process development and quality assurance 471

Additional permanent external employees via third companies approx. 1,900

Degree candidates and doctoral students\*\* 170

Apprentices 66

Interns and vacation/industrial placements\*\* 1,103

## Research & Development

R&D Expenditure €498 million +16%\*

R&D Expenditure as a percentage of sales 17%

Initial patent applications 280

## Production

Products (basic types) 1,747

Production volume 13.75 billion chips

Audits and customer visits 23



\*As compared to fiscal year 2017  
\*\*Aggregated values for the fiscal year 2018  
as of 30 September 2018  
including domestic shareholdings



## The Board of Infineon Technologies Austria

# 1. Preface

Dear readers,

As a microelectronics manufacturer, the technologies and solutions we develop and produce are intended to make life easier, safer and greener. Our chips reduce energy consumption and enhance the performance of electrical devices. Chips from Infineon can manage increasing traffic, make it safer, or reduce traffic volumes. Increasingly, energy-efficient innovations and products provide important leverage in meeting the global megatrends of energy efficiency, mobility, safety and security, and sustainable and successful operations in a connected world. That is why the Infineon Group is investing 1.6 billion euros in a new chip factory for production on 300-millimeter thin wafers at our site in Villach, where we are also focusing on energy efficiency.

However, environmentally-conscious behavior also plays an important role in the company itself. With internal company guidelines for the environment, energy

management, safety and health, we have laid an important foundation to protect people and the environment. But we want to do even more: we are implementing targeted measures and initiatives to encourage and enable our employees, who come from around 60 different nations, to create and enjoy a sustainable way of life.

Our goal is to help shape a sustainable future with our products and our actions. This responsibility is shared by everyone, and anyone can contribute. Many of our employees show this on a daily basis, working on even more energy-efficient technologies, using environmentally-conscious modes of transport to come to work, or getting involved with sustainability issues. And this makes us very proud.

We invite you to find out more in this Environmental Statement.

Sabine Herlitschka

Oliver Heinrich

Thomas Reisinger



#### THE BOARD OF INFINEON TECHNOLOGIES AUSTRIA AG:

Dipl.-Ing. Dr. Sabine Herlitschka, MBA  
CEO and Technology Director

Area of responsibility: Research & Development,  
Human Resources, Communications

Dipl.-Ing. (FH) Oliver Heinrich (left), CFO  
Area of responsibility: Finance, IT, Purchasing,  
business responsibility for product lines,  
Business Continuity and Compliance

Dr. Thomas Reisinger (right), Operations Director  
Area of responsibility: Production, Technology,  
Quality Management, Infrastructure and Logistics



### The Villach site

- › Combined on one site: production, research & development and global business responsibility
- › Employees: 3,405
- › Global competence center for power electronics since 1997
- › Global competence center for new semiconductor materials since 2017

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### Villach site expansion: a milestone in European industrial history

- › New 300-millimeter chip factory for power electronics
- › New research building

More information: [www.infineon.com/expansion](http://www.infineon.com/expansion)

See page 8 & 11



### Innovation Factory Villach

- › 13.75 billion chips produced (FY 2018)
- › 22,200 m<sup>2</sup> clean room area up to class 1
- › around 1,747 product types processed simultaneously
- › more than 1,600 items of equipment
- › 800,000 wafer movements a day
- › Just over 1,000 individual work steps for each wafer

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The most research-focused industrial company in Austria.





## Research & Development Infineon Austria

- › The most research-focused industrial company in Austria in the top 500 list issued by the business magazine “trend” 2019.
- › 498 million euros R&D expenditure
- › R&D expenditure 17% of sales
- › 1,813 R&D employees, 1,207 of these in Villach
- › Expansion by around 860 R&D positions in Villach, Graz and Linz

See page 9



## Technology from Villach can be found in

- › Wireless chargers
- › LED lighting
- › Servers
- › 5G mobile infrastructure
- › Photovoltaic systems and wind parks
- › Anti-lock braking systems
- › Electronic power steering
- › Electric and hybrid vehicles
- › Charging infrastructure for electric vehicles
- › Refrigerators and induction stoves

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## Technology from Graz can be found in

- › NNFC ATM cards
- › Payment and credit cards
- › Electronic passports
- › Security components for PCs and tablets
- › Health insurance cards (e-cards)
- › 3D image sensor chips for Augmented Reality
- › Tire pressure sensors
- › Control of automatic transmissions

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## Technology from Linz can be found in

- › Radar chips for driver assistance systems
- › Distance warning systems
- › Automatic emergency braking
- › Autonomous vehicles
- › Smartphones & tablets
- › Navigation devices

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The most researched-focused industrial company in Austria

## 2. The Company

Infineon Technologies Austria AG is a subsidiary of Infineon Technologies AG. The Group is a global leader in semiconductor solutions that make life easier, safer and greener. The headquarters of the Austrian subsidiary is in Villach, with other sites in Graz, Klagenfurt, Linz and Vienna. Besides Germany, Infineon Austria is the only subsidiary within the Group that pools competencies for research and development, production and global business responsibility. Our employees from almost 60 countries have established Infineon as a leading company in Austria. Infineon Austria was ranked as the most research-focused industrial company in Austria in the top 500 list issued by the business magazine “trend” 2019 and is a pioneer in digitalization for many years.

### Welcome to the big world of very small things

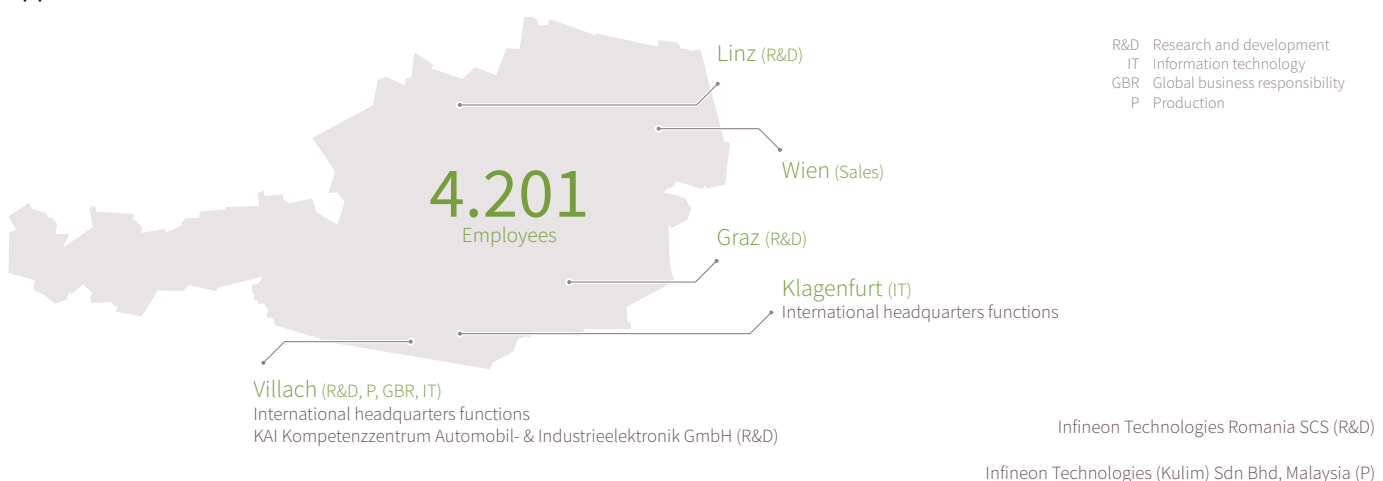
Small and barely visible, semiconductors have become an indispensable part of our daily lives. Chips from Infineon play an essential role wherever energy is generated, transmitted and used efficiently. They connect the real world with the digital world and are the decisive factor for one of the most important technological trends of our time: the Internet of Things. Whether they are in your car, your smartphone, your fridge, your debit card and passport, or in robots and industrial equipment - you can find expertise from Infineon Austria in many everyday applications.

### 2.1 Fiscal Year 2018: Continued Growth

The Infineon Technologies Austria Group is still on track for continued growth. In the 2018 financial year (accounting reference date 30 September), the company achieved sales of 2,960.8 million euros (up 17 percent). This increase in sales derives from the consistently high demand for power electronics in the global market. The earnings before tax were 294.1 million euros, an increase of 117.6 million euros compared to the fiscal year 2017. Staffing levels are at an alltime high, with a total of 4,201 employees.

#### Austria's largest private investment project launched

Over the next six years, the Infineon Group will invest around 1.6 billion euros in the construction of a new, fully automated chip factory for production on 300-millimeter thin wafers in Villach. The new, highly-efficient factory will create around 400 jobs for highly qualified workers. Construction started in May 2019, with production scheduled to begin in the first half of 2021. This major investment is an economic, technological and corporate milestone for Infineon Austria. You can find all the details of the Villach site expansion at [www.infineon.com/expansion](http://www.infineon.com/expansion).





## 2.2 Infineon Villach – Site Description

Infineon Austria employs about 3,580 people in Carinthia (of whom about 3,400 are employed at Villach). This makes the company the largest private employer in the region.

Infineon Villach was founded in 1970; it is the largest Infineon site and the company's head office in Austria. What makes this site special is the fact that Villach is the only site outside of Germany to pool competencies for research & development, production and global business responsibility. Villach has been home to the global competence center for power electronics since 1997, and the global competence center for semiconductor materials since 2017. The extensive expansions taking place in research & development and production mark a significant step toward securing the future of the high-tech site in Villach.

### **Carinthia and Villach Economic and Technology Region**

The Carinthian business hub, and the Villach area in particular, are positioning themselves as driving forces for technological and ecological innovation in the Alps-Adriatic region. Infineon's investment in a new chip factory is intended to "turbocharge" the entire region and attract more high-tech companies to the area. This includes service providers and suppliers as well as research facilities and educational institutions.

Silicon Austria Labs will also be established in Villach, as well as in Graz and Linz. The aim of the Silicon Austria research investment campaign, established by the BMVIT (Austrian Federal Ministry of Transport, Innovation and Technology), is to transform Austria into a leading high-tech location for electronic-based systems.

## 2.3 Innovative Development and Manufacturing

### **2.3.1 Research & Development**

Infineon Austria was ranked as the most research-focused industrial company in Austria in the top 500 list issued by the business magazine "trend" 2019. In the fiscal year 2018, approximately 17 percent of total sales went into research and development. There are 1,813 experts working in development centers in Villach, Graz and Linz to develop innovative technologies and solutions. Infineon Austria employs nearly a quarter of all R&D staff across the entire Group.

These capabilities are being extended: by 2020, the Villach, Graz and Linz locations will be expanded to resolve the shortage of research and development premises. The useable space in Graz, Linz and Villach will be extended to include an additional 860 R&D workplaces by 2020. 290 additional workplaces are being created in the development center for contactless security technologies in Graz, and 220 at the DICE development center for high frequency technologies in Linz. At the headquarters in Villach, a € 50 million investment in a new building with a total capacity of 600 R&D workplaces will provide sufficient space for existing R&D departments to move into, plus 350 additional R&D workplaces and an extended canteen.

### **The Villach Site: Focus on Energy Efficiency**

The Infineon global competence center for power electronics was established in Villach in 1997. Activities in Villach focus on the development of increasingly small and energy-efficient chips to be used in automotive, manufacturing and consumer electronics. This has made Infineon the global market leader in power semiconductors. To maintain this success, the team in Villach are already working on the next generation of chips, made from new materials such as silicon carbide (SiC) and gallium nitride (GaN). These convert electricity even more efficiently,



enabling smaller and smaller sizes and lighter components. Current applications include charging stations for electric cars with significantly shorter charging times and mobile infrastructure for 5G networks. The automotive research goal is to design the next generation of vehicles. Power electronics, microcontroller solutions and sensor technologies designed in Villach form the basis for innovative applications for the cars of the future. The result is intelligent cars with greater safety, improved comfort and lower energy consumption.

#### **The Graz site: Contactless, Secure, Mobile**

While Villach is responsible for power electronics, Graz covers contactless, security and sensor technologies. Whether we are talking about the Near Field Communication (NFC) transmission standard, vehicle components for optical distance measurements or 3D image sensor chips – the global competence center for contactless technologies is a driving force in innovations in security, mobility and the Internet of Things.

#### **The Linz site: High-Frequency Development**

With the Danube Integrated Circuit Engineering (DICE) holding company, Infineon Austria operates a development center for high-frequency components in Linz. The focus here is on 77 GHz radar chips for driver assistance systems – an area in which Infineon, with over 100 million chips sold to date, is a global market leader. Assistance systems are one of the fastest-growing application areas in the automotive industry and are also one of the essential requirements for fully-automated driving. Other key areas of activity include high-frequency components for mobile telephony and navigation applications, such as aerial switches and receiving amplifiers.

#### **2.3.2 Innovation Factory Villach:**

Power semiconductors for applications in automotive and industrial electronics are the main products of the Villach site. The site is the innovation factory of the front-end production network, with partner factories in Germany and Malaysia.

In the fiscal year 2018, 13.75 billion chips were produced in Villach. The electronic components are manufactured on silicon disks called wafers. These parts are produced and tested in different technologies and complexities in just over 1,000 production steps and with three different wafer diameters. In total, the factory produces approximately 1,747 basic product types simultaneously and to the highest quality standards, operating around the clock 365 days a year. Maximum reliability and precision are required here: accuracies up to well below 100 nanometers, i.e. approximately 700 times less than the diameter of a human hair, demonstrate the Villach site's vast technological competence.

Villach's production innovations focus on several areas: single-process technology, equipment engineering, new materials, thin wafers and future-oriented automation, digitalization and production concepts.

#### **Industry 4.0**

Industry 4.0, which involves networked and knowledge-intensive production, provides opportunities to accelerate innovation and improve productivity and quality. Infineon Austria is playing a pioneering role in implementing this technology in Austria. Special facilities for manufacturing semiconductors – ion implantation facilities – have been brought together within a defined section of the

Industry 4.0 pilot area in Villach. In this area, various systems such as energy consumption, intelligent product steering and mobile maintenance are optimized incrementally and then rolled out for production. The use of sensor technology in combination with communication and data processing systems makes it increasingly possible for decisions to be taken autonomously during production. In future, increased interweaving of development and production will enable new products or processes to be shown in dynamic simulations. The aim is to capitalize on the added value of the multitude of data generated within the company on a daily basis. These findings will be used to accelerate development processes and improve prediction accuracy and decision qualities, which will in turn improve productivity. Suppliers and other Infineon sites will be increasingly integrated into the overall process.

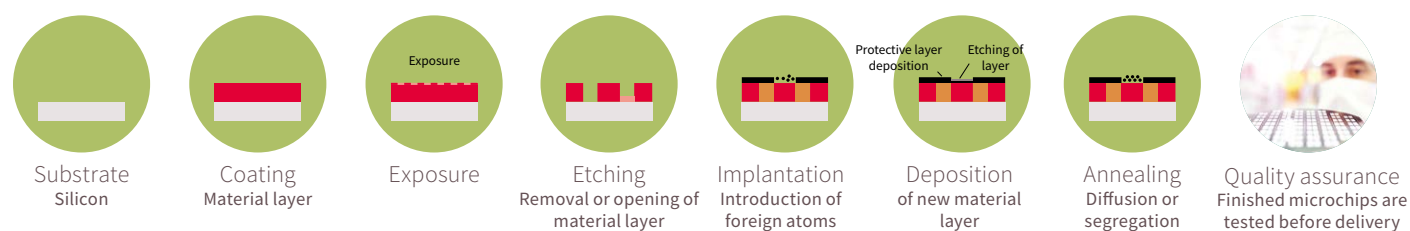
### A milestone in European industrial history

The best example of this innovation is the world's first production of power semiconductors in 300-millimeter thin-wafer technology. These particularly thin energy-saving chips ensure even more efficient energy conversion in electronic systems. At the same time, the productivity of mass manufacture is greatly improved. A 300-millimeter wafer allows the production of around two and a half times as many chips in one production run as a 200-millimeter wafer.

After Infineon Austria had produced the first chips using this technology in late 2011, another milestone was reached in early 2013: the successful qualification of a completely continuous production line and customer approval for production. The large-scale production of this new generation of power semiconductors for automotive applications began in Villach in mid-2015.

The success story is continuing with the above-mentioned investment of around 1.6 billion euros in the construction of a new, fully-automated chip factory for production on 300-millimeter thin wafers in Villach.

### Semiconductor manufacture: schematic process steps



Work steps repeated depending on chip



# Environmental Protection, Energy Management, Workplace Safety and Health Protection



## Voluntary commitment since 1997

- › EMAS (Eco Management and Audit Scheme of the European Union)
- › Environmental Management Standard ISO 14001
- › EMAS Award: 2018, 2013 and 2009
- › The first company in Austria to be validated under the EMAS-III Regulation

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## Recent awards for the Infineon Villach site

- › EMAS Award 2018
- › VCÖ Mobility Award 2018: 1st place Austria and Carinthia
- › Quality Seal for Workplace Health Promotion 2018
- › Best employer, “Electronics, Electrical Engineering, and Medical Devices” category, trend survey 2018

For all awards, see [www.infineon.com/sustainability](http://www.infineon.com/sustainability)

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## Tested and certified

- › EMAS-III 1221/2009 incl. 2017/1505
- › ISO 14001:2015 (Environmental Management)
- › OHSAS 18001 (Occupational Safety Management)
- › ISO 50001 (Energy Management)
- › ISO 22301 (Business Continuity)
- › ISO 27001 (Information Security)

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## Company suggestions scheme “Your Idea Pays” (YIP)

- › 227 employee ideas implemented in the areas of environmental protection, workplace safety and energy
- › Savings: 820,000 euros

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## Family and work

International Daycare Center: [www.idc-villach.at](http://www.idc-villach.at)

International School Carinthia: [www.isc.ac.at](http://www.isc.ac.at)

Welcome2Villach: [www.welcome2villach.at](http://www.welcome2villach.at)

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## Pillars of our operational safety management system

- › Internal Disaster Response Organization
- › Fire department
- › Company medical service

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## Emergency precautions

- › 52 emergency paramedics
- › 359 first responders
- › 61 rescue exercises
- › 2,149 hours of training

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## Infineon IMPRES Environmental Guidelines

The environmental guidelines outlined in the IMPRES policy form the basis of our activities

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## Environmental Protection, Energy Management, Workplace Safety and Health Protection

# 3. IMPRES Integrated Management System

Infineon views sustainability as a combination of social, ecological and economic responsibilities. Cost-effective activities, health protection, workplace safety, environmental protection, energy efficiency, climate protection and social responsibility are mutually compatible principles and goals, which we implement and strive to fulfill.

### 3.1 IMPRES Policy

This part of our corporate policy summarizes the key areas addressed by our integrated management system. Infineon implements this integrated management system worldwide and ensures a minimum global standard in the areas of environmental protection, energy management, workplace safety and health protection (IMPRES = Integrated Management Program for Environment, Energy, Safety and Health).

The full [IMPRES policy](http://www.infineon.com/nachhaltigkeit) can be downloaded from [www.infineon.com/nachhaltigkeit](http://www.infineon.com/nachhaltigkeit).

The guiding principles of the IMPRES policy in the areas of workplace safety, health and environmental protection and energy are outlined below:

- › Through our everyday actions, innovations and products, we support a sustainable global society and enable the production of energy-efficient end products and applications.
- › We use energy conscientiously and efficiently, and consume resources sparingly.
- › We strive to maintain our leadership within our industry in terms of energy efficiency, now and into the future.
- › We contribute to climate protection in several areas, e.g. by minimizing our greenhouse gas emissions.
- › We continuously work to create an ecological net benefit now and for the future, both in our products and solutions and through efficient processes and production methods.

- › We believe that the prevention of accidents is fundamentally our responsibility. This also includes our duty to motivate our employees to actively promote their own health.
- › We ensure our company policy effectively implements “environmental protection, workplace safety, health protection, and energy management”. The technical and organizational procedures necessary for this purpose are regularly checked and continuously improved.
- › We consider it the obligation of every employee to support our goals in environmental protection, workplace safety and health protection as well as energy management through responsible action. Increasing and promoting awareness at all levels is an ongoing managerial task.
- › We require our business partners to follow our guidelines. We work together with authorities, associations and non-governmental organizations.
- › In order to achieve our high standards, we have implemented effective and sustainable processes and measures within our company. These processes and measures serve not only to fulfil legal and other requirements, but also lay a foundation for continual improvement in our performance in the areas of workplace safety, health protection, energy efficiency and environmental protection.

### 3.2 Integrated Management – a Holistic Approach

Infineon's global management system, IMPRES, combines goals and processes in environmental sustainability, workplace safety and health protection.

The IMPRES system was developed 14 years ago and ensures the continuous evaluation of changes in legal frameworks and potential areas for improvement. This integrated management program is certified worldwide



according to [ISO 14001](#), [OHSAS 18001](#), and at several sites the [ISO 50001](#) Energy Management standard as well.

Infineon has been certified under a [matrix certification](#) in accordance with the standards ISO 14001 and OHSAS 18001, and its largest European front-end sites and the Campeon corporate headquarters have also been certified under ISO 50001 since the end of 2012.

In the area of workplace safety, we are currently preparing to convert to the new [ISO 45001](#) standard.

Infineon Villach is the first Infineon site to be certified under the ISO 22301 Business Continuity Management standard.

Both with our innovations and in our daily actions, we proactively contribute to a sustainable society. Our measures in workplace safety, accident prevention and health protection consistently aim to minimize potential risks in all roles in order to protect the health and wellbeing of our employees. We believe that sustainable environmental protection includes the efficient use of natural resources. Potential [environmental impacts](#) are studied at the earliest possible stage and are taken into account in product and process development. We strive to prevent the negative impact of pollution on people and the [environment](#), or if this is not entirely possible, to keep it to a minimum.

#### **One of the Most Sustainable Companies in the World**

In previous years, the Infineon Group has received numerous awards for its activities in the field of [CSR](#) (Corporate Social Responsibility). Infineon is proud of these awards, which also represent external recognition of the company's achievements. For example, the Infineon Group has been included in the Dow Jones Sustainability Index for the ninth consecutive year. Infineon is listed in both the Dow Jones Sustainability World Index and the Dow Jones Sustainability Europe Index. This places Infineon among

the top ten percent of the most sustainable semiconductor companies in the world.

### 3.3 Organization of the Environmental Management System

Along with the high environmental standards detailed in IMPRES, the Austrian production site in Villach has also committed to the European Union's [EMAS environmental management system](#) (Eco Management and Audit Scheme). In addition to the sustainable use of a wide variety of resources, EMAS also strives to continuously improve environmental performance, taking sustainability aspects into account, and report on this annually in the environmental statement.

In 2018, Infineon Villach was awarded the EMAS prize for the best [environmental statement](#) for the third time. This award was given primarily because of the way the site continues to combine environmental and economic goals.

The documentation of environmental protection, energy management, workplace safety and health protection at Infineon includes both the IMPRES manual and all IMPRES-relevant process descriptions, work instructions and other IMPRES-relevant documents.

From an organizational point of view, the head of the Environmental Protection and Workplace Safety Division, as local coordinator of the IMPRES integrated management system, sits directly under the legal Managing Director. In practice, they report directly to the Group's global "Head of Sustainability".

At the Villach site, IMPRES is regularly reviewed via both internal and external audits. The management system is regularly evaluated as part of a management review, in order to continuously improve and analyze activities.

Adaptation to the new ISO 14001:2015 standard has already been completed.

Companies are faced with an increasingly dynamic and complex environment. If we are to satisfy our customers' expectations and meet other obligations in this environment, we must continue to develop our integrated management system.

### 3.4 Employee Involvement

Excellent employees are the foundation of Infineon Austria. They contribute significantly to the company's success with their motivation, flexibility and technical expertise, and shape the culture of Infineon Austria. This makes it all the more essential for Infineon Austria to offer an attractive working environment. The company therefore takes an active approach to shaping the internal and external environment by implementing different initiatives and measures. These include flexible working time models, teleworking options, bilingual childcare facilities and a comprehensive health promotion program. This commitment has been rewarded: in 2018, Infineon Austria earned first place in trend's survey of the 300 best employers in the field of "Electronics, Electrical Engineering, and Medical Devices".

#### Combining Family and Work

Infineon is laying the foundation for its employees to pursue their careers alongside their family life and create a healthy work-life balance. To do this, Infineon Austria has introduced a variety of programs and facilities, such as multilingual day care centers in Villach operated in conjunction with the Sonnenstrahl organization. With flexible and longer opening hours and only a few days of closure, these facilities address the needs of shift workers in particular.

The largest of these facilities is the International Daycare Centre right next to the Infineon Villach site. There are now a total of 178 daycare places available for children aged from twelve months to six years, with 29 different nationalities represented in the current cohort. The International School Carinthia (ISC) in Velden, a private all-day school which uses English as its main language and German as the second language, pursues similar aims. There, 242 children are taught according to both the Austrian curriculum and the learning goals of the International Baccalaureate.

#### An Audit to Support Progress

Just how much value Infineon Austria attaches to the compatibility of career and family is highlighted by the "work and family" audit. This federal mark of quality and the regular inspections involved in the process validate and reinforce the path chosen.

#### Benefiting from a wealth of ideas

A number of ideas for improvement and innovative approaches are also generated as part of our employee suggestions scheme. In the fiscal year 2018, the program entitled "Your Idea Pays" (YIP) achieved:

- › 82 realized proposals on the subject of energy
- › 25 proposals on the subject of workplace safety and health protection
- › and 20 proposals

These suggestions for improvement resulted in total savings of approximately 820,000 euros in the fiscal year 2018.

#### Information from the very first day

From their very first day on the job, employees are given comprehensive training in the areas of workplace safety, health protection, energy and environmental protection. Up-to-date information on environmental protection and other environmental aspects, as well as relevant publications, is provided through the company's intranet,

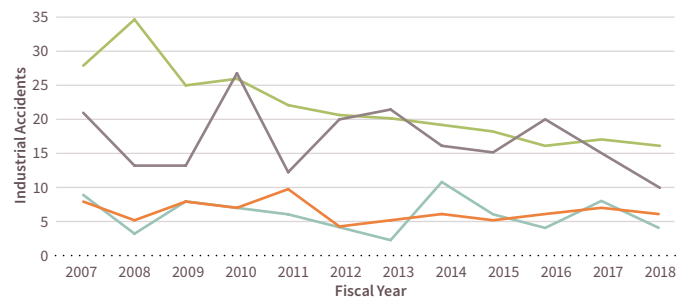
posted on bulletin boards and shown on displays. The Environmental Statement is available both on company sites and as an Internet and intranet download.

### 3.5 Workplace Safety and Health Protection

Workplace safety, based on both statutory provisions and company regulations, has been a permanent part of day-to-day operations at the Villach site ever since the first employees joined, and strategies are constantly undergoing further development. This can also be seen in the very low number of workplace accidents at the Villach site compared to the Austrian electronics industry as a whole. All stipulated and attendant safety measures (awareness, training, monitoring) are also reflected in the very low accident rate at our Villach facility (compare [AUVA](#) statistics), which was maintained in 2018.

Prevention, exercise, nutrition and mental health are the extended focal points of our Medical Center at the Villach site, which is managed by two physicians and a specially-trained graduate nurse. Additional support is also provided by the Health Team, a work group selected from different departments, which focuses on the subject of health at the site under the motto “by employees, for employees”. Health and fitness programs, various health campaigns focusing on different aspects and courses in stress management and burnout prevention contribute to allround wellbeing. This is supplemented by the option of external psychological counseling, which is anonymous and free of charge. As a result of the prevention and health promotion activities mentioned above, in 2018 the Villach site was awarded the “Workplace Health Promotion” seal of approval for a further three years – for the fourth time in succession.

Frequency of industrial accidents  
(per 1,000 employees)



Recognized industrial accidents  
(recognized by AUVA)

	Infineon Technologies Austria AG	Competitor 1	Competitor 2	Electronics industry average
2007	8	9	21	28
2008	5	3	13	35
2009	8	8	13	25
2010	7	7	27	26
2011	10	6	12	22
2012	4	4	20	20,5
2013	5	2	21,5	20
2014	6	11	16	19
2015	5	6	15	18
2016	6	4	20	16
2017	7	8	15	17
2018	6	4	10	16

■ Infineon Technologies Austria AG  
■ Competitor 1  
■ Competitor 2  
■ Electronics industry average

To maintain this result in the long term, training courses with a focus on “onsite chemical safety” were provided in the fiscal years 2017 and 2018, in addition to the tried-and-tested preventative services.

### 3.6 Compliance with Statutory Environmental Provisions

We do not merely pay lip service to protecting the environment, but regard it as a corporate obligation, and thus part of the voluntary social responsibilities Infineon carries. Compliance with legal standards and regulatory



requirements is a matter of course for us. In order to make these laws easier for everyone to understand, we have formulated internal regulations which demonstrably translate our environmental protection strategy into specific instructions for every individual in the company. The company complies with all legal regulations and other relevant official requirements (official rulings). In addition, any requirements arising from approvals, official orders and insurance issues are fulfilled. Current statutory provisions relevant to workplace safety, health protection and environmental protection (including energy) are recorded in a legal directory. Voluntary commitments, requirements stipulated in permits, regulatory orders, etc. are recorded in the same way. Specific departments are responsible for maintaining this information at the Villach site. The legal directory is reviewed on a regular basis and modified as necessary. It forms, among other things, the basis for process descriptions and other corporate regulations on workplace safety and health protection, environmental protection and energy.

The company meets all applicable environmentally-relevant obligations. Specifically, these include:

- › Legal provisions laid out in the approximately 200 relevant laws,
- › Around 1,300 regulatory requirements resulting from official rulings,
- › Conditions and limit values associated with approvals and official orders,
- › Insurance law requirements
- › Other voluntary commitments (such as additional social benefits, etc.).

### 3.7 Emergency Precautions and Emergency Management

In collaboration with the responsible emergency and medical response services, we have taken all the safety and

precautionary measures necessary to prevent a potential emergency incident onsite or, if this not entirely possible, to limit the impact of any such event as much as possible. In addition, all the essential environment-related processes are monitored by process control and/or continuous automatic and manual measurements. This means that even minimal deviations from standard operation and other faults are detected at the earliest possible stage.

#### Internal emergency response system

In addition to shift workers and staff on call, the Infineon Villach company fire department and our company medical service are available to rectify any malfunctions and respond to any emergencies and accidents that may occur.

In the event of serious damage incidents which cannot be rectified in the course of normal operations, the company's Disaster Response Organization (DRO) will be deployed. Specially-trained crisis management team leaders with managerial authority can be contacted via the control stations at any time and can immediately take over the management of a response operation.

Furthermore, as a part of the DRO, a specially-trained chemical response team is available to respond to any potential damage events involving chemicals or gases.

The company medical center is staffed from 8:00 am to 3:00 pm Monday to Friday and supported by 52 emergency paramedics distributed across the individual shift groups. In addition, 359 first responders have been trained in accordance with the applicable workplace regulations.

#### External Alarm and Hazard Prevention Plans

In order to limit the impact that emergencies and accidents may cause off the premises, we have drawn up detailed alarm and hazard prevention plans. These are continuously adapted to current requirements.

In the past fiscal year, approximately 61 preparedness exercises took place, along with a total of 2,149 hours of training (courses and seminars) and exercises in the areas of fire safety and prevention, chemical and technical assistance.

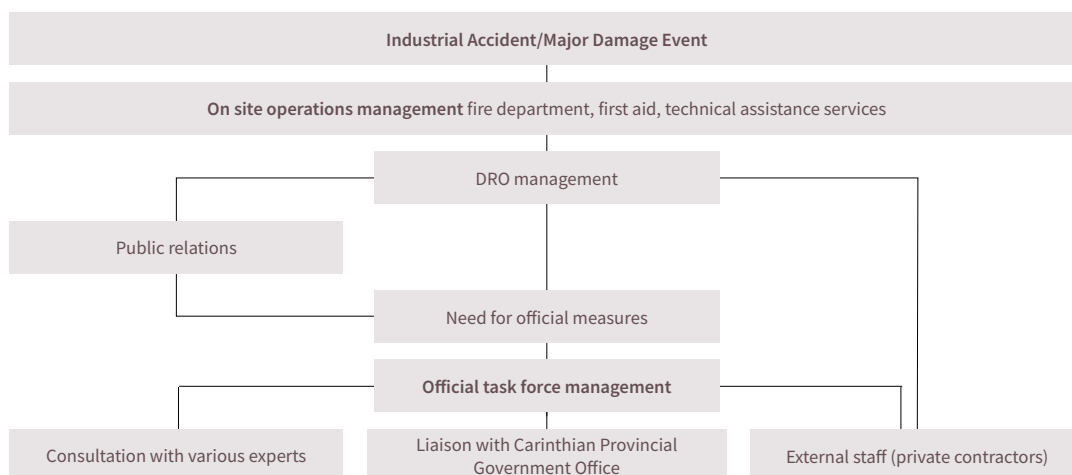
The DRO team completed several training courses to prepare them to handle any emergencies that may occur.

### Chemicals and How We Handle Them

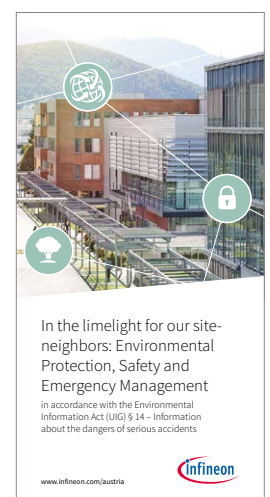
All hazardous materials handled at the Villach site are safely stored, transported and used. Deliveries are made using specially approved vehicles and transport containers. The site includes specially-coated leakage and retention basins in all delivery areas, the chemical storage facility and the central chemical supply rooms for the production area, to prevent negative impacts from any conceivable leaks. Transport within the premises, for example from the chemical and gas storage facility to the supply facilities for production, is conducted under strict safety conditions. Additional transport to production facilities takes place through double-walled pipelines which, among other precautions, are monitored by sensors to ensure they are leak-proof. Our production facilities are equipped with extensive safety and emergency shutoff systems. In the

event of an incident, the necessary emergency procedures can be triggered in the shortest possible time.

A summary of all major emergency aspects and safety measures can be found in our information folder “In the limelight for our site neighbors”.



Source: Information brochure “In the limelight for our site neighbors”, 2016





# Environmental Aspects



## Industry 4.0 and Energy Efficiency

Since 2017, the main energy efficiency projects at the Villach site have been pooled and managed under the “Sustainability 4.0” umbrella.

See page 23

## Sustainability4.0



## Energy efficiency

A total of 11.1 GWh of energy (10.6 GWh of heat and 0.5 GWh of electricity) was saved in the fiscal year 2018. This is equivalent to the heat consumption of approx. 620\* family households and the electricity consumption of approx. 140\* single-family households.

\*Comparative values from the energy provider KELAG

See page 25



## Water Treatment

Around 50 percent of the onsite water supply is converted into ultrapure water for production using special equipment. The water required for cooling these production and infrastructure facilities is also extracted onsite.

See page 27



## CO<sub>2</sub> savings at the Villach site

Around 60,000 tons of CO<sub>2</sub> emissions cut thanks to the use of electricity from hydropower and green energy.

See page 24







## CSR Guidelines

Infineon Austria is committed to Corporate Social Responsibility and has defined its own guidelines:

- › Innovation is in our DNA
- › A strong employer - a strong region
- › For a green tomorrow

See page 34



## AfB Sustainability

Savings achieved through the donation of devices to the non-profit company AfB for recycling:

- › 69,658 kg iron equivalent
- › 157,593 kWh energy
- › 52,627 kg CO<sub>2</sub> equivalent

See page 36



## Green Way: Environmentally-Friendly Commuting

The Green Way initiative offers alternatives to cars at the Villach site, such as:

- › Carpool app & carsharing parking spaces
- › Development of cycle infrastructure and a cycle path network
- › Introduction of “jobticket” – free journeys to work by public transport
- › Electric bike sharing system

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## CO<sub>2</sub> balance sheet

enabled by products and solutions of the Infineon Group



~1.46 Mt  
CO<sub>2</sub> emissions<sup>1)</sup>



~56.1 Mt  
CO<sub>2</sub> savings<sup>2)</sup>

Ratio ~1:38

Net ecological benefit:

CO<sub>2</sub> emissions reduced by around 54 million tons

<sup>1)</sup> This figure factors in manufacturing, transportation, company vehicles, flights, raw, auxiliary and operational materials, chemicals, water/waste water, direct emissions, energy consumption, waste, etc. and is based on internally collected data and publicly available conversion factors. All data relate to the fiscal year 2018.

<sup>2)</sup> This figure is calculated using internally established criteria, which are explained in the explanatory notes. This figure refers to mobile phone chargers and drives. The CO<sub>2</sub> savings are calculated on the basis of the market share of Infineon, and the semiconductor content and service life of the technologies concerned, based on internal and external expert estimates. Despite the fact that such life cycle assessments are imprecise and subject to a certain amount of error due to the complex issues involved, the results are nevertheless clear.



## Data, Facts and Figures

# 4. Environmental aspects

Environmental aspects and their associated environmental impacts refer to any positive or negative change in the environment which occurs wholly or partly as a result of the activities, products or services of an organization. Infineon Austria regularly re-evaluates its environmental impacts, adjusts its current targets and implements new measures accordingly.

## 4.1 Input/Output Analysis

Infineon's goal is to minimize the impact of the Villach site on the environment. This is based on the systematic recording and evaluation of energy and material flows in order to optimize processes. Every individual is encouraged to optimize the use of resources. This is done not just through targeted recycling and processing measures, but also by initiating individual small projects, conducting environmental training and raising awareness through environmental campaigns.

The following data enumerate the direct environmental aspects of the Villach site including the energy required, fresh air, water, chemicals and other materials, as well as the generation of exhaust heat, exhaust air, waste water and general waste.

Although production output increased slightly, it was nonetheless possible to maintain the same overall consumption of resources, and in some cases even to reduce it.

A significant proportion of non-hazardous waste had to be reclassified as hazardous waste in the 2018 reporting period (see section on "Waste Management"). therefore the quantity of non-hazardous waste decreased, offset by a corresponding increase in hazardous waste.

INPUTS during the fiscal years 2016, 2017 and 2018

Raw materials, consumables and supplies	Unit	2016	2017	2018
Wafers	t	121.86	159.03 <sup>1)</sup>	154.79
Gases	t	90,962.57	93,456.53	96,286.19
Wet chemicals	t	5,507.94	4,648.15	5,430.08
Photochemicals	t	1,562.95	1,248.52	1,384.83
CMP chemicals and slurries <sup>5)</sup>	t	188.15	220.13	217.03
Other chemicals	t	15.07	14.51	19.30
Chemicals for facilities	t	5,046.42	4,850.89	4,992.96
Metals (in products)	t	21.44	15.20 <sup>4)</sup>	14.83 <sup>4)</sup>
Water	m <sup>3</sup>	4,567,106	4,649,108	4,059,491
Ultrapure water <sup>1)</sup>	m <sup>3</sup>	2,061,900	1,925,498	1,996,632
Air	10 <sup>9</sup> Nm <sup>3</sup>	14.88	15.11	15.37
Recirculated air	10 <sup>9</sup> Nm <sup>3</sup>	70.22	70.23	74.01

Energy	Unit	2016	2017	2018
District heating consumption	MWh	31,233.74	22,542.93	16,594.50
Electricity consumed from renewable energy sources	MWh	256,302.95	259,948.16	270,331.92
Natural gas	MWh	10,043.62	10,037.88	9,708.70
Self-generated energy from heat pumps	MWh	26,700.25	37,160.81	44,238.03
Waste heat utilization	MWh	61,512.71	62,387.56	64,879.66
Total energy consumption	MWh	385,854.89	392,125.39	405,807.48
Of which renewable energy <sup>2)</sup>	MWh	283,003.20	297,108.97	314,569.95

<sup>1)</sup> Approx. 95% of ultrapure water generated by reclamation from cooling water.

<sup>2)</sup> Electricity and heat pumps.

<sup>3)</sup> Increased share of contract production and development.

<sup>4)</sup> Increased use of special chemicals for process evaluation e.g. waste water precipitation.

<sup>5)</sup> Decrease in consumption due to technology shifts.

OUTPUTS during the fiscal years 2016, 2017 and 2018

Total waste <sup>1)</sup>	Unit	2016	2017	2018
Non-hazardous waste	t	3,147.69	4,626.29	3,491.25
Hazardous Waste <sup>2)</sup>	t	4,918.26	3,768.77	5,605.32

Emissions into the air	Unit	2016	2017	2018
Total exhaust air	10 <sup>9</sup> Nm <sup>3</sup>	14.96	15.11	15.37
of which recorded as emitted <sup>3)</sup>	10 <sup>9</sup> Nm <sup>3</sup>	13.39	13.62	13.90
PFC-contaminated	10 <sup>9</sup> Nm <sup>3</sup>	0.012	0.013	0.014

Waste water	Unit	2016	2017	2018
Total waste water	m <sup>3</sup>	4,432,682	4,755,961	4,304,508
Waste water from production requiring treatment	m <sup>3</sup>	2,833,610	2,930,957	3,091,807

<sup>1)</sup> See page 26 for waste statistics.

<sup>2)</sup> Not including notified and recycled spent solvents, including sulfuric acid.

<sup>3)</sup> These figures include the exhaust volume flows from clean room areas and the recorded exhaust air volume flows from other site areas.

## 4.2 Direct Environmental Impacts

Direct environmental aspects, which are those directly related to the company's activities, products and services, include: emissions into the air and water, waste, and the consumption of resources and energy (an overview of all assessed environmental impacts can be found in Section 4.5). Environmental aspects are identified both by reviewing the statutory provisions and examining the material flows.

The environmental impacts of our products are regarded as indirect environmental impacts and are described in the following section.

### **Energy, climate protection and CO<sub>2</sub> balance**

As a global player in the semiconductor industry, the topics of energy efficiency and energy saving are important pillars of our corporate philosophy. This is also reflected in our energy management system, certified according to ISO 50001.

A constantly-growing number of energy and material flows is systematically recorded and evaluated in order to optimally design and control individual processes. These and many other optimization measures enable us to improve our energy usage efficiency.

With regard to emissions, due to the consistent implementation of the CO<sub>2</sub> reduction program (in the test facility among others) it was also largely possible to slightly decrease the level of specific emissions of CO<sub>2</sub> equivalents over the last 15 years as compared with previous fiscal years, despite complex production expansions (see "Exhaust Air" section).

### **Reaching the Next Level with "Sustainability 4.0"**

In the fiscal year 2009, in order to keep the utilization of energy and resources as efficient as possible, we launched

a site-wide Energy Efficiency Project that also addresses innovative strategies for resource optimization. Introduced in 2017, the "Sustainability 4.0" project builds on this and brings together the key projects around Industry 4.0 and energy efficiency in production. The vision is to link all the facilities through an automated and self-learning regulating system. Modeling, simulation and automation along the entire production chain are intended to ensure that the parameters of stable equipment, low energy consumption and cost-effectiveness can be balanced in the best possible way. This is accompanied by vocational and in-service training programs for employees. One project that has been successfully completed in the last few years is BaMa (Balanced Manufacturing, <http://bama.ift.tuwien.ac.at>). The follow-up project Semi40 ([www.semi40.eu](http://www.semi40.eu)), which focuses on a selected area, dealing with the digitalization and networking of operational data to enable a link between the real and virtual worlds. The aim of this project is to further optimize clean room air-conditioning. Existing load-driven controlled systems are to be developed into an energy-efficient operational management system. Using real data from the systems, mathematical models and simulations, potential energy savings of around 13.23 per cent (~2.750 MWh p.a.) are forecast.

Ultimately, progress made in this area ensures improved transparency, flexibility and sustainability, and thus contributes to optimized decision-making and stable supply.

### **Site Expansion & Energy Efficiency**

When designing new procedures, technologies and innovations, Infineon Austria attaches great importance to environmental compatibility and sustainability. With the so-called Pilot Room 4.0 at our Innovation Factory Villach, Infineon Austria is already applying future-oriented real-time digitalization methods, which will also be used and further developed in the new chip factory. This includes the energy budget of buildings, production

facilities and supply areas on the site. Buildings and systems are and will continue to be equipped with sensors, automatic control devices and smart meters for the intelligent monitoring and regulation of all facilities. This enables energy consumption to be adjusted even more precisely to suit the corresponding production capacity. The data collected in this way is used for computer models and simulations to determine further savings potential. In 2017, in order to make this data transparently accessible to different target groups, an energy dashboard was installed in the showroom of Hall 17, which is currently the newest production area at the Infineon Villach site. The energy dashboard allows both visitors and systems experts to visualize the energy consumption of this building, which is making use of Industry 4.0 applications, in real time. The object of this is to provide an overview of how much energy is currently being used in the production facility.

Infineon is also focusing on energy efficiency in its new research building: in addition to the high technological standard of the building with its comprehensive ventilation system, cooling ceilings, selective exterior shading and the specific energy consumption of a low-energy house, the necessary energy is supplied by means of heat recovery from the factory's cooling processes and highly efficient refrigeration plant. Working together with an international team of experts, we are also starting a research project in parallel with the construction. We aim to create a virtual replica of a part of the building, allow it to grow alongside reality, and learn from the results of the simulation.

### Land use and biodiversity

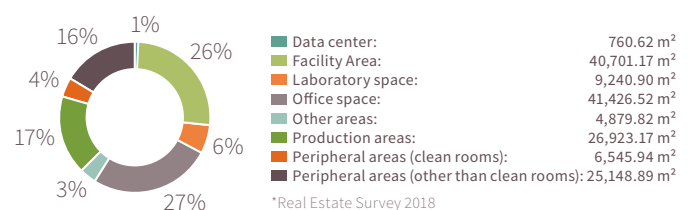
The total area covered by the site during the 2018 reporting period, including roads and pathways, was 196.643 m<sup>2</sup>, with an additional 31.566 m<sup>2</sup> of leased space. Approximately 80.300 m<sup>2</sup> of the outdoor area is paved (sealed), and around 33.800 m<sup>2</sup> comprises green space (lawns, vegetation). The total sealed area of the site, including an area of approximately 64.000 m<sup>2</sup> covered by buildings, amounts to

approximately 144.300 m<sup>2</sup>. The remaining approximately 50.100 m<sup>2</sup> consists mainly of parking areas with infiltration systems, drainage ditches and embankments, unpaved gravel surfaces (prepared sites) and sports facilities.

The new buildings and extensions for the Villach site expansion will mainly be built on existing parking areas. Some low-value timber was cleared to make way for new infrastructure buildings and the plant access road. Infineon is replacing these areas in several ways: in consultation with Department 8 of the Carinthian Provincial Government (Environment, Energy and Nature Conservation) and the forestry authority, so-called substitute habitats such as biotopes and wet meadows are being created. Furthermore, Infineon is acquiring approximately 2.000 m<sup>2</sup> of natural space to the east of the daycare center which, in order to safeguard natural resources, will not be repurposed as a technology park. As a secondary measure, also in conjunction with the authorities, Infineon will financially support reforestation projects to create new high-quality forest areas. Details can be found at [www.infineon.com/ausbau](http://www.infineon.com/ausbau).

Net usable area of all buildings\*

155,496 m<sup>2</sup>





## CO<sub>2</sub> Calculations

The CO<sub>2</sub> calculations were made on the basis of EDM reporting as required by the Industrial Gas Ordinance and ESIA PFC working group templates, using information provided by the Intergovernmental Panel on Climate Change (IPCC) in the currently valid form.

The manufacture of semiconductors uses primarily electrical energy. This energy is needed both to create a stable production environment with defined ambient conditions in the clean rooms and for the operation of the production facilities. The majority of the Villach site's energy consumption is incurred by production operations.

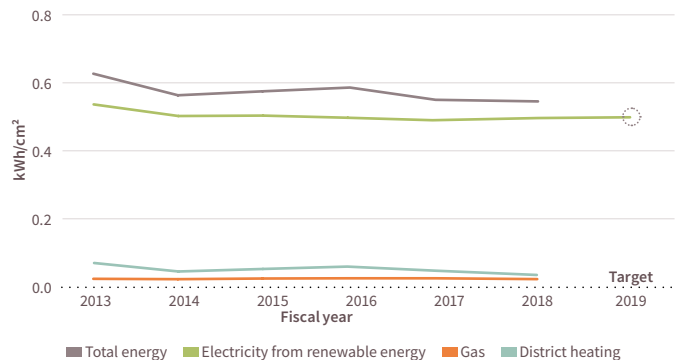
With the integration of the requirements of ISO 50001, Infineon has introduced mechanisms at the Villach site to systematically identify ways in which energy consumption could potentially be optimized, and to implement these where significant improvements are indicated.

The following graph illustrates developments in the use of electricity and district heating at the site. With the use of district heating since 2011, powered by an energy mix comprising mainly renewable energy sources, the use of natural gas has been reduced from typically around ten percent to around 2.5 percent at the present time. Since April 2013, electricity purchased by the Villach site has consisted of 100% hydro power and green energy. In 2018, this cut CO<sub>2</sub> emissions by approximately 60,000 tons. Fuel consumption for business trips and company vehicles throughout the Group is recorded, documented and reported centrally.

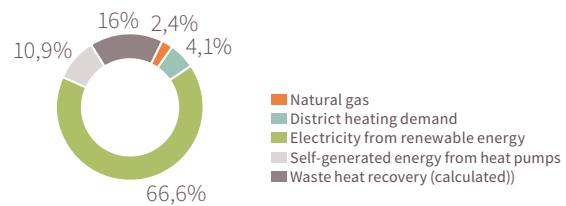
The target for the fiscal year 2018 was not to exceed 271 GWh of electricity consumption while providing for continuous growth, and this was achieved with a total consumption of 270 GWh. Diesel and extra-light fuel oil (EL) were used only in minimum quantities and for emergency power systems.

## Energy Consumption

in kWh/cm<sup>2</sup> silicon surface area, normalized by fiscal year – 2018

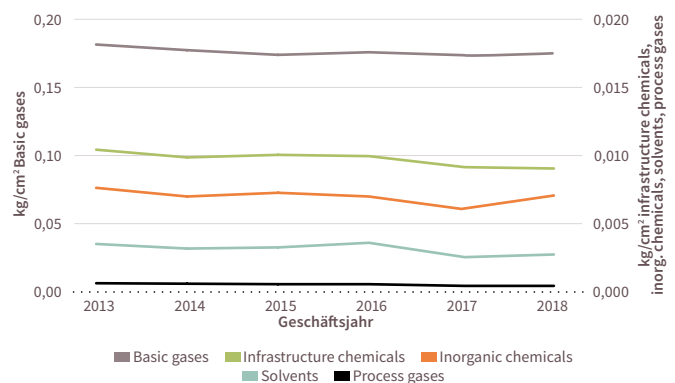


## Breakdown of energy requirements at the Infineon Villach site 2018



## Consumption of chemicals and gases

in kg/cm<sup>2</sup> silicon surface area, normalized by fiscal year – 2018



## Site Energy Statistics

As shown in the energy consumption graph, the site's specific total electricity consumption decreased once again in the fiscal year 2018. A total of 11.1 GWh of energy (10.6 GWh of heat and 0.5 GWh of electricity) was saved in the fiscal year 2018.



In particular, the consumption of district heat was significantly lowered by the optimized use of heat pumps. The site's specific electricity consumption was also reduced as a result of energy efficiency projects and measures, in combination with a high production capacity utilization.

### Chemicals and gases

In the fiscal year 2018, the specific consumption of chemicals and gases increased slightly compared to the previous financial year. The main production-related increase in consumption was seen in inorganic chemicals (mineral acids such as sulfuric acid, nitric acid and phosphoric acid).

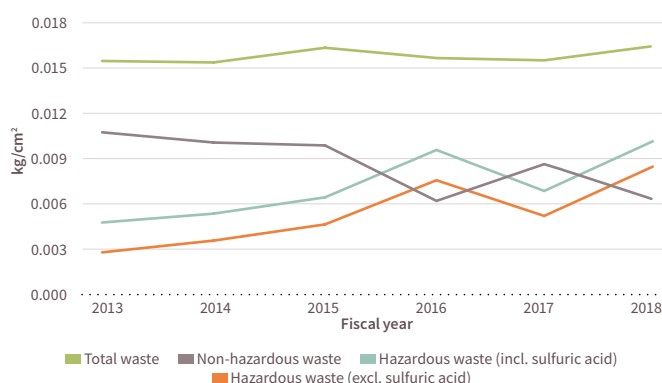
### Waste management

Infineon Austria attaches great importance to in-house recycling networks at the Villach site. All employees are therefore encouraged to reduce residual waste volumes by collecting and sorting waste and reusable materials. Most hazardous and non-hazardous waste components that can be dealt with by licensed waste collectors and processors are recycled. Thus, the calcium fluoride slurry from the waste water treatment system is used in the construction industry, spent sulfuric acid is used for neutralization purposes, spent solvents are thermally recycled and domestic and commercial waste is partially recycled with the rest incinerated. Owing to detailed analysis and the consistent use of recycling channels, revenues from waste management in the fiscal year 2018 remained at the same high level as in the previous fiscal year.

**The specific amount of non-hazardous waste fell** significantly due to the reclassification of calcium fluoride slurry from the waste water treatment plant as hazardous waste. Therefore, the amount of hazardous waste rose correspondingly. The results of a 2017 diploma thesis on the optimization of precipitation are being implemented within the framework of plant optimization (the classification of the calcium fluoride slurry continues to change

between hazardous and nonhazardous waste on the basis of analytical evaluations).

Waste  
in kg/cm<sup>2</sup> silicon surface area, normalized by fiscal year – 2018



### Non-hazardous waste

Below is a summary of the non-hazardous waste generated by the site, broken down into the main components and their respective recycling flows.

In the fiscal year 2018, the total quantity of nonhazardous waste was approximately 3,491.26 tons. This can be broken down as follows:

Waste from production	Unit	2016	2017	2018
Total non-hazardous waste	t	1.861.98	3.313.47	2.019.50
of which recycled	t	365.94	415.03	369.50
of which incinerated	t	140.39	154.04	152.14
of which disposed of	t	1.355.65	2.744.40	1.497.86

Production waste - rest of site (incl. periphery, facilities, office space)	Unit	2016	2017	2018
Total non-hazardous waste	t	924.26	918.80	1.018.59
of which recycled	t	324.40	316.95	344.37
of which incinerated	t	30.36	59.66	27.24
of which disposed of	t	569.50	542.20	646.98

Packaging	Unit	2016	2017	2018
Total non-hazardous waste	t	361.45	394.01	453.15
of which recovered	t	171.14	174.64	183.13
of which incinerated	t	190.31	219.37	270.02

In the fiscal years 2016, 2017 and 2018, the main non-hazardous waste components were:

Non-hazardous waste	Waste Code	Unit	2016	2017	2018
Slurries from waste water plant	31641	t	1.336	2.733	1.487
Household and commercial waste	91101	t	500	497	604
Contents of grease separators (kitchen)	94705	t	130	134	143
Iron and steel waste (commercial scrap metal)	35103	t	210	259	248
Waste paper	91201	t	171	175	183
Biogenic waste	91104	t	172	172	172
Waste timber from construction/demolition	17202	t	42	-	13
Wood waste	17201	t	189	218	268

The main components were unremarkable in terms of quantity and have either changed very little in comparison to the previous years or are within the long-term fluctuation range.

### Hazardous waste

Due to the reclassification of calcium fluoride slurry as described above, the fiscal year 2018 saw a rise in the total quantity of non-hazardous waste to approximately 5.605.32 tons. The main components can be broken down as follows:

Hazardous waste	Waste Code	Unit	2016	2017	2018
Solvent mixtures <sup>1)</sup>	55370	t	686	562	684
Spent acids (sulfuric acid)	52102	t	1.023	942	951
Other aqueous concentrates	52725	t	1.010	1.110	1.536
Residues from solvent recycling	140603 <sup>2)</sup>	t	270	176	172
Calcium fluoride slurry	31641	t	2.076	985	2.243

<sup>1)</sup>Excludes residues from solvent recycling.

<sup>2)</sup>Recycling residue from notified solvents at Braun Recycling.

The hazardous waste produced in the fiscal year 2018 is attributed mainly to the fractions of other aqueous concentrates (increased due to special disposal measures in 2018), in particular the reclassification of calcium fluoride slurry and sulfuric acid. The miscellaneous aqueous concentrates are specific waste components which cannot be processed internally at present.

Waste from production	Unit	2016	2017	2018
Total hazardous waste	t	4,840.48	3,655.88	5,498.91
of which recovered or recycled	t	1,053.37	981.93	1,018.30
of which incinerated	t	699.55	578.14	700.89
of which disposed of	t	3,087.56	2,095.81	3,779.72

Production waste - rest of site (incl. periphery, facilities, office space)	Unit	2016	2017	2018
Total hazardous waste	t	59.33	94.31	87.38
of which recovered	t	10.56	19.81	58.85
of which incinerated	t	4.06	6.72	2.42
of which disposed of	t	44.71	67.78	26.12

Packaging	Unit	2016	2017	2018
Total non-hazardous waste	t	18.45	18.59	19.03
of which recovered	t	1.01	1.20	2.75
of which incinerated	t	17.44	17.38	16.28

In the area of the operational recycling of spent solvents by means of redistillation, dimethylformamide (DMF) has been successfully recycled externally since 2014, in addition to the solvents propylene glycol methyl ether acetate (PGMEA), cyclopentanone and N-methyl pyrrolidone (NMP).

A total of approximately 521 tons of pure solvents could thus be recycled externally using closed-loop recycling methods, with recycling rates of up to 74 percent. The recycling rate for all spent solvents was approximately 35 percent, as in the previous year, after major savings in cyclopentanone consumption were achieved at the equipment level.

It should also be noted that our spent solvent mixtures are, as a result, not only sources of energy in terms of thermal treatment, but also valuable secondary raw materials.

Thus, preference is clearly given to the recovery of materials rather than thermal treatment.



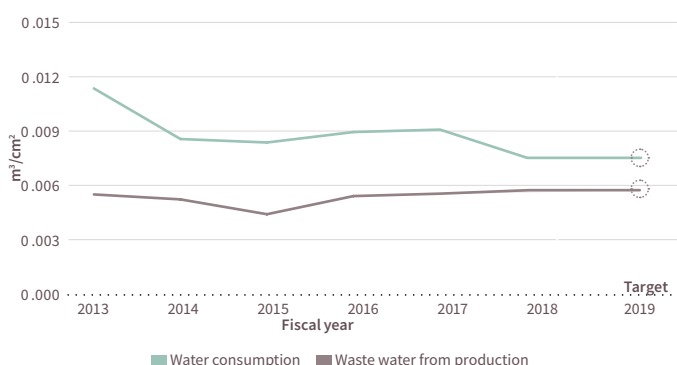
## Wastewater data

The Villach site obtains most of its water supply from its own wells. As a result of the expansion of operational facilities and shifts in technology, depending on production almost 50% of this self-supplied water is now treated with the aid of special equipment, resulting in ultrapure water for production. The water for cooling these production and infrastructure facilities is also extracted onsite. We source drinking water and water for sanitary installations from the local utility provider.

The specific water consumption (7.4 l/cm<sup>2</sup>) and the specific waste water quantity (5.6 l/cm<sup>2</sup>), referred to the silicon area produced, improved in the fiscal year 2018, despite an increase in production (2017: consumption 8.6 l/cm<sup>2</sup> and waste water 5.4 l/cm<sup>2</sup>). These savings were realized through an internal onsite water project.

Based on the historical quantities consumed, the company has now set its sights on new consumption targets (see graph) for the fiscal year 2019.

Water Consumption and Waste Water Volumes from Production in m<sup>3</sup>/cm<sup>2</sup> silicon surface area, normalized by fiscal year – 2018 with target for 2019



Extracts from the typical figures for waste water components from direct and indirect feeds are shown in the following tables.

Sampling Container Austrian Semiconductor Waste Water Emission Regulation (AEV) – indirect – external monitoring

Substance	Unit	New official limit 10/2016	Meas. value 2016	Meas. value 2017*	Official limit 12/2017	Meas. value 2018
Filterable substances	mg/l	250	47	63	–	34
Ammonium – N (NH <sub>4</sub> )	kg/d	240	215.4	232.7	380**	213
Fluoride <sup>1)</sup> (F)	mg/l	50	36.9	35	–	21
Fluoride <sup>1)</sup> (F)	kg/d	–	–	–	277**	114.7
Nitrate NO <sub>3</sub> -N (N)	kg/d	–	–	–	456**	213
Phosphorus (tot. P)	kg/d	60	29.3	37.1	114**	13.7
Phosphate (PO <sub>4</sub> -P)	kg/d	–	–	–	95**	13.89
Nitrogen (total N)	kg/d	250	275	346.5	–	86
Sulfate (SO <sub>4</sub> )	mg/l	200	152	148	–	157
AOX <sup>2)</sup>	mg/l	0.5	0.03	0.04	–	<0.05
Copper (Cu)	mg/l	0.1	0.05	0.06	–	0.07
Molybdenum (Mo)	mg/l	1.0	<0.05	<0.05	–	<0.05
Nickel (Ni)	mg/l	0.3	<0.05	<0.05	–	<0.05
Zinc (Zn)	mg/l	2.0	<0.10	<0.10	–	<0.10
Boron (B)	mg/l	1.0	<0.50	<0.50	–	<0.50
THCs <sup>3)</sup>	mg/l	3.0	<0.10	0.15	–	<0.10
POX <sup>4)</sup>	mg/l	0.05	<0.010	<0.01	–	<0.010
Arsenic	mg/l	0.10	<0.10	<0.10	–	<0.05

<sup>1)</sup> Due to the increased production output and the resulting requirement for higher waste water load limit levels, the appropriate increases to the limit levels were requested from the responsible authorities in the fiscal year 2009.

<sup>2)</sup> Adsorbable Organic Halides.

<sup>3)</sup> Hydrocarbons.

<sup>4)</sup> Purgeable organic halides.

\*Source: MAPAG (state-accredited testing and inspection body)

External Monitoring of Waste Water Treatment System, 1st half of 2018 (Report No 614/2018, dated 2/3/2018)

\*\* Changes according to official order 12/12/2017 1/NU-Wa-13/2016/Ka

Contaminated waste water from production is purified in our internal waste water treatment plant, which is equipped with state-of-the-art automatic online analysis functions and corresponding retention basins. As previously announced, an additional building with a new retention basin was commissioned as part of the waste water project in the fiscal year 2018.

Due to the expansion of the production facilities in recent years and the resulting need for higher waste water load limit levels, appropriate increases to the limit



levels for fluoride, phosphorus, phosphate, nitrogen and ammoniacal nitrogen were requested from the responsible authorities in the fiscal year 2009. For this reason, any load overruns for these specified parameters are continuously reported to the respective authorities; a comprehensive official water legislation order was issued by the authority in October 2016.

Sampling Container Austrian Semiconductor Waste Water Emission Regulation (AEV) – direct – external monitoring

Substance	Einheit	New official limit 10/2016	Meas.value 2016	Meas.value 2017*	Meas.value 2018
pH		6.5–8.5	7.7	6.7	7.7
Filterable substances	mg/l	50	<10	<10	<10
Ammonium – N (NH <sub>4</sub> )	mg/l	20	1.4	0.44	0.85
Fluoride <sup>1)</sup> (F)	mg/l	50	<10	<10	<10
Phosphorus (tot. P)	mg/l	2	0.32	0.55	0.32
TOC <sup>2)</sup>	mg/l	30	3.4	1.40	1.10
COD <sup>2)</sup>	mg/l	120	<15	<15	29
AOX <sup>3)</sup>	mg/l	0.5	<0.01	<0.02	<0.02
Antimony (Sb)	mg/l	0.1	<0.05	<0.06	<0.06
Arsenic (As)	mg/l	0.1	<0.05	<0.05	<0.05
Lead (Pb)	mg/l	0.1	<0.05	<0.05	<0.05
Cadmium (Cd)	mg/l	0.05	<0.002	<0.002	<0.002
Chromium (Cr)	mg/l	0.1	<0.02	<0.02	<0.02
Copper (Cu)	mg/l	0.2	0.06	0.18	0.05
Molybdenum (Mo)	mg/l	0.1	<0.05	<0.05	<0.05
Nickel (Ni)	mg/l	0.3	<0.05	<0.05	<0.05
Selenium (Se)	mg/l	0.1	<0.01	<0.10	<0.10
Zinc (Zn)	mg/l	1	0.55	<0.10	<0.10
Tin (Sn)	mg/l	1	<0.1	<0.10	<0.10
Boron (B)	mg/l	1	<0.5	<0.50	<0.50
Total HCs <sup>4)</sup>	mg/l	1	<0.1	0.16	0.10
POX <sup>5)</sup>	mg/l	0.1	<0.010	<0.010	<0.010
Anionic surfactants	mg/l	2	<0.02	<0.02	<0.02
BTXE <sup>6)</sup>	mg/l	0.1	<0.002	<0.002	0.003
Non-ionic surfactants	mg/l	1	<0.1	<0.10	<0.10

<sup>1)</sup> Total organically-bound carbon.

<sup>2)</sup> Chemical oxygen demand.

<sup>3)</sup> Adsorbable Organic Halides.

<sup>4)</sup> Hydrocarbons.

<sup>5)</sup> Purgeable organic halides.

<sup>6)</sup> Total volatile aromatic hydrocarbons.

\*Source: MAPAG (state-accredited testing and inspection body) and BDL ZT GmbH 2018 External Monitoring of

## Data on exhaust air

To provide the clean rooms with fresh air, large amounts of ambient air are taken in, cleaned of particulate matter and, after being recirculated several times (multiple circulation

routing), filtered and then discharged back into the environment. When necessary, we remove process-related contaminants from exhaust air by means of treatment systems.

In doing so, we remain well below the official regulatory limits. Environmentally-relevant substance classes are collected from the exhaust air and sorted into exhaust flows according to their chemical properties.

Wet scrubbers are used for acidic/alkaline exhaust air (process exhaust air), organic components are purified using after-combustion systems and perfluorinated compounds (PFCs) from the semiconductor production area are incinerated in a high-temperature process and cleaned using wet chemicals.

As can be seen from the tables above, the emission levels at the individual emission points of the site are well below the limit levels. The emission limit levels were therefore adjusted and lowered in cooperation with the applicable authorities.

The agreement with the authorities to lower limit levels was implemented in the spring of 2016. The newly adjusted and reduced limit levels have already been factored into the tables listed above.

Substance	Old limit mg/m <sup>3</sup>	New limit mg/m <sup>3</sup>
Hydrogen chloride (HCl)	30	10
Hydrogen fluoride (HF)	3	1–3 <sup>1)</sup>
Hydrogen fluoride (HF) Hall 16	1	1
Chlorine (Cl <sub>2</sub> )	3	2
Nitrogen oxides as nitrous oxide (NO <sub>2</sub> )	200	100–150 <sup>1)</sup>
Ammonia (NH <sub>3</sub> )	30	10–15 <sup>1)</sup>
Hydrogen bromide (HBr)	3	3
Arsine (AsH <sub>3</sub> )	0.5	0.5
Phosphine (PH <sub>3</sub> )	0.5	0.5
Organic carbon	30	20–30 <sup>1)</sup>
Carbon monoxide (CO)	100	100

<sup>1)</sup> Hall-specific, according to the state of the art.



## Air emissions from Halls 14, 15, 16 – Measured values from the fiscal years 2016, 2017 and 2018

Substance	Unit	Limit <sup>1)</sup>	Measured Values (average)								
			2016	Hall 14 2017	2018	2016	Hall 15 2017	2018	2016	Hall 16 2017	2018
Hydrogen chloride (HCl)	mg/m <sup>3</sup>	10	0.35	0.33	0.14	≤0.30	0.26	0.17	≤0.30	0.18	0.15
Hydrogen fluoride (HF)	mg/m <sup>3</sup>	1	n. z.	n. z.	n. z.	≤0.24	n. z.	n. z.	≤0.24	0.12	0.12
Hydrogen fluoride (HF) Hall 14	mg/m <sup>3</sup>	3	n. z.	0.35	0.23	n. z.	n. z.	n. z.	n. z.	n. z.	n. z.
Hydrogen fluoride (HF) Hall 15	mg/m <sup>3</sup>	2	≤0.24	n. z.	n. z.	n. z.	0.06	0.08	n. z.	n. z.	n. z.
Chlorine (Cl <sub>2</sub> )	mg/m <sup>3</sup>	2	≤0.50	0.36	0.50	0.52	0.23	0.64	0.52	0.18	0.38
Nitrogen oxides as nitrogen dioxide (NO <sub>2</sub> )	mg/m <sup>3</sup>	100	0.89	9.39	12.32	5.69	1.10	0.58	5.69	3.18	1.42
Ammonia (NH <sub>3</sub> )	mg/m <sup>3</sup>	10	0.71	0.43	0.38	≤0.69	0.97	0.85	≤0.69	0.62	0.43
Hydrogen bromide (HBr)	mg/m <sup>3</sup>	3	≤0.67	0.72	0.92	≤0.67	0.72	0.34	≤0.67	≤0.72	0.58
Arsine (AsH <sub>3</sub> )	mg/m <sup>3</sup>	0.5	≤0.017	0.07	≤0.07	≤0.017	0.07	≤0.07	≤0.017	≤0.07	≤0.07
Phosphine (PH <sub>3</sub> )	mg/m <sup>3</sup>	0.5	≤0.007	0.03	≤0.03	≤0.007	0.03	≤0.03	≤0.007	≤0.03	≤0.03
Organic carbon	mg/m <sup>3</sup>	20	≤1.61	1.52	0.66	n. z.	≤0.016	n. z.	n. z.	n. z.	n. z.
Organic carbon Hall 16	mg/m <sup>3</sup>	30	n. z.	n. z.	n. z.	6.06	n. z.	n. z.	6.06	1.95	0.67
Carbon monoxide (CO)	mg/m <sup>3</sup>	100	≤9.28	2.50	2.86	≤9.28	n. z.	n. z.	≤9.28	5.91	2.63

<sup>1)</sup> Limit levels in accordance with the official order "Reduction of emission limit levels – change authorized 1/GV-B-5196/1/T:151/Ch"; valid from May 2016.  
n/a = not applicable

## Air emissions from Halls 13, 16A and 17

Substance	Unit	Limit	2016	Hall 13 2017	2018	2016	Hall 16A 2017	2018	2016	Hall 17 2017	2018
			2016	2017	2018	2016	2017	2018	2016	2017	2018
Hydrogen chloride (HCl)	mg/m <sup>3</sup>	10	≤0.24	n. z.	≤0.08	≤0.53	n. z.	n. z.	≤0.75	0.08	≤0.08
Hydrogen fluoride (HF)	mg/m <sup>3</sup>	1	n. z.	n. z.	n. z.	≤0.20	0.048	≤0.05	≤0.50	0.04	≤0.05
Nitrogen oxides as nitrogen dioxide (NO <sub>2</sub> )	mg/m <sup>3</sup>	100	≤0.66	≤0.21	n. z.	≤0.66	2.41	4.45	≤0.66	0.22	≤0.21
Ammonia (NH <sub>3</sub> )	mg/m <sup>3</sup>	10	≤0.60	1	n. z.	≤1.11	1.95	0.87	n. z.	n. z.	n. z.
Arsine (AsH <sub>3</sub> )	mg/m <sup>3</sup>	0.5	n. z.	n. z.	n. z.	n. z.	n. z.	n. z.	0.08	0.07	≤0.07
Organic carbon	mg/m <sup>3</sup>	20	n. z.	0.16	n. z.	≤1.617	0.9	1.23	n. z.	n. z.	n. z.

n. z. = not applicable

### Low Emissions

Based on the provisions of the EMAS-III regulation, this Environmental Statement also includes reports on NO<sub>x</sub> (nitrogen oxide), SO<sub>2</sub> (sulfur dioxide) and dust emissions.

The site's NO<sub>x</sub> emissions from production in the fiscal year 2018 are currently estimated at approximately 34,700 kg. The NO<sub>x</sub> fraction from fossil fuels after the switch to district heating (approximately 4 kg NO<sub>x</sub> from 2,700 m<sup>3</sup> of fuel gas for the test operation of the boiler plants at the site), and the site's SO<sub>2</sub> emissions, are negligible.

Indirect emissions from district heating production are not recorded. Vehicle emissions are only recorded on a Group-wide basis, and not separately for each site (see "Energy Consumption").

The NO<sub>x</sub> emissions from production areas were evaluated by estimating the loads of the exhaust air volume flows from their NO<sub>x</sub> levels (values below the measurement detection limit of 0.21 mg/Nm<sup>3</sup> were replaced by the detection limit levels themselves in the calculation – worst-case calculation).

### Greenhouse gas emissions including those from PFC emissions

A variety of greenhouse gases are used in the semiconductor industry, for example in the etching processes used to structure wafers and for cleaning production facilities. These include the so-called perfluorinated compounds (PFCs), such as perfluorinated and polyfluorinated hydrocarbon compounds, sulfur hexafluoride (SF<sub>6</sub>) and

nitrogen trifluoride (NF<sub>3</sub>). These greenhouse gases cannot be replaced by other groups of substances.

We minimize the use of these gases, firstly by means of ongoing process optimization, i.e. more efficient production methods and intelligent air exhaust purification concepts, and secondly through the use of alternative PFC group gases with higher conversion rates and lower greenhouse potential. However, the increasing complexity of our products is leading to a slightly increased need for greenhouse gases. As described in the previous Environmental Statement, SF<sub>6</sub> is an essential process gas in the semiconductor industry. Furthermore, because of its dielectric properties, it is used all over the world as an insulation gas in high-voltage technologies. Current state-of-the-art technologies offer no alternative to the use of SF<sub>6</sub> as a process gas for plasma etching in semiconductor component production.

In recent years, targeted reduction programs have enabled a reduction of the use of SF<sub>6</sub> as an insulation gas when measuring and testing completed wafers in the wafer testing facility at the Villach site to the minimum necessary. The remaining base load results from the special requirements of high-voltage measurement techniques as well as its use as a dielectric in implantation systems.

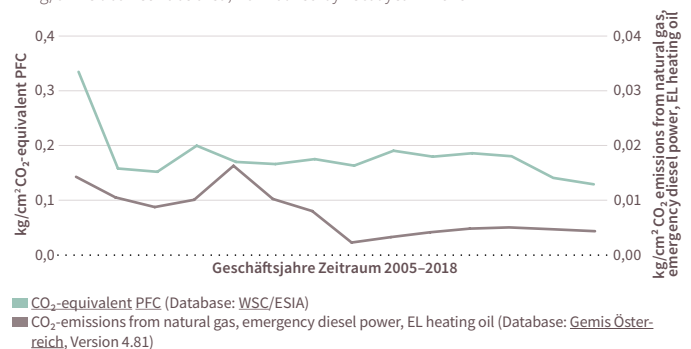
Now that the Villach site has implemented sustainable measures for the reduction of greenhouse gas emissions in line with the [Kyoto Protocol](#), especially in the area of exhaust air purification, we have been able to, for the most part, optimize the ratio of specific CO<sub>2</sub> emissions to the amount of silicon surface area produced.

The use of perfluorinated hydrocarbons at the Villach site is rigorously monitored and reported under the Austrian Industrial Gas Regulation (BGBl. II No. 447/2002) and serves as the basis for the reporting required by this regulation.

In accordance with the EMAS-III Regulation, the emissions of the CO<sub>2</sub>, CH<sub>4</sub> (methane) and N<sub>2</sub>O (nitrous oxide) gases used are also considered in terms of CO<sub>2</sub> equivalents. As the greenhouse potential of the process gases listed above is relatively low in terms of CO<sub>2</sub> equivalents, and since they accounted for only approximately two percent of overall emissions in the fiscal year 2018, this fraction was, in accordance with 2004/156/EC guidelines, not factored into the ten-year balance shown above. The use of hydrofluorocarbon (HFC) greenhouse gases as refrigerants is also negligible, contributing around 1.9 percent of the CO<sub>2</sub> emissions listed. The significant decrease in direct CO<sub>2</sub> emissions from heating and waste gas purification (energy source: natural gas) in recent years is the result of the switchover from onsite heating to district heating in April 2011. This means that the only remaining use for natural gas at the site is for the operation of special waste gas purification systems. The energy provider KELAG still uses small amounts for its boilers, but only for testing system operation.

#### Greenhouse gas emissions

in kg/cm<sup>2</sup> silicon surface area, normalized by fiscal year – 2018



#### Dust emissions

The regulatory specifications on dust emissions (a maximum of 5 mg/Nm<sup>3</sup>) are audited once a year based on samples taken at representative measurement points by an assessor as part of the corresponding control concept. The estimated dust emissions for the site for the last fiscal



year, again obtained from a loading analysis of the exhaust air flows, amount to approximately 6 tons (4.7 tons in the previous year).

### Noise

Infineon Austria maintains an up-to-date noise emissions log. Most noise-generating equipment (compressors, cooling units, heating equipment and vacuum pumps) is located in enclosed supply rooms. Only the heat exchangers are located out-of-doors. Noise levels at the site boundaries are below the officially stipulated level. However, due to a complaint arising from construction work and related activities at the site, there was an official enquiry toward the end of the 2018 fiscal year. The problem was quickly resolved and remedied.

## 4.3 Indirect Environmental Impacts

Environmental impacts are not caused solely by the company's own activities at the site; environmental damage can also be caused by the use and disposal of products and services. However, these effects are not, or only to a certain extent, under the control of the company. "Easier, safer, greener": this is the aspiration driving the development and manufacture of innovative products at Infineon. This is also clearly evident both within the corporate culture itself and in all our dealings with stakeholders. For Infineon Austria, therefore, sustainability means maintaining an even balance between successful economic activities and caring for people and the environment.

### Know-How from Austria Supports Energy and Climate Goals

Chips made by Infineon Austria play an essential role wherever energy is generated, transmitted and used efficiently. The company's activities in Villach focus on

two main areas: increasing energy efficiency and system miniaturization by means of innovative power semiconductors. The company aims to provide chips and system solutions that will reduce consumption throughout the entire energy cycle. The Infineon global competence center for power electronics was established in Villach in 1997, thereby making a significant contribution to the top ranking of the Infineon Group in the semiconductor market, which it has maintained since 2003. These so-called energy-saving chips play a key role in electronic devices. They convert the mains voltage drawn from the socket to the specifications of the respective device. The most important requirement here is to reduce the amount of energy lost, which is usually in the form of waste heat. Infineon develops and manufactures these energy-saving products in Villach and markets them all over the world. To maintain this success, the team in Villach are already working on the next generation of chips, made from new materials such as silicon carbide (SiC) and gallium nitride (GaN). These convert electricity even more efficiently, enabling smaller and lighter components. Current applications include charging stations for electric cars with significantly shorter charging times and mobile infrastructure for 5G networks.

Some examples using Austrian know-how include:

### Power Generation

Renewable energy, such as solar power and wind energy, is becoming increasingly important. In this context, power electronics guarantee energy efficiency from the generator to the consumer. This makes them a key factor in saving energy by means of demand-driven energy consumption and the use of regenerative energy sources. Infineon Austria has been developing and manufacturing microchips for solar technology for over 20 years and is the global market leader in this sector. Power semiconductors based on the new semiconductor material silicon carbide, which is increasingly being used in photovoltaics, will strengthen this advantage.



## **Electromobility**

With its products and developments, Infineon Austria actively contributes to the advancement of hybrid and electric vehicles. The world's five best-selling electric vehicles of 2018 use power semiconductor solutions developed by Infineon. In some parts of the electromobility sector, such as control electronics components for electric vehicle drive mechanisms, Austria is the driving force behind global business. In the electric drive, charging, battery management and other electric vehicle systems sectors, Infineon provides viable solutions for start-stop systems suitable for mild-hybrid and plug-in hybrid vehicles as well as pure-electric vehicles. This reduces costs for drive and electronics and increases the overall energy efficiency of the system. Innovations such as active battery-balancing are even now increasing the capacity, range and service life of batteries by over ten percent. In cooperation with top companies in the fields of industry, research and energy, Infineon Austria is also actively involved in the nationwide Austrian Mobile Power (AMP) platform.

In addition to the e-vehicles themselves, widely-available charging facilities are another important factor that must be taken into account in promoting the advance of electromobility as a whole. The new semiconductor material silicon carbide (SiC) plays an important role here: it converts electricity far more efficiently and enables further miniaturization of devices. In the SiC field, Infineon Villach is the competence center for the Infineon Group and makes a significant contribution. For example, Infineon energy-saving chips are being used in a project conducted by a group of major German automobile manufacturers who are planning the joint, Europe-wide construction of rapid e-car charging stations. These stations are substantially smaller and lighter than conventional charging points and shorten the charging time for 300 km from three hours to 20 minutes. A total of 1,000 stations are to be built by 2020.

## **“Smart Home” Households**

Infineon uses inverter technology to demonstrate how “power guzzlers” in our households, such as refrigerators, can learn how to save intelligently. Infineon's energy-saving chips have already been installed in many new refrigerators, where they are lowering energy consumption by over 40 percent.

## **Wireless Charging**

Infineon enables this charging technology with innovative chip solutions that transfer power from the charging station to the device as quickly and efficiently as possible. When it comes to smart charging, the focus is clearly on further increasing energy efficiency, ease of use and charging speed. The majority of this technology is developed and produced in Villach. Damaged cables are a thing of the past now that cables are no longer needed, and devices can be charged “on-the-go” in public places and in the car. Furthermore, several devices can now be charged at the same time by a single charging station. These include smartphones, tablets and notebooks as well as wearables. Low-voltage devices such as power tools, domestic appliances, toys and medical equipment are now also benefiting from this trend. Infineon offers product solutions for charging stations and adapters which ensure optimum wireless power transfer to various receivers.

## **Consumer Electronics**

According to a study by Greenpeace, electricity consumption for Internet activities is expected to triple by 2020. This implies there is clear potential for the use of energy-saving chips to guarantee a low-loss and reliable electricity supply. In Villach, Infineon is developing the next generation of energy-saving chips, which will be able to cut future energy losses by half. In addition to a number of applications such as power supply units and chargers for notebooks, smartphones and tablets, energy-efficient server operations also play a significant role in this context.

Increasing usage of these devices leads to a rise in server data rates, requiring larger server capacities and thus increasing the demand for chips. At present, around 50 percent of the world's servers use Infineon power semiconductors to control current conversion.

### A Passion for Sustainability

In Austria, Infineon sets an example as an attractive employer that accepts its responsibilities toward society and the environment and promotes environmental consciousness within the region. We are in contact with the stakeholders relevant to our environmental management system (e.g. customers, employees, suppliers, cooperation partners, funding agencies) and understand their requirements, expectations and demands. Infineon Austria has defined guidelines for sustainable growth based on the Infineon Austria “Smart Growth 2025” strategy and the Group's CSR Policy.

Our CSR guidelines at a glance:

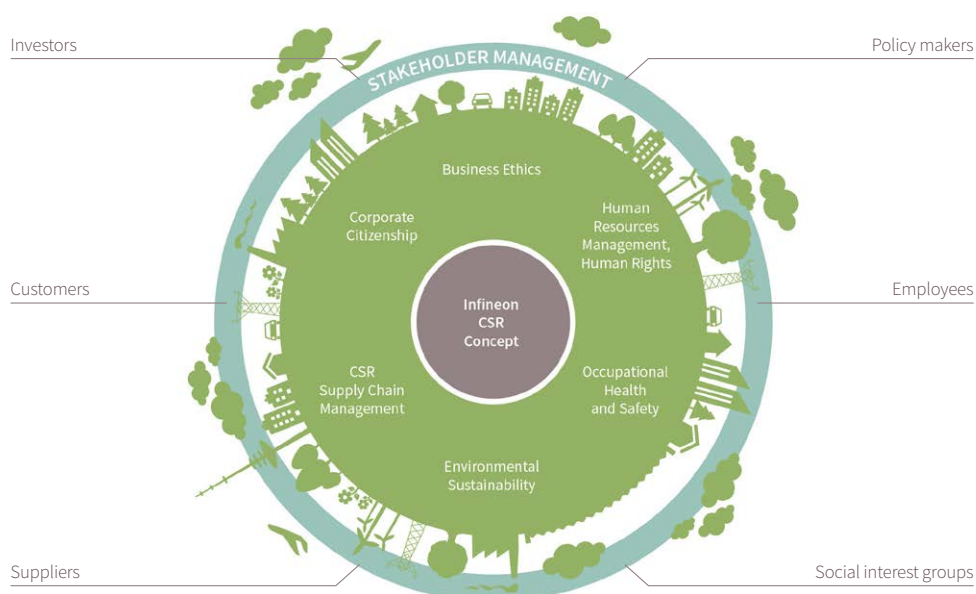
- › Innovation is in our DNA
- › A strong employer - a strong region
- › For a green tomorrow

### Taking the Entire Life Cycle into

Account In the past few years, Infineon has increased its focus on sustainability and Corporate Social Responsibility (CSR). This involves highlighting the entire (“cradle to grave”) life cycle of our products.

The long-term partnership between Infineon and its suppliers plays a key role here and is a core part of our corporate philosophy. Compliance with our standards for environmental protection, workplace safety and CSR is a highly relevant factor when selecting future suppliers and assessing existing suppliers and, thereby, in all decisions regarding future supplier development. Infineon Austria thus uses its own internal processes to ensure that its procurement of facilities and services is environmentally friendly. This system has also been extended to include

### Our stakeholders



evaluations of the environmental performance of our suppliers. With considerable success: around 90 percent of main suppliers to the Villach site have a certified environmental management system. Based on our Groupwide guidelines, such as the “Principles of Purchasing” which, in turn, are based on our global “Business Conduct Guidelines” and CSR policy, all of our service providers and suppliers are obliged to meet our standards of workplace safety, health and environmental protection and working and social conditions. The specification of environmental and workplace safety aspects in our framework agreements adds a further guarantee of successful cooperation. Additional requirements of our suppliers are formulated in our “Technical Terms and Conditions of Delivery”.

### Environmentally-Friendly Transport Packaging

Three years ago, the cardboard packaging previously used at the Villach site to transport sawn wafers (6- and 8-inch) was replaced by reusable plastic packaging, especially for shipments from the site to Warstein (Germany) and Cegléd (Hungary). In the fiscal year 2018, this saved up to 70,000 cardboard boxes and up to 140,000 pieces of rubber foam.



Source: Annual Report (Sustainability Supplement) 2018, p. 32

The introduction of reusable packaging has resulted in savings of around 340,000 euros. The new packaging was developed by a cross-site team of employees working in cooperation with suppliers. In the fiscal year 2018, the transport of 12-inch wafers in reusable packaging was qualified, which meant the savings could be increased.

### Inspire with Sustainability

A wide range of activities demonstrate our commitment to people and the environment:

#### › Expansion of the “Green Way” mobility scheme

Since 2016, Infineon Austria has set itself the goal of being “greener and smarter” on the way to work with its “Green Way” corporate mobility management policy. In addition to investments in expanding the e-charging infrastructure and the use of fully-electric cars for business trips, 800 new bicycle parking spaces and a multi-purpose bike service station have been created. Employees who carpool benefit from reserved parking spaces. The “TwoGo” carpool app allows employees to offer their trips or find the right ride. The carpool app has been shared throughout Carinthia and taken up by other companies and institutions (e.g. the State of Carinthia, the City of Villach). Connecting the site to the public transport network is also a top priority for the company. Since September 2017, the Villach site has been accessible via buses running from the city center and railway station every 15 minutes. To make this option even more attractive, a “job ticket” has been available since March 2019, giving employees free journeys to and from work. Under the job ticket scheme, Infineon Austria covers all public transport costs from an employee’s home to their place of work. The EU Horizon 2020 project “STEVE” hopes to offer e-mobility solutions as alternatives to private vehicles: together with regional partners and the City of Villach, Infineon Austria is planning to implement an electric bike sharing system in 2019.

Green Way involves regular consultations with policy-makers in the region. The further improvement of public



transport options and the cycle network will be covered in constructive discussions. As the growing Infineon site in Villach interacts with the region, Green Way contributes to mobility planning by the city, the state and the Austrian Ministry of Transport. Through discussions and coordination with joint projects, our company is working closely with other companies and official bodies to improve mobility offers and, in a broader sense, to promote the attractiveness of the region. For example, cross-platform access for citizens, commuters and tourists is in the planning stages. This platform will integrate new mobility solutions into the existing Villach bonus scheme administered by the Villach city marketing department and, at the same time, provide a link to other services offered by the city and its tourism partners, including public transport.

#### › VCÖ Mobility Prize

In 2018, Infineon Austria won the Carinthia and Austria VCÖ Mobility Prize in the “Working Environment and Education” category. In cooperation with the Austrian Federal Ministry of Transport, Innovation and Technology (bmvit), the Austrian Federal Ministry for Sustainability and Tourism (BMNT) and ÖBB (Austrian Federal Railways), each year the VCÖ organization awards prizes to sustainable and innovative projects, ideas and concepts related to mobility. The VCÖ Mobility Prize is Austria's largest sustainable mobility competition.

#### › E-mobility rally

In September 2018, around 80 teams stopped off at the Infineon site in Villach with their electrically-powered cars, motorcycles and bicycles as part of the WAVE (World Advanced Vehicle Expedition) Trophy electromobility rally. The WAVE Trophy rally visited various regions, municipalities and companies working on environmentally-friendly mobility solutions on its way through Germany and Austria. A stop at Infineon Austria was a given, since the company's semiconductor solutions make it a major driver of innovation in hybrid and electric vehicles.

#### › Award for social and ecological engagement

Infineon Austria was also honored in 2018 by AfB gemeinnützige GmbH for its commitment to social and ecological issues. AfB is a non-profit company which helps people with disabilities to integrate into working life. Half of the more than 200 people employed by the company in Germany, Austria, France and Switzerland have disabilities. The company specializes in refurbishing IT hardware that has been taken out of service so that it can be used in other applications. The quality and quantity of the devices donated by Infineon in 2018 has helped to fund a job for one person with a disability.

#### › “Green” printing

We take care to use environmentally-friendly printing methods in the majority of our print jobs, including this Environmental Statement. Therefore, this Environmental Statement is printed on environmentally-friendly paper. The individual print components are PEFC-certified, meet the criteria of the Austrian Eco-Label, and are the result of climate-neutral production.

#### › Reporting on environment and sustainability

In addition to the Environmental Statement, a quarterly summary of the major environmental indicators is produced at a site level, which forms the data basis for environmental and sustainability reporting. The data from this summary

## 4.4 Environmental Aspects and Key Themes

When evaluating the most important direct and indirect environmental aspects of our operational facilities, we formulate goals for the most significant environmental impacts and implement measures to prevent or reduce these. Direct, controllable aspects are evaluated by means



of a detailed analysis. Indirect environmental aspects are assessed qualitatively, since the Infineon Villach site cannot control these indirect aspects.

Detailed analyses and evaluations reveal that, along with energy, chemicals and gases are important environmental aspects (i.e. primary energy and raw materials).

Due to an external complaint, noise is also included in the current reporting period.

The main criteria used for the general assessment of environmental aspects include environmental relevance, probability of occurrence, volume trends and frequency.

These factors are then weighted against each other.

Summary






All major challenges have been identified, suitably evaluated and, where necessary, successfully managed with countermeasures.

Infineon Austria strives to steadily improve and, through continuous optimization, to reduce the burden it places on the environment.

## 4.5 Direct Environmental Impacts and Safety Effects During Normal Operations and in Damage Events

At the Villach site, in addition to evaluating environmental impacts during normal operations, we also evaluate the effects of possible non-standard operations. Our concept and evaluation are continuously refined based on the Seveso III classification of the site and the corresponding safety analyses. Our new information folder, provided for the site's neighbors, presents an in-depth analysis of the effects of potential operational damage events and a detailed description of the site's safety logistics.

## Plausibility test for Infineon Austria environmental aspects

Environmental Aspects and Measures		Evaluation of environmental relevance		
		2016	2017	2018
	<b>Umwelt und/oder Klima</b>			
<b>Emissions into the atmosphere</b>				
<ul style="list-style-type: none"><li>› Based on the development of the site, associated production increase and the resulting technology shifts, continuous expansions and adjustments are necessary</li><li>› Ongoing optimization of operational exhaust air purification systems under consideration of aspects arising from the Kyoto Protocol</li><li>› Extended service and control concept for the solvent purification system has been implemented, and received a positive audit result</li><li>› Automation system for NOx cleaner</li><li>› Expansion of exhaust air purification facilities and reduction of limit levels</li><li>› Validation of exhaust air measurement technology</li><li>› Creation of an exhaust air register</li><li>› Completion of solvent combustion system</li><li>› Scheduled evaluation of a measuring device for organic exhaust air (DMF and NMP) due to increased susceptibility of older systems to failure</li></ul>		P/M	B/C	B/C
<b>Generation of waste water</b>				
<ul style="list-style-type: none"><li>› Adaptation and expansion of waste water treatment system to meet operational requirements and make use of latest technology</li><li>› Based on the site expansion and associated production increase, an increase in quantity thresholds is necessary; appropriate procedures were initiated with the authorities and concluded with the official order of 10/2016</li><li>› Load monitoring of hazardous constituents; integrated into water legislation procedures</li><li>› Revalidation of the environmental laboratory pursuant to Section 7 of the Waste Water Emissions Regulation</li><li>› New official water legislation order 10/2016</li><li>› Construction of a new waste water facility (equalizing reservoir)</li></ul>		P/M	B/C	B/C
<b>Non-hazardous waste</b>				
<ul style="list-style-type: none"><li>› Main components of non-hazardous waste are sent to recycling</li></ul>		M	B/C	B/C
<b>Hazardous waste</b>				
<ul style="list-style-type: none"><li>› Main components are reclaimed or recycled and reused</li><li>› Classification of the calcium fluoride slurry waste fraction on the basis of actual measured values</li></ul>		M	B/C	B/C
<b>Generation of dust</b>				
<ul style="list-style-type: none"><li>› Regular dust measurements by an external institution, all official requirements met, extended maintenance plan realized</li></ul>		M	B/C	B/C
	<b>Mental and physical effects</b>			
<b>Noise emissions</b>				
<ul style="list-style-type: none"><li>› No action required during normal operations</li><li>› Safeguarding against construction site emissions with preventive measurements as necessary</li><li>› One complaint due to Hall 13 plant defect</li></ul>		M	C	C
	<b>Resource efficiency</b>			
<b>Water consumption/DI water</b>				
<ul style="list-style-type: none"><li>› Constant analyses of consumption (waste water reduction) in the production process</li><li>› Increasing consumption is driven and controlled by technological and unit quantity factors</li><li>› Water demand for the current plant expansion is being evaluated</li></ul>		P/M	B/C	B/C
<b>Operational resources, consumables</b>				
<ul style="list-style-type: none"><li>› Continuous analysis of resources, processes and consumption</li><li>› Consumption of operational resources and consumables is driven and controlled by technological and unit quantity factors</li></ul>		M	B/C	B/C
<b>Chemicals, gases</b>				
<ul style="list-style-type: none"><li>› Continuous analysis of resources, processes and consumption, as well as inputs and outputs</li><li>› Consumption of chemicals and gases is driven and controlled by technological and unit quantity factors</li><li>› Large volumes of solvents are already recycled</li></ul>		M	B	B
<b>Media consumption</b>				
<ul style="list-style-type: none"><li>› Continuous optimization of hazardous goods transport by extracting oxygen &amp; nitrogen from onsite air fractionation system</li><li>› Dilution of chemicals onsite, central supply systems</li></ul>		P/M	B/C	B/C
<b>Energy requirements, waste heat</b>				
<ul style="list-style-type: none"><li>› More than 25% of the total energy used undergoes heat reclamation and is reused</li><li>› Comprehensive energy reduction program ("Energy Efficiency Project")</li><li>› Heating for the site supplied by district heating from sustainable sources (including biomass)</li></ul>		P/M	B/C	B/C
<b>Soil/ground water</b>				
<ul style="list-style-type: none"><li>› Soil monitored by means of regular ground water analyses</li><li>› A soil assessment is undertaken during every phase of construction</li></ul>		M	C	C
	<b>Economic growth</b>			
<b>New production sites</b>				
<ul style="list-style-type: none"><li>› Based on the site expansion, official procedures completed in a timely manner to ensure legal compliance with the extensive obligations to provide evidence</li></ul>		P	B/C	B/C
	<b>Safeguarding technical progress</b>			
<b>Process/Innovations</b>				
<ul style="list-style-type: none"><li>› Consistent and systematic evaluation and safeguarding of new technologies in respect of safety and the environment, including in the areas of ion implantation, electrochemical plating, silicon carbide &amp; gallium nitride and E-Mobility</li><li>› Expansion of the production site with a new 300 mm semiconductor fab</li></ul>		P	B/C	B/C

Environmental Aspects and Measures		Evaluation of environmental relevance		
		2016	2017	2018
	People and the environment			
<b>Odor and smoke emissions</b> <ul style="list-style-type: none"> <li>› No complaints from site neighbors</li> <li>› Problems analyzed as necessary</li> <li>› Raising awareness and training response teams and plant supervisors in the area of odor-related pollution in the production area</li> <li>› New alkaline wet scrubber 44 to separate acidic and alkaline exhaust air</li> </ul>	M	C	C	C
<b>Demand for other hazardous materials</b> <ul style="list-style-type: none"> <li>› Despite the increased complexity of production technology, the specific consumption of hazardous materials and organic solvents has settled, and the recycling rate of spent solvents has remained stable</li> <li>› DMF is now routinely recycled and PGMA consumption has been further reduced as a result of optimization measures.</li> <li>› Solvent consumption significantly reduced by various process optimization measures</li> </ul>	P/M	B/C	B/C	B/C
<b>Environmental impacts in non-standard operations</b> <ul style="list-style-type: none"> <li>› Maintenance of a cross-site safety function plan and business continuity concept</li> <li>› Explosion zone concept (VEXAT)</li> <li>› Extensive safety analyses of radiation-relevant facilities</li> <li>› In-depth analyses of industrial accident regulations (creation of a safety report)</li> <li>› Operation of a validated environmental protection laboratory</li> <li>› New fire station</li> <li>› Review of internal DRO</li> <li>› “Evaluation of environmental aspects in non-standard operations” performed</li> <li>› Seveso inspections for 2017/18 completed with no criticisms</li> </ul>	P/M	B/C	B/C	B/C
<b>Legal compliance</b> <ul style="list-style-type: none"> <li>› Maintenance of a legal database</li> <li>› Continual consolidation</li> <li>› Expanded safety concepts (VEXAT, ADR, radiation protection, Industrial Accident Regulation and evaluation under the industrial emissions guidelines)</li> <li>› Safety report prepared in compliance with the <u>Seveso III Directive</u></li> </ul>	P/M	B/C	B/C	B/C
<b>Sustainable development</b> <ul style="list-style-type: none"> <li>› Separation and recycling schemes in various areas</li> <li>› Training and development schemes in workplace safety, health protection, energy and environmental protection</li> <li>› Project theses, graduate theses assigned as required</li> <li>› Promotion of the YIP improvement suggestions scheme</li> <li>› Innovations in e-mobility and solar technology: Operation of a company electric filling station and deployment of an electric car for business trips</li> <li>› Extensive reporting on the environment and sustainability</li> <li>› Review of data via the Group Sustainability Report</li> <li>› Inclusion of further sustainability aspects in the Environmental Statement (e.g. mobility)</li> <li>› 2018 EMAS prize for the 2017 Environmental Statement</li> </ul>	M	B/C	B/C	B/C
<b>Health activities</b> <ul style="list-style-type: none"> <li>› Ongoing corporate health promotion taking a holistic approach</li> <li>› Activities run as needed and coordinated with the internal specifications; key areas: <ul style="list-style-type: none"> <li>– Preventative care</li> <li>– Exercise</li> <li>– Mental health (burnout prevention)</li> </ul> </li> <li>– New: “Ergonomics at the Office Workstation” training video</li> <li>› <b>Best aging</b></li> <li>› Mediation and coaching</li> <li>› Establishment of a Health Team with the aim of continuously developing company health promotion strategies</li> <li>› Ongoing employee health promotion programs</li> </ul>	P/M	B/C	B/C	B/C
<b>Transport/mobility</b> <ul style="list-style-type: none"> <li>› Extensive focus on car parking spaces to deal with incoming and outgoing employee traffic. A significant reduction in the “cars to employees” ratio was observed</li> <li>› Intensified measures such as <ul style="list-style-type: none"> <li>– Designated carpool parking spaces at every entrance</li> <li>– Carpooling center and carpool app</li> <li>– New bus links to main railway station every 15 minutes, incl. new bus stops</li> <li>– Group purchase of electric bikes</li> <li>– Awareness raising campaign for employees</li> <li>– Development of cycle infrastructure</li> <li>– Introduction of “jobticket” (Infineon covers all fares for public transport to and from work)</li> </ul> </li> <li>› Green Way project a “complete success”</li> </ul>	M	B/C	B/C	B/C

P Project M Ongoing Measure

#### Assessment of environmental relevance

- A** Reduction measures are necessary due to high negative impacts on the environment from the plant or activity or its group
- B** No immediate action necessary due to tolerable negative impacts on the environment, reduction measures have already been carried out or match current state of the art
- B/C** No immediate action necessary, measures are already being implemented (continuous improvement programs, dynamic processes). No need for action due
- C** to measures introduced, or environmental impact cannot be controlled

Aspects in categories A and B are considered significant environmental aspects.



## LEDs

Infineon Austria relies on LED lighting within the company itself: 64 percent of all production and office buildings at the Villach site are already equipped with LEDs (approximately 19,000 fixtures). 87 percent of the production halls, which operate 24 hours a day, 7 days a week, 365 days a year, are already equipped with LEDs. The installation of LEDs has saved ~1.7 GWh since the start of the changeover. Our goal is to convert the entire Villach site to LED lighting by 2020.



## Server

Did you know that around 50 percent of the world's servers use Infineon power semiconductors from Villach to control current conversion?

[See page 33](#)



## Electric cars

Did you know that eight out of the ten top-selling electric cars on the market today already use Infineon products from Austria?

[See page 32](#)





# Environmental Program and Environmental Goals



## Wireless Charging

Did you know that innovative chip solutions from Infineon enable wireless charging and transfer power from the charging station to the device as quickly and efficiently as possible?

[See page 33](#)



## Refrigerators

Did you know that Infineon energy-saving chips are cutting energy consumption in many new refrigerators by over 40 percent?

[See page 33](#)









## Environmental Program and Environmental Goals

# 5. Overview

At the Villach site, the workplace safety, health protection, environmental protection and energy programs are based on the objectives formulated in the Infineon Group environmental protection, energy management, workplace safety and health protection policies. The catalog of goals and actions is reviewed, adjusted and defined once a year based on the corresponding input and output analyses and the aspects of the site that have been identified as essential. The measures, deadlines and responsible parties associated with the individual projects are determined as part of the same process.

In recent years, Infineon Austria has concentrated on highlighting its major strategic projects in the areas of waste water, exhaust air and recycling in its Environmental Statement. When new equipment is needed for innovation, capacity expansion or replacement investments, we pay close attention to the state of the art. Below, we showcase examples of environmentally-relevant project activities that have provided, or will provide, a significant contribution to improving the site's environmental performance.

For the Infineon Group, less is more



-47%

less electricity



-29%

less water



-56%

less waste

per cm<sup>2</sup> wafer produced, as compared to the global average  
of the WSC (World Semiconductor Council)

These calculations are based on the number of square centimeters of processed wafer area in front-end production and consumption levels defined by the WSC.





## 5.1 Measures Implemented in 2018

Based on the analysis of environmental aspects and the measures derived from this, the following projects were planned and implemented in the fiscal year 2018

### IMPRES Program 2017 – Goals for 2018

Area	Target	Measure	Status	End date
<b>Energy efficiency*</b>	Energy savings through switching to LED lighting. The aim is to have installed around 76% LED lighting in the clean rooms by the end of the fiscal year 2017/2018	Roll-out to selected areas and implementation plan	Currently around 87% of clean rooms have been converted	9/2018 ✓
<b>Consumption of resources</b>	Maintain the 65% recycling rate, corresponding reduction of hazardous waste in the fiscal year 2017	Recycling of spent solvents	External recycling of DMF, NMP and cyclopentanone (total of 521 t of 35% of total volume) with an average recycling rate of 74% at the recycler	12/2018 ongoing
<b>Exhaust air</b>	No observable immissions	Separation of acidic and alkaline exhaust air	Installation of a third scrubber to clean up alkaline exhaust air	12/2018 ✓
<b>Waste management</b>	Update of Villach site waste management concept	Waste legislation update, re-evaluation and amendment of site-related extensions	2016 version as basis for revision; waste legislation approval 11/2017 with positive results; final editing completed; final documentation as basis for GP 300 and other projects	06/2018 10/2018 ✓
<b>Mobility</b>	“Green Way” project	Action program to promote occupational mobility logistics/e-mobility	Ongoing. Current priorities include the promotion of cycling and public transport; Jobticket: After only 1.5 months, 224 Jobtickets have been requested throughout Austria, 132 of them in Villach; integration of Green Way into the City of Villach's planning of traffic routes and mobility schemes around the Villach site	12/2018 ✓
<b>Employees / external contractors, service provide</b>	Mandatory safety training via terminals	Automated safety training for all visitors and business partners via terminals at reception	Two terminals already installed in reception area of Building 01, planned roll-out with new main gate	04/2018 ✓
<b>Skills, training and awareness</b>	Improved documentation and completion rate for onsite training	New approach to general safety training supported by an e-learning tool	New e-learning introduced in 8/2018 with minor delay due to need for increased coordination	08/2018 ✓
<b>Chemical safety</b>	Industrial Accident Regulation	Implementation of requirements from Seveso inspections; Collaboration on the external emergency plan	In cooperation with public bodies (emergency services, etc.); Status: Draft external emergency plan concept completed – awaiting approval from external authorities	06/2018 ✓
	Industrial Accident Regulation	Preparations for the 2018 Seveso inspections	Two new questionnaires for 2018 Seveso Inspection successfully completed with no major criticisms	11/2018 ✓
<b>Immission protection</b>	Assessment of the site's exhaust air immissions	Compiling a professional exhaust air immissions report	After various simulation experiments and physical measurements with two measuring stations, low immission levels found	06/2018 09/2018 ✓
<b>Workplace safety</b>	Standardized workstation evaluations	IT-supported revision of workstation evaluations	Roll-out of workplace evaluations via e-tools completed at the Villach site	10/2018 ✓
<b>Management system</b>	Introduction of modifications as per ISO14001:2015	Integration into the existing integrated management system IMPRES, update of documentation	Document update completed (environmental aspects, process descriptions etc.)	07/2018 ✓
<b>Fire safety and disaster response</b>	Revision of Villach fire protection regulations	Controlled document version 4.0 onwards	Revised and released	12/2017 ✓
<b>Noise</b>	Evaluation of noise situation at the site	Update of professional noise report	Updated noise register created	09/2018 ✓


















✓ Project was successfully implemented

\* The projects shown in the energy efficiency section are reproduced in a “BaMa” master plan dealing with simulations and optimization projects for energy-optimized production.

## 5.2 Measures Planned for the Fiscal Year 2019

Based on the analysis of environmental aspects and the measures derived from this, the following projects are planned for the fiscal year 2019/20:

### IMPRES Program 2018 – Goals for the fiscal year 2019

Area	Target	Measure	Status	End date
Energy efficiency*	Cost and energy savings through onsite use of LEDs	LED project already into its 3rd fiscal year. Currently: evaluation and detailed planning for areas that do not yet have LED lighting installed	Currently implemented in 87% of clean rooms	12/2019 
	Onsite production of green hydrogen	Feasibility study and planning of onsite hydrogen production by means of electrolysis system	Concept development with project team 12/2019. Technical implementation of project planned for 12/2021	12/2019 – 2021 
	Energy savings through optimized operation of air conditioning in clean rooms	Commissioning of a feasibility study “Optimization of air conditioning units in existing buildings”	Plan in preparation / description in progress	Status 09/2019 
	Energy optimization for operations	Evaluation to identify optimal hardware components for cooling towers (configurations and designs)	Preparation of evaluation plan	09/2019 
Consumption of resources	Reductions in input media (solvents) > 300 t	Continuation of solvent recycling	Ongoing optimized measure	10/2019 
Exhaust air	Increase level of safety by replacing combustible pipes / non-combustible piping sets on eight implanters	Reconfiguration of exhaust air cleaning for implantation H14, new piping system (stainless steel) - ca. 300 running meters	Restrukturierung abgeschlossen, neues Rohrsystem installiert	02/2019 
		Exchange of four adsorbers	Austausch abgeschlossen	02/2019 
	Enhanced production safety standards and uptime control	Refurbishment of H16 EPI scrubber (approx. four scrubber packages) without honeycomb; Implementation of new technologies	Austauschbeginn 10/2018	10/2019 
	Additional three scrubbers to double scrubber capacity for alkaline exhaust air from Hall 16/16A/15	Separation of acidic and alkaline exhaust air from H15 (wet scrubber 44) – continuation from last year	Start 06/2018: Nasswäscher 44 wurde installiert, Leitung H15 zu Wäscher 44 wird gerade gebaut	09/2019 Inbetriebnahme 
Mobilität	Fortführung des Projektes „Green Way“	Further promotion of, among others, public transport, Jobticket scheme and carpooling app, development of cycling infrastructure with a further 200 parking spaces, implementation of e-sharing system in Villach planned for 2019	Campaign of action to promote corporate mobility management e.g.: -Expansion of electric filling stations across sites. Target: 30-40 charging points by Q1/2020 -Further expansion of cycle infrastructure (200 parking spaces) planned	03/2020 – 12/2020 
Employees / external contractors, service providers	Awareness raising among employees/ service providers/external contractors on the importance of chemical safety in emergencies	Training given by means of “Chemical Safety” video	Video has been created; now in the process of internal editing and approval	04/2019 
Skills, training and awareness	Employees and external contractors onsite act in a consciously sustainable & environmentally-friendly manner	Training given by means of “Environmental Protection” video	Script has been written and is in first editing phase	10/2019 
Chemical safety	The plant security staff are aware of the dangers and countermeasures at the Villach site	Training of all plant security staff	Completed	10/2018 
Immissions protection	Permanent immissions monitoring / recording of immissions data	Development of a permanent joint immissions monitoring station with Dept. 8 of the Carinthian Provincial Government	Measuring station commissioned 10/2018, all values at low levels	10/2019 
Workplace safety	Employees use protected walkways and not construction site pathways	Monitoring of construction site traffic routes by at least two members of site security staff	Ongoing action throughout 2019; system has been implemented	01–12/2019 
	Follow-up evaluations of all workstations at shorter intervals	Implementation of standardized evaluations by means of IT-controlled “Syneris” program	All workstations have been surveyed. Schedule for follow-up evaluation in preparation	03/2020 
	Straightforward area-wide recording of accidents & near misses – individual accident analysis	Recording of accidents by individual employees by means of IT-supported “Syneris” program	Program has been released for first stage of user testing	10/2019 
Management system	Preparation for implementation of the new ISO 45001 standard	Training of least 3 internal safety auditors according to ISO 45001	Four employees participated in external seminars on the topic – internal training in Munich completed successfully	03/2019 
Fire safety and disaster response	Infineon Austria crisis team equipped to handle incidents	At least one table-top exercise per year for the crisis team	2018: two exercises; 2019: two exercises and two crisis team training sessions	05/2019 
	Employees know the dangers of and countermeasures against fire and incidents involving fire	Training given by means of “Fire Safety” video	Script in preparation	10/2019 
	Faster and better targeted evacuation of buildings	Automated evacuation alarm announcements (German/English) – naming specific areas of buildings	Announcement texts have been completed, preparing for implementation	05/2019 

Green text: planned goals that have already been met in the fiscal year 2018 (before publication of this Environmental Statement)

\* The projects shown in the energy efficiency section are reproduced in a “BaMa” master plan dealing with simulations and optimization projects for energyoptimized production.

Status indicators: Progress in %  25%  50%  75%  100%



## 5.3 Special Environmental Achievements in the Fiscal Year 2018

When it comes to special environmental achievements, the Villach site is highly innovative and oriented toward the future. Some important examples are highlighted below:



### Energy sources

- › Thanks to many years of experience in the use of heat exchangers and heat pumps, along with the use of reclaimed waste heat from systems and equipment, it was once again possible in the past fiscal year to reduce the amount of energy required by over 25 percent of the total amount of energy used, as in previous reporting periods.



### Onsite energy efficiency

- › Based on the ISO 50001-compliant energy management system already implemented in 2012, a number of projects focusing on energy efficiency and led by the Energy Manager have already been launched and realized. As part of the best practice sharing policy, information was constantly exchanged with the other Infineon sites.
- › The aim of the Energy Efficiency Act, which came into effect in January 2015, is to achieve cost-effective increases in the efficient use of energy by companies and by the government, and to save energy in order to meet the goals defined for Austria for 2020.
- › Infineon has fulfilled the legal obligation of major companies to report on the introduction of an energy management system or to carry out an external energy audit - all the associated requirements arising from the Energy Efficiency Act have been met.
- › The use of electricity from 100 percent hydroelectric power and green energy once again enabled approximately 60,000 tons of CO<sub>2</sub> emissions to be saved this year.



### District heating/CO<sub>2</sub>

- › Due to the switchover from natural gas to district heating, implemented in the fiscal year 2012, nearly 2,500 tons of CO<sub>2</sub> savings were once again realized in the area of secondary energy usage in the fiscal year 2018.



### Recycling

- › The consistent implementation of the solvent recycling program again enabled approximately 521 tons, or nearly 35 percent, of solvents to be recycled in this fiscal year.



### Mobility

- › Infineon Austria is highly committed to finding sustainable mobility solutions at the Villach site. Ongoing mobility management activities include the “Green Way” initiative, a professional carsharing app, more attractive bus links to the main railway station, expansion of the e-charging stations in the car park, a new transport and parking scheme, measures supporting the use of e-bikes and bicycles and free tickets for journeys to work on public transport. These were also listed in the EMAS mobility folder and recognized with the 2018 VCÖ Mobility Award for Austria and Carinthia.

## 5.4 Significant Changes Since the Last Consolidated Environmental Statement

A look back over the last three calendar years shows that the following changes have taken place at the Villach site:

### 2016

- › May 2016: kick-off of European research project “SemI40” (37 partners from five countries). Research is being conducted into the further development of autonomous factories (including energy savings and more efficient use of resources in production).
- › In May 2016, the Carinthian Regional Health Insurance Fund and the State of Carinthia awarded the first “Smoke-free Company (Silver)” certificate for any company in Carinthia to Infineon Austria.
- › The International Day Care Center added another 40 new places in September 2016, and now offers a total of 120 places for children aged from two to six.
- › The EPPL (“Enhanced Power Pilot Line”) European research project was successfully completed in September 2016. One of the focus areas of the project was the development of energy- and cost-efficient semiconductor technologies.
- › In October 2016, the “E-Mobility on Stage” event, hosted in collaboration with Austrian Mobile Power, took place at the Villach site.

### 2017

- › April 2017: companies in the industrial and tourism sectors launched a joint project to promote Carinthia as an attractive business location with a high quality of life: [www.welcome2villach.at](http://www.welcome2villach.at).
- › In 2017, the Infineon Group invested 35 million euros to expand development and production activities for the new semiconductor materials silicon carbide and gallium nitride at Villach.
- › The kick-off of the STEVE (Smart-Tailored L-category Electric Vehicle Demonstration in Heterogeneous Urban Use Cases) EU project took place in November 2017. This project involves 21 partners from seven different countries studying new electromobility solutions for environmentally-friendly transport in medium-sized cities (including Villach as a test region).
- › The BaMa (Balanced Manufacturing) research project concluded in 2017, after running for four years. In this project, Infineon Austria conducted research into energy savings in cooling equipment, already achieving significant savings in the last two fiscal years and identifying potential future savings.

### 2018

- › On 18 May 2018, the expansion of the Villach site to add a new fabrication line for 300-millimeter chips for power electronics was announced. This investment of 1.6 billion euros is currently the largest private investment project in Austria.
- › As part of the iDev40 (Integrated Development 4.0) research project, which was launched in May 2018, work is underway on applying Industry 4.0 methods to automate highly complex processes and develop the workplaces of the future. This project involves 38 partners from seven countries, with a project volume of 47 million euros.
- › The “PowerBase” EU research project, which involved 39 partners from nine countries and a project volume of 87 million euros, was successfully completed in 2018. This project successfully developed and demonstrated the pilot production of the next generation of energy-saving chips, which in some cases can reduce energy losses by up to half.
- › Infineon Austria won the 2018 EMAS Award for the best environmental statement and the VCÖ Mobility Award 2018 for Austria and Carinthia for its operational mobility management program. Furthermore, in October 2018, Infineon Austria received the EFQM Global Excellence Award 2018, the most prestigious award for business quality.

## 6. Glossary

### 6.1 Explanation of Terms

<b>AEV</b>	Austrian Waste Water Emission Regulation (Abwasseremissionsverordnung)
<b>AfB gemeinnützige GmbH</b>	AfB is a non-profit company which helps people with disabilities integrate into working life. The company specializes in refurbishing IT hardware that has been taken out of service so that it can be used in other applications
<b>Ammonium – N</b>	Ammoniacal nitrogen
<b>Audit</b>	A systematic and documented verification process within the company by means of which data and processes are identified and evaluated
<b>AUVA</b>	Austrian General Accident Insurance Institution (Allgemeine Unfallversicherungsanstalt in Österreich)
<b>BaMa</b>	Balanced Manufacturing (research project)
<b>Best aging</b>	Comprehensive health project for employees aged 50 and over
<b>Clean room</b>	Used for the production and inspection of micro-mechanical and electronic components and systems subject to particular requirements, e.g. particle-free environments
<b>Class 1 clean room</b>	Class 1 is the highest grade of clean room; i.e. with the lowest maximum permitted particle concentration. Maximum permissible concentration of particles $\geq 0.1 \mu\text{m}$ in diameter is 10 particles/ $\text{m}^3$
<b>CMP</b>	Chemical-Mechanical Polishing
<b>CO<sub>2</sub> equivalent</b>	CO <sub>2</sub> is the chemical formula for carbon dioxide; as different greenhouse gases have different climatic impacts, a common unit is needed to compare them. This unit is referred to as a CO <sub>2</sub> equivalent and is calculated based on the amount of emissions of a particular gas multiplied by its climatic impact factor
<b>Cyclopentanone</b>	An organic solvent
<b>DI Water</b>	Deionized water, ultrapure water
<b>DMF</b>	The solvent dimethyl formamide
<b>DRO</b>	The company's internal Disaster Response Organization
<b>EDM</b>	A networked system of Internet applications and databases to support the complex processes involved in documentation, notification and reporting obligations related to environmental protection
<b>EMAS</b>	"Eco Management and Audit Scheme" (EU eco-auditing system)
<b>E-mobility</b>	An innovation project at Infineon promoting energy-efficient electric and hybrid vehicles
<b>Environment (according to ISO 14001)</b>	The surroundings in which the company or parts thereof are active; including among others: air, water, land and other natural resources, people and nature as well as their mutual interactions
<b>Environmental aspects</b>	The elements of a company's activities, products or services etc. or its sub-areas or sites, which interact or might interact with the environment
<b>Environmental impact</b>	Any positive or negative change to the environment which is completely or partly the result of the activities, products, services, etc. of a company or its sub-areas or sites
<b>Environmental statement</b>	A document by which a company's sites certified under Regulation (EC) No. 1221/2009 communicate the activities performed, environmentally-relevant objectives, environment-related services, environmental impacts, etc. to the public on a regular basis
<b>Environmental management system (according to ISO 14001)</b>	Part of the company's management system; the environmental management system includes the organization, planning activities, methods, procedures, processes and resources which are necessary for the development, implementation and fulfillment of the environmental policy, as well as for its evaluation and continued maintenance
<b>ESIA</b>	European Semiconductor Industry Association
<b>Front-end</b>	Type of production in which chips are manufactured on the wafers
<b>GEMIS Österreich</b>	Environmental impact (energy sources etc.) calculation model developed by the Austrian Federal Environment Agency


<b>Hazardous material</b>	Materials or mixtures with one or more of the following hazardous properties: risk of explosion, oxidizing, highly or easily flammable, combustible, toxic, very toxic, detrimental to health, caustic, irritating, sensitizing, carcinogenic, toxic to reproduction, mutagenic or chronically harmful in some other way, pathogenic, hazardous to the environment
<b>IMPRES</b>	Infineon Integrated Management Program for Environment, Energy, Safety and Health
<b>IMPRES Policy</b>	The company's overall intentions and approach in terms of its performance in the areas of the environment, workplace safety, and energy and health management
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>ISO 14001</b>	To support companies in establishing and expanding in-house environmental management systems, the International Organization for Standardization (ISO) developed the ISO 14001 standard, which is recognized worldwide
<b>ISO 45001</b>	A standard published by the International Organization for Standardization (ISO) in March 2018, which describes requirements for an Occupational Health and Safety Management System (OHSMS) as well as instructions for its implementation. The ISO 45001 standard will replace the Occupational Health and Safety Assessment Series (OHSAS 18001)
<b>R&amp;D</b>	Research & Development
<b>Semiconductor</b>	A crystalline material which displays electronic conductivity which increases at higher temperatures; some examples of semiconductors are silicon and germanium; the term is also used for integrated circuits made with these materials
<b>ISO 50001</b>	A globally recognized standard from the International Organization for Standardization (ISO), which is intended to help organizations and companies establish comprehensive energy management systems; certification can also serve as proof that an energy management system complies with the standard
<b>IT</b>	Information Technology; comprises all the methods, concepts and technologies for the processing, storage, transmission and provision of access to information and data
<b>KELAG</b>	Kärntner Elektrizitäts-Aktiengesellschaft (electric company in Carinthia)
<b>Kyoto Protocol</b>	Supplementary protocol of the United Nations with the objective of protecting the environment
<b>Legal Compliance</b>	Ensuring legal certainty
<b>Matrix certification</b>	Certificate listing all units/sites of a company which have been certified by an assessor
<b>NMP</b>	The solvent N-methyl-2-pyrrolidone
<b>OHSAS 18001</b>	Occupational Health and Safety Assessment Series 18001 – internationally applicable standard for the evaluation and certification of an occupational health management system
<b>PFC</b>	Perfluorinated compounds
<b>PGMEA</b>	The solvent propylene glycol monomethyl ether acetate
<b>Seveso III Directive</b>	EU Directive 2012/18/EU for the prevention of industrial accidents
<b>Slurries</b>	Suspensions of solids, sometimes with chemical additives, used in the CMP process
<b>SoFi</b>	Sustainability reporting database
<b>State-of-the-art</b>	The development status of advanced procedures, facilities or modes of operation which ensures the practical suitability of a measure for the protection of health, safeguarding the employee and limiting environmental damage. When determining the state of the art, particular attention should be paid to comparable procedures, facilities and modes of operation that have been successfully tested in practical operations
<b>Wafer</b>	A disk made of a semiconductor material (e.g. silicon) with a diameter of up to 300 millimeters; in integrated circuit production, the wafer is sliced from a single crystal boule and serves as the carrier material for integrated circuits
<b>WSC</b>	World Semiconductor Council
<b>YIP</b>	“Your Idea Pays”; internal company scheme for suggestions for improvement

## 6.2 Measurement Units

<b>g, mg</b>	Grams, milligrams
<b>GJ</b>	Gigajoule
<b>GWh</b>	Gigawatt hours
<b>kg</b>	Kilograms
<b>kg/d</b>	Kilograms per day
<b>kWh</b>	Kilowatt hours
<b>kWh/cm<sup>2</sup></b>	Kilowatt hour (consumption) per square centimetre (silicon surface area)
<b>l</b>	Litres
<b>l/cm<sup>2</sup></b>	Litres (consumption) per square centimetre (silicon surface area)
<b>m<sup>2</sup>, cm<sup>2</sup></b>	Square metre, square centimetre
<b>m<sup>3</sup></b>	Cubic metre
<b>mg/l</b>	Milligrams per litre
<b>MWh</b>	Megawatt-hours
<b>Nm<sup>3</sup></b>	Normalized cubic kilometre
<b>nm</b>	Nanometer
<b>t</b>	Ton (metric)

## 6.3 Declaration of Validity

**ETA**  
Umweltmanagement



### Gültigkeitserklärung

Die ETA Umweltmanagement GmbH als akkreditierte EMAS-Umweltgutachterorganisation mit der Registernummer AT-V-0001 bestätigt, dass die **Infineon Technologies Austria AG**, mit dem **Standort Siemensstraße 2, A-9500 Villach** wie in dieser Umwelterklärung 2019 dargestellt, alle Anforderungen der Verordnung (EG) Nr. 1221/2009 des Europäischen Parlaments und des Rates vom 25. November 2009 über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS) in der Fassung der Verordnung (EU) Nr. 1505/2017 erfüllt.


Es wird bestätigt, dass

- die Begutachtung und Validierung in voller Übereinstimmung mit den Anforderungen der Verordnung (EG) Nr. 1221/2009 in der Fassung der Verordnung (EU) Nr. 1505/2017 durchgeführt wurden,
- keine Belege für die Nichteinhaltung der geltenden Umweltvorschriften vorliegen,
- die Daten und Angaben der aktualisierten Umwelterklärung, ein verlässliches, glaubhaftes und wahrheitsgetreues Bild sämtlicher Tätigkeiten der Organisation geben.

Die nächste umfassende Umwelterklärung wird im Jahr 2022 publiziert. Jährlich wird eine für gültig erklärte, aktualisierte Umwelterklärung veröffentlicht.

Diese Erklärung kann nicht mit einer EMAS-Registrierung gleichgesetzt werden. Die EMAS-Registrierung kann nur durch eine zuständige Stelle gemäß Verordnung (EG) Nr. 1221/2009 in der Fassung der Verordnung (EU) Nr. 1505/2017 erfolgen. Diese Erklärung darf nicht als eigenständige Grundlage für die Unterrichtung der Öffentlichkeit verwendet werden.

Wien, am 12.04.2019

  
Dr. Stefan GARA  
Leitender Umweltgutachter



## 6.4 Date of the Next Environmental Statement

The next Environmental Statement will be an updated Environmental Statement and will be published in May 2020.

## 6.5 Contacts

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