

Sustainability Report

2018



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Dear Readers,

Sustainability was once again a central issue for IAV in 2018. Policymakers, society and, not least, our customers expect us to deliver solutions that make a tangible contribution to protecting the environment and climate. As such, one of the automotive industry's goals is to achieve carbon-neutral mobility by 2050 at the latest.

To this end, our developers are working on a whole raft of new technologies and concepts. We are optimizing combustion engines, increasing the efficiency of hybrid vehicles and are one of the pioneers of electric mobility. This is reflected by an impressive figure: IAV has been involved in developing more than half of the electric cars exhibited at the Geneva International Motor Show in March 2019. On top of this, we are also working on climate-friendly fuel cell drives, modern electrolysis processes for generating hydrogen and synthetic fuels.

One of our flagship projects is IAV Elocity. Using a modular set of components, commercial vehicles can be easily retrofitted with an electric powertrain – in addition to buses and delivery vans, also municipal as well as delivery and disposal vehicles. This provides a fast gateway to urban electric mobility. It means we are not only improving the quality of air and life.

IAV Elocity users also benefit in economic terms from their vehicles' low total cost of ownership (TCO).

Future driver assist systems will make road transport safer, more efficient and, consequently, also more sustainable. However, they are also placing new demands on testing. IAV has developed an approach that combines a real-world test vehicle with virtual elements, permitting reproducible and risk-free testing. This "vehicle-in-the-loop" approach provides the basis for running particularly dangerous test scenarios, such as collision and accident avoidance scenarios at high vehicle speeds.

However, we are also working on further enhancing the combustion engine. Pre-chamber ignition, for example, enables us to cut fuel consumption by up to 9% in the homologation cycle (WLTC). At the point where the spark plug is located, a small space in the cylinder head is separated off from the main combustion chamber by a perforated cap. In passive pre-chamber ignition, the mixture passes through these apertures into the pre-chamber during the compression stroke and is ignited by a spark plug. With active pre-chamber ignition, the pre-chamber has an additional fuel-metering facility.

For us, sustainability also means treating our members of staff in a fair and transparent manner. As early as 1989, we were the first engineering services provider to enter a general and collective wage agreement, and in 2018 too we were still one of the few engineering services providers with a collective wage agreement and co-determination at every site or in every region. Our collective agreement for student workers is still the only one of its kind in Germany. It has the purpose of fostering young talent and aims to get future employees interested in IAV at an early stage. On our Talent Innovation Day, we also award the Hermann Appel Prize to Bachelor and Master's degree as well as PhD students for outstanding work in the field of future mobility.

Protecting personal data is an integral part of our corporate philosophy when it comes to working with customers and business partners as well as within the company group. We are committed to the principles of data protection: lawfulness, fairness, transparency, limitation to specified purposes, data minimization, accuracy, storage limitation, confidentiality and accountability.

With the plea agreement concluded with the US Department of Justice in December 2018 in respect of IAV's role in the use of a so-called "defeat device" on the part of Volkswagen, we have also taken a major step to becoming even stronger as a company and to being a reliable partner for the entire automotive industry in the future too. We are firmly committed to integrity, fairness and transparency in our business practices and in our dealings with employees, business partners, society and the environment.

Last year was also marked by changes in IAV's corporate management: Matthias Kratzsch was appointed Chief Operations and Technological Officer in September. Immediately after the end of the reporting period – on 1 January 2019 – Dr. Ulrich Eichhorn took up office as Chairman of the Management Board, and Katja Ziegler as Chief Commercial Officer. As in the past, the management and the entire company will continue to feel committed to sustainability in all its facets in the future [102-14].



Sustainability has many facets for IAV, all of which contribute to our long-term development as a company. Without the trust of employees, customers and society we cannot be successful, which is why we place great importance on excellent management. This also applies to our use of natural resources: we want to help protect the climate and the environment and to leave behind a viable planet for future generations. This is also at the heart of our day-to-day work. Based on science, research and world-class engineering, we are developing solutions for intelligent and sustainable mobility that reconciles the demands of people and the environment.



Dr. Ulrich Eichhorn
Chairman of the Management Board



Matthias Kratzsch
Chief Operations and Technological Officer



Katja Ziegler
Chief Commercial Officer



Kai-Stefan Linnenkohl
Chief Human Resources Officer

2 The Company

automotive
engineering **iaav**

The Company

[102-09] The IAV Group has been developing innovative concepts and technologies for future vehicles for more than 35 years. Our core competences include production-ready solutions in all areas of electronics, powertrain and vehicle development as well as in the field of mobility services.

Both our technological capability and the attitude of the people behind it make us a successful partner in the field of automotive engineering. As a result, almost all renowned automobile manufacturers and suppliers worldwide are IAV customers. They expect us to provide technological stimulus for the future and cutting-edge development services.

Sustainability increasingly plays an important role in this. In order to ensure the required environmental compatibility and comply with customers' wishes, IAV intensively works on hybrid vehicles as well as electric, hydrogen and gaseous-fuel vehicles and on optimizing gasoline and diesel engines in terms of fuel consumption and emission reduction.

Other key issues in automotive engineering are the maximum safety for passengers and other road users, as well as comfort and driver assist systems. The great future trends include vehicle connectivity and digitiza-

Better mobility has many facets

More safety, more comfort and more service

More time, more freedom and more quality of life

Less congestion and less noise

Fewer pollutants and lower consumption

Fewer accidents, fewer injuries and fewer road fatalities

More productivity and more efficiency

Greater conservation of resources

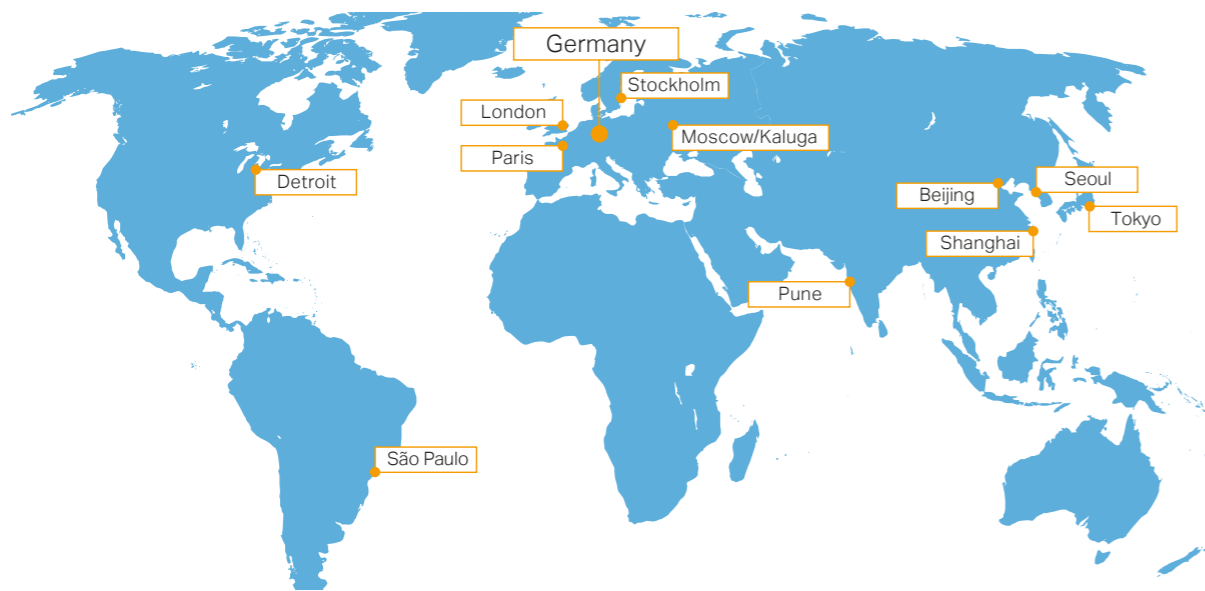
tion, which affect passenger cars and commercial vehicles alike. In the mobility field, IAV is also looking

into the intelligent interconnection of different modes of transport.

Our Mission



We develop ideas, concepts, technologies and production-ready solutions to meet the many different demands on today's and tomorrow's mobility in an optimum way.



As an established automotive development partner, we focus our attention on all facets of mobility. This includes new technologies for combustion engines as well as innovative solutions for converting vehicles to electric drive systems and autonomous shuttles for urban traffic. In the context of technology transfer, there is growing demand for our know-how in the area of energy generation and supply, such as for controlling energy distribution and wind energy systems.

In every customer project, IAV aims to cooperate with the customer based on a contract for works and

services. We provide our services primarily in our own development, testing and trialing facilities as well as our workshops. Our premium standards regarding our results are also reflected in the quality of our office workstations and technical facilities. All employees have their own workstations, where they can carry out the required activities in a focused and successful manner.

With more than 7,500 employees, the IAV Group was one of the leading engineering partners to the automotive industry and mobility sector in the 2018 financial year.

The group's parent company is Ingenieurgesellschaft Auto und Verkehr GmbH, whose head office is in Berlin [102-03] (IAV GmbH for short) [102-01]. More than 6,500 members of staff are employed at IAV GmbH alone. With its seven German and ten foreign subsidiaries [102-45] in Europe, Asia and North and South America, IAV operates in eleven countries worldwide [102-04].

- In operative terms, IAV GmbH in Germany is primarily supported by its three subsidiaries IAV Fahrzeug-sicherheit GmbH & Co. KG, Consulting4Drive GmbH and TRE GmbH which specialize in vehicle safety, in consulting services covering all aspects of new mobility concepts and in chassis projects [102-06].
- IAV erbringt an 17 Standorten in Deutschland Entwicklungsleistungen für die Automobilindustrie und ihre Systemzulieferer sowie weitere innovationsorientierte Industrien (z. B. Energieversorgung, Wasserwirtschaft). Schwerpunkte bilden dabei die drei Entwicklungszentren in Berlin, Gifhorn und Chemnitz/Stollberg. Diese zeichnen sich, neben den Entwicklungstätigkeiten, durch umfangreiche Prüfstandeinrichtungen aus. Weiter betreibt IAV zwei moderne Testzentren für Fahrzeugsicherheit in Gifhorn und in Großmehring (bei Ingolstadt).
- Außerhalb Deutschlands ist IAV mit Tochtergesellschaften in Frankreich, England, Schweden und Russland, China, Indien, Japan und Korea sowie in den USA und in Brasilien aufgestellt [102-06]. Die IAV de Mexico hat ihre operative Tätigkeit im Geschäftsjahr 2018 eingestellt und wird als Gesellschaft aufgelöst [102-10].

As IAV Group, we work for our customers on-site on international and complex projects covering tomorrow's big issues facing the automotive industry. The increasing interconnection of international locations is being consistently enhanced for this purpose.

Problem solutions for the customer and technological innovations are the cornerstones for successful performance on the market. We are proud of our high level of innovation and the quality of our technical solutions in automotive engineering. With great attention to detail, an eye for the whole picture and ingenuity, IAV develops convincing solutions: on-time, within budget and of outstanding quality.

High-quality work processes and work results are of equal importance for safeguarding the future of the company. In agreement with the management and the employees, the shareholders and the Supervisory Board thus place qualitative growth at the center of all the company's activities.

As the parent company, IAV GmbH ensures that its corporate objectives can be achieved not only in Germany but throughout the IAV Group. To do this, it defines the strategic alignment of its subsidiaries worldwide and monitors its implementation through local management and employees [102-18].

IAV GmbH supports its subsidiaries by offering central, shared services across the Group. These include group controlling, accounting, finance, legal affairs, marketing, corporate communications and IT services.

Key figures for IAV GmbH (based on German Commercial Code [HGB])	2018	2017	2016	2015
Total earnings	€ 870 m	€ 767 m	€ 701 m	€ 669 m
Increase in fixed assets	€ 52 m	€ 29 m	€ 66 m	€ 50 m
Operating result	€ 20 m	€ 27 m	€ 29 m	€ 25 m
Equity ratio of GmbH	34 %	42 %	40 %	42 %
GmbH staff	6,683	6,222	5,851	5,623
Of which students	595	468	407	294
Of which women	1,019	933	878	845
Share of executives *	742	718	717	691

* Team Manager, Head of Department, Senior Vice President, Executive Vice President

IAV GmbH (group parent company) is the main service provider in the group and, with its positive development, is the primary contributor to the group result [102-07] [102-08].

2018 saw the addition of no less than approx. 10,000 m² of office space in Berlin, Chemnitz, Dresden, Gifhorn, Kaiserslautern and Munich. This allows us to respond to urban growth and to provide every member of staff with a workplace.

Since 2012, IAV has invested about

€ 300 million

in expanding its own infrastructure and is planning further investments on a similar scale to secure further growth.

2.1 Corporate structure, management, corporate governance

IAV is structured as a group of companies. All companies in the IAV Group are managed and legally represented on location by independent management boards.

The parent company is IAV GmbH, a private limited company under German law. The shareholders of the group are manufacturers and suppliers from the automotive industry [102-05]. The ownership structure of the company is as follows:

Shareholder	Share
Volkswagen AG	50%
Continental Automotive GmbH	20%
Schaeffler Technologies AG & Co. KG	10%
Freudenberg SE	10%
SABIC Innovative Plastics BV.	10%

As a limited liability company under German law, IAV GmbH not only has the Shareholders' Meeting but also a Supervisory Board composed of an equal number of shareholder and employee representatives, a voluntary Advisory Board and, currently, a four-member Management Board.

The Management Board guarantees the company's ability to act by representing IAV GmbH externally and

managing its business. Since January 1, 2019, IAV GmbH's management has been made up as follows:

Dr. Ulrich Eichhorn
Chairman of the Management Board (CEO)

Matthias Kratzsch
Chief Operations/Technology Officer (COO/CTO)

Katja Ziegler
Chief Commercial Officer (CFO)

Kai-Stefan Linnenkohl
Chief Human Resources Officer (CHRO)

Michael Schubert, long-standing Chief Financial Officer, retired from office at IAV GmbH on August 15, 2018. Mr. Kratzsch took up his position as Chief Operations/Technology Officer on September 21, 2018. Ms. Ziegler was appointed Chief Commercial Officer and Dr. Eichhorn Chairman of the Management Board with effect from January 1, 2019. Prior to this, Dr. Eichhorn had stepped down from his offices as Chairman of the Supervisory Board and the Advisory Board at the end of 2018.

[102-22] The Management Board of IAV GmbH informs the Supervisory Board and the Advisory Board in monthly reports and bi-annual meetings on the business situation and the economic development of the company.

[102-24] Given the company's headcount, IAV GmbH's Supervisory Board must be formed in accordance with the provisions of the German Codetermination Act. 50% of the twelve-person Supervisory Board consists of representatives of the shareholders and 50% is made up of employee representatives. The last Supervisory Board was elected in the 2018 financial year. The Supervisory Board was constituted on July 4, 2018.

[102-29] The Supervisory Board has the task of advising the Management Board and monitoring its activities. Two of the Supervisory Board mandates are currently held by women. Volkswagen appointed Professor Dr. Stefan Gies [102-23] to succeed Dr. Ulrich Eichhorn who retired from the Supervisory Board at the end of 2018. The Supervisory Board elected Professor Gies as its new Chairman with effect from January 31, 2019.

IAV GmbH's voluntary Advisory Board comprises representatives of the shareholders whose expertise is of interest in respect of IAV GmbH's future development. The Advisory Board primarily performs a consultative function.

The Shareholders' Meeting is IAV GmbH's supreme decision-making body in which the shareholders jointly make key structural and fundamental decisions [102-24].

The rights and obligations of the above-mentioned bodies and the Advisory Board follow from statutory

provisions, from IAV GmbH's Articles of Association and from its Rules of Procedure for the Management Board, the Supervisory Board and the Advisory Board [102-26].

Within the IAV Group, regular dialog takes place between IAV GmbH and its subsidiaries, both at management and operational level.

Everything IAV GmbH's executive bodies and subsidiaries do is defined by acknowledged principles of good corporate governance. This makes it possible to ensure responsible, qualified, transparent management geared towards long-term success which benefits the company and its staff, the shareholders, customers and suppliers as well as the general public.

In the Code of Conduct defined for the IAV Group and available in German and English, the Management Board has set out crucial principles that constitute the benchmark for its own actions, as well as for the actions of executives and employees. Complying with these principles is part of the IAV Group's corporate mission.

2.2 Mission statement

[102-16] The IAV Group has drawn up a mission statement, to which all employees and executives are committed.

Every single decision must be examined to make sure it meets these goals, ideals and corporate culture. This



Our self-conception

Human beings, their passion and their drive are the true masterpiece behind every technology.

philosophy serves as a benchmark and orientation for the company's long-term objectives and day-to-day operations.

2.3 Code of Conduct

IAV is committed to the principles of a social market economy. We impress through cutting-edge engineering methods and performance, act within the law and comply with our society's ethical principles. Our values are based on the United Nations' Universal Declaration of Human Rights [102-12].

[102-16] As a central instrument for communicating our corporate values, the Management Board and the employee representatives have jointly signed a Code of Conduct.

Complementing IAV's mission statement and the values for cooperation and management, the Code of Conduct, as a higher-level policy, reveals possible risk and conflict areas and provides basic behavioral guidelines. The Management Board sees itself as a promoter of the behavioral guidelines laid down in the Code of Conduct and is committed to ethical and sustainable behavior. The behavioral guidelines are applicable to all employees, executives and members of the IAV Group's management. IAV's Works Council supports the Code of Conduct and the measures taken by the Management Board.

IAV conveys the contents of the Code of Conduct (CoC) by means of training courses and a webinar. The courses are compulsory for executives and all employees at IAV as well as partners that work for IAV for at least three months, on a one-off basis when they join the company [412-02].

In addition, all employees are trained specifically on the issues of data protection, occupational safety and health, as well as information security.

Just as our environment is constantly evolving, so we are also constantly developing our Code of Conduct in a diligent manner. The Code of Conduct was extensively reviewed in 2018. Technical compliance and sustainability are now being included in the Compliance Program and, hence, also in the Code of Conduct. A revised edition of the Code of Conduct will be published in 2019.

Our Code of Conduct will be an integral part of contracts, to the extent possible [205-02].

[102-11] IAV has set itself the target of dealing responsibly with potential risks, and for years has conducted continuous and structured risk management in which all key business areas are involved [102-31]. The Management and the Supervisory and Advisory Boards are notified regularly or on an ad-hoc basis about opportunities and risks.

[102-15] Within the context of IAV's risk policy, higher-level goals are set, for which risks are then identified and evaluated. Effective risk identification is based on well-defined, uniform methods and the assignment of responsibilities for risk assessment within the company. There is regular communication to management regarding the risk situation.

Our **Code of Conduct** is also published on our website and can be consulted by all employees, customers, suppliers and interested parties.

> www.iav.com/Compliance

An overview of our Code of Conduct is shown on the **next page**.

The Code of Conduct summarizes the behavioral guidelines under the following areas of responsibility [412-02]:

Our Code of Conduct

Social responsibility

- Corporate social responsibility/sustainability
- Human rights
- Equal opportunities and respect
- Environmental protection
- Product safety
- Safety at work
- Donations and sponsorship
- Political lobbying
- Employee representation

Macroeconomic responsibility

- Fair competition
- Accounting and financial reporting
- Customs and export control
- Fair purchasing
- Dealing with insider information

Corporate responsibility

- Conflicts of interest
- Sideline activities
- Participation in company
- Preventing corruption
- Use of consultants

Responsibility for employees, partners and IAV

- Data protection
- Dealing with confidential information
- IT security
- Industrial property rights
- Protection of company property
- Responsibility for the company's image
- Management culture

3 Our Services



Our Services

Engineering

Products

Services

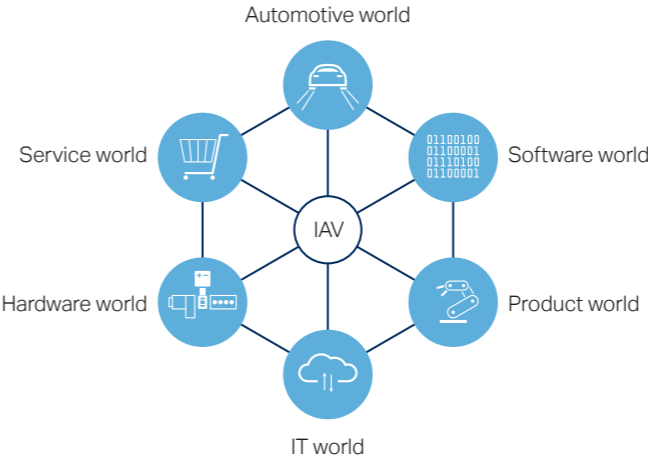
Consulting

[102-02] As an internationally acknowledged and established provider of engineering services, our company's activities focus on development projects with our customers from various sectors. Added to this, IAV operates a customer and technology-specific product business which fully exploits the practicability of development processes, making a sustainable contribution to developing processes in line with PDCA. It complements our engineering work and permits customized solutions which our customers regard as an integral part of the services we provide. This means IAV can take advantage of the opportunity to act as general contractor.

For us, the safety and conformity of our products and solutions as well as those of our customers have top priority. IAV takes into account the legal and technical requirements and standards on product safety and conformity in all phases of the value chain.

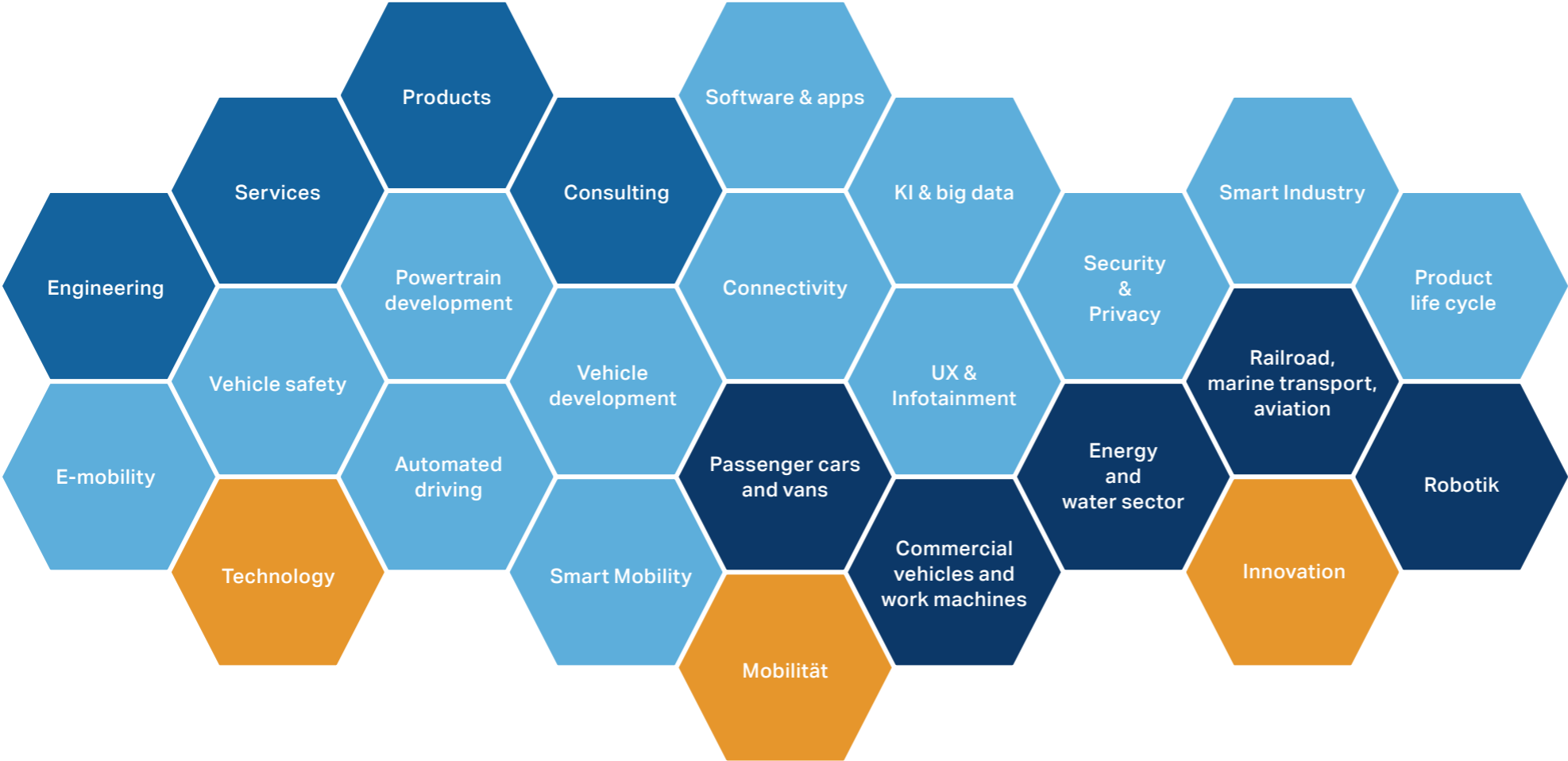
Our range of expertise is second to none. It extends from developing new powertrain and vehicle concepts to testing and launching the production-ready solutions. In this context, we offer all development steps on a one-stop shop basis and leave nothing to chance when it comes to future technologies.

Below, we present the four pillars of our service portfolio.



IAV offers outstanding engineering expertise and brings together many different worlds.
Our goal: better mobility.

Service Portfolio





Engineering

Our engineering work focuses mainly on the automotive and mobility industry. Among other aspects, we develop conventional and alternative powertrains, transmissions, interior and exterior, driver assist systems as well as electric and electronic components for passenger cars and commercial vehicles. As a development partner with expertise in the entire vehicle, we offer our customers a portfolio of services on a one-stop shop basis and assist them throughout the value chain.

Among the aspects that currently dominate our work are combustion engines with optimum efficiency and minimum emissions. To achieve these goals, we champion innovative combustion systems

(e.g. pre-chamber ignition) and cutting-edge systems for exhaust gas aftertreatment which we constantly improve using simulation. Besides gasoline and diesel engines, hybrid and all-electric powertrains also play a key part at IAV. For example, we are developing an efficient energy management system for hybrid vehicles and electric drives which will set standards in terms of efficiency and safety.

Alongside fuel consumption and emissions, analyzing a vehicle's entire environmental footprint is also gaining significance. With detailed life cycle assessments (LCA), we provide our customers with an objective basis for comparing different product alternatives.

Products

Customized solutions for you: that is the philosophy behind IAV's service portfolio with its broad range of products. Benefiting customers, our development tools are packed with over 35 years of engineering experience. They have proven their worth in numerous volume production projects and are always on the cutting edge of technology. Our tools not only assist our employees in carrying out their work and help to boost efficiency but also make our customer's engineering process faster, better in terms of quality and more reliable.

But we also supply volume-produced electronic components, such as displays and control elements for agricultural machinery and integrated board computer systems. And we never compromise on quality. Our engineers work in the same professional way as they do in their large-scale production projects. This involves the use of state-of-the-art development tools and rigorous testing before the start of production.

The "vehicle conversion" product portfolio element is defined by the provision of specially developed and fully integratable parts kits that make it possible to convert combustion-engined vehicles into vehicles with electric powertrains.





Services

IAV's customized services can be divided into the categories of mobility services, product life cycle management, support and engineering cloud.

As part of our mobility services, we can provide our customers with a comprehensive portfolio from car-sharing to fleet management, from updates to personalization. This also includes new services: the passenger car as a wallet and shopping cart, the car as a cloud service, the car as an entertainment platform, the car as a personal assistant.

In the area of product life cycle support, IAV assists its customers from assessing ideas and technologies to product development and variants, from updates and servicing to recycling and disposal. In other words: we give our clients the best possible support throughout the entire life cycle and in each individual phase.

At support level, we provide assistance in selecting and managing suppliers, among other services. This also includes aspects such as qualification and homologation as well as new concepts in the field of aftersales.

The engineering cloud is one of our most recent topics: as one of the world's leading engineering companies, high-performance computing is essential for us. Today, there is no other way of coping with the vast amount of data, computations and simulations or future development requirements.

In every service we provide, we not only think in terms of individual systems but beyond system boundaries.



Consulting

In an increasingly complex world, excellent support in engineering is essential. IAV can draw on over 35 years of experience and the expertise of more than 7,500 members of staff. This knowledge is channeled into all of our projects and is one of IAV's key unique selling points.

With our consulting4drive subsidiary, we also have our own consultancy. It speeds up innovations by integrating market-relevant novelties and technologies into business models. It helps to open up markets by analyzing and evaluating market potentials, rapidly turning opportunities into measurable business success. It boosts its customers' performance, for example by using existing resources to realize up to 20% more projects and achieve time and/or cost savings of up to 25%. And it optimizes costs in product development, sourcing and manufacturing.



4 Sustainability Strategy

Ecological. 
Economic. 
Social. 

Sustainability Strategy

[102-26] Besides economic values, great importance is also attached to social and ecological values at our company. For the IAV Group, these values are central elements of our corporate philosophy. The values and ten principles of the UN Global Compact and the values from the German Corporate Governance Code guide our activities. Our corporate values and Code of Conduct pick up on these principles. IAV's compliance and risk management system ensures that sustainability issues are addressed in depth within the company group.

To do justice to this, we endeavor to evaluate our services, business processes and products in terms of their sustainability and define appropriate activities for improving them. The (long-term) planning and coordination of activities as well as the subject of Corporate Social Responsibility (CSR) will be placed centrally in the hands of the management's staff. Overall responsibility for this will lie with IAV's top management.

IAV not only wants to set standards and take responsibility in terms of the services it provides, but also in respect of its approach to business partners and the environment. As a corporate citizen and responsible member of society, we practice a culture of respect, appreciation and tolerance within the environment in which we work.

Top management makes sure that the management systems applied are implemented and regularly adjusted for the entire company. The demands of clients and other stakeholders are key motivators for continual improvement in this regard. Top management follows the principle of good and sustainable corporate governance [103-03].

IAV is in direct and constant dialog with its environment and takes this dialog very seriously, increasingly also in relation to matters of CSR. Communication takes place at all company levels: in customer projects, by participating in research projects with government and private partners as well as through IAV's involvement in associations and working groups. We benefit enormously from the intensive dialog we have with our advisory board members on strategy, technology and social orientation. In this context, regular strategy events take place with the representatives of our key accounts and top management. Participation in leading trade shows and conferences also provides the IAV Group with valuable discussion platforms. In addition, we organize events ourselves, such as the Berlin Powertrain Symposium, which gives us a platform to discuss aspects of new mobility concepts, efficient development methods and the demands on tomorrow's powertrains.

Besides creating carbon-neutral mobility, the cornerstones of our sustainability endeavors are respect for people and the environment in the supply chain and the industry. This also includes ethical aspects, such as vehicle behavior in autonomous driving and the ultimate goal of a Mission Zero (zero road fatalities). We are responding to the resultant changes in the demands on our portfolio – and, with this, on the skills of our employees – with our internal "Staff Transformation" program in which we prepare them in good time for new challenges and give each individual the specific qualifications he or she needs for new subject areas.

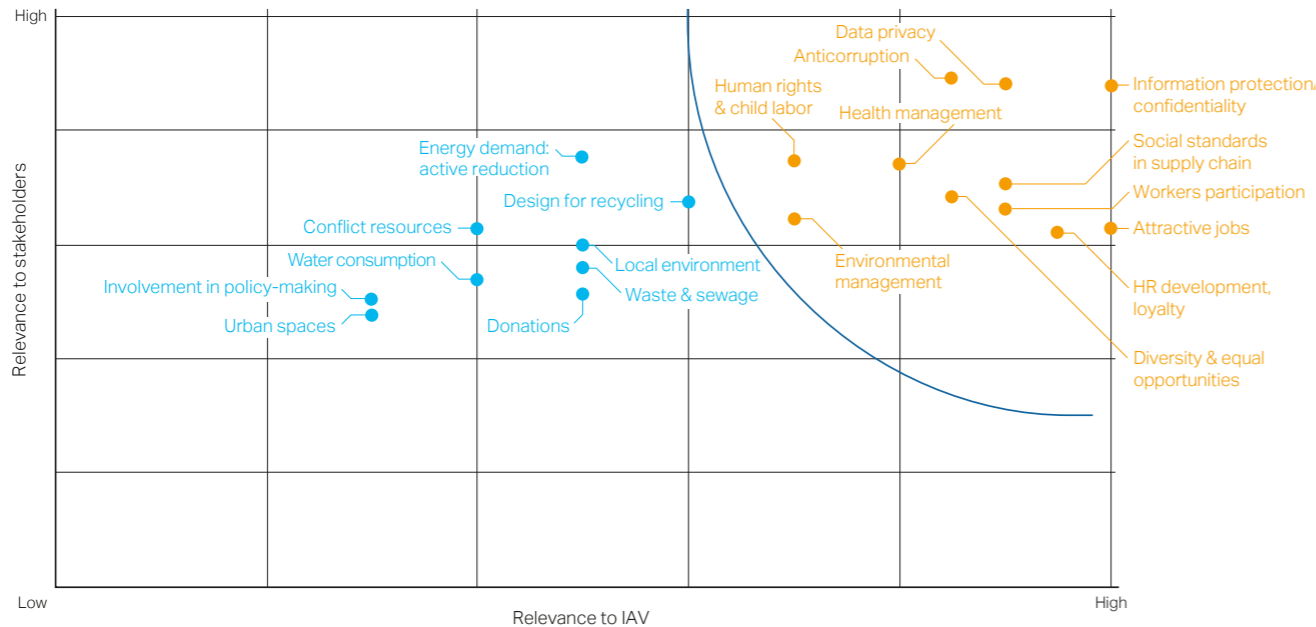
We regularly inform our customers and the interested general public in our "automotion" customer magazine as well as on our website where we report on the latest technological developments.

IAV attaches importance to actively integrating its employees and their representatives into shaping and meeting the company's responsibility toward society. Involving employees and works council members is part of our corporate culture and gives us valuable input. The management regularly informs members of staff about ongoing developments and the business situation. Among other channels, communication

takes place through the "IAVinside" staff magazine, which is published on a quarterly basis, as well as through the intranet on a regular basis. Held at regular intervals at all German sites, the management reports

at townhall meetings on the company's business situation and challenges. Members of staff can use these opportunities to put direct questions to the management [102-23].

Key aspects 2017 (excerpt)



4.1 List of key aspects

[102-47] As part of a stakeholder analysis, various aspects of the GRI standards were evaluated. This involved an assessment of relevance and risks, resulting in the following priorities:

- Compliance/ethics (re-evaluation 2018)
- Protecting information/confidentiality
- Data privacy
- Combating corruption
- HR management (HR development, attractive jobs, diversity and equal opportunities)
- Vendor management (social standards; environmental standards in the supply chain)
- Environmental management (environmental protection, energy efficiency, consumption of resources)

Pre-Chamber Ignition

Higher efficiency for gasoline engines

Pre-chamber ignition is a key technology in gradually making gasoline engines more efficient. The idea behind it: at the point at which the spark plug is located, a small space is separated off in the cylinder head from the main combustion chamber by a perforated cap. It accounts for about 2 to 3% of the compression volume. With passive pre-chamber ignition, the mixture passes through these apertures into the pre-chamber during the compression stroke and is ignited by the spark plug. With active prechamber

ignition, the pre-chamber is fitted with an additional fuel metering device (e.g. an injection or timing valve) which produces a stoichiometric mixture at the spark plug. This variant is particularly suitable for lean-burn engines.

IAV has been working on pre-chamber ignition for passenger cars and commercial vehicles for many years. It permits fuel savings of up to 3% (passive pre-chamber) or up to 9% (active pre-chamber) in the WLTC. It has already demonstrated its potential in large, stationary gaseous-fuel engines and in Formula 1 racing car engines. In gaseous-fuel engines, it provides efficiency levels of around 50% and it gives racing cars their huge power output on relatively little fuel. IAV is planning to use this sustainable technology in production vehicles as well.



Vehicle-in-the-Loop

Risk-free and resource-saving vehicle testing



Future driver-assist systems will make road transport safer, more efficient and, consequently, also more sustainable. They are providing assistance in more and more driving situations and their operation needs to be increasingly automated in complex situations as well. They interact with other systems in the vehicle, communicate with their surroundings and combine data from different sensors to capture the traffic

situation as accurately as possible and, from this, derive actions.

However, this is also producing new demands on testing the safety and reliability of driver-assist systems. IAV has developed an approach that combines a real-world test vehicle with virtual elements, making testing reproducible while at the same time eliminating risks and conserving resources.

To generate a critical situation, the real-world test environment is augmented by virtual target objects that are shown on a mobile display in the windscreen with an augmented-reality app. Virtual sensors detect the superimposed target objects and transmit this information to the driver-assist function being tested. This evaluates the traffic situation and – if necessary – triggers an intervention. The test engineers in the vehicle see the real-world test environment as well as the virtual target objects in the visualization and experience the test vehicle's real-world response.

This principle can be used both in early as well as late phases of the function development process. As the target hardware is not yet available in the early phases, driver-assist functions can be experienced using vehicle-in-the-loop. This permits early

validation of the function in conjunction with a real-world vehicle. In the late phases of the development process, vehicle-in-the-loop can be used to increase the maturity of the function before starting validation in the field.

In particular, test scenarios that are too dangerous for tests with real-world objects can be performed without risk using the vehicle-in-the-loop approach – for example collision and accident avoidance scenarios at high speeds, critical driving situations, such as oncoming vehicles in a passing maneuver and vehicles swinging in just in front of the vehicle as well as multi-object scenarios in the urban environment.

Initial applications in development projects have shown that the test method makes it possible to perform relevant test scenarios on a resource-saving, risk-free and reproducible basis. The possibilities of real-world vehicle testing are augmented by superimposing virtual elements. As such, virtual engineering provides the key to sustainable vehicle development.

IAV Elocity

From old to clean

The air in inner cities needs to become cleaner which is why many cities are thinking about imposing restrictions or bans on combustion engines. Electric drives are a sustainable alternative here because they make a significant contribution to improving the quality of air and life in urban areas. However, delivery companies, tradespeople, fleet operators and municipal utilities also benefit from another characteristic of the clean powertrain. In technical terms, electric vehicles are simpler than their combustion-engined counterparts,

noticeably reducing the cost of servicing them. In addition to this, the electric drive is far more efficient than the conventional diesel drive, which further reduces the total cost of ownership (TCO) for electric cars. In other words: everything speaks in favor of leaving regional and scheduled traffic to electric vehicles in the future.

This calls for concepts that make it possible to equip commercial vehicles with electric powertrains without

any major cost and effort – either directly at the OEM or as a retrofit solution. As there are many different application scenarios here, modular solutions are the preferred choice because they can be adapted to the specific needs of each user. "IAV Elocity" can offer precisely this: a modular kit made up of production-ready components which adapts to package spaces and power demands while providing a fast gateway to urban electric mobility, for buses and delivery vans as well as for municipal, supply and waste disposal vehicles.

The components for the electric drive system are supplied as a complete set of parts by IAV Cars GmbH. The parts kit is being developed with support from IAV engineers and partners and integrated as a system into the specific target vehicle on a customized basis to ensure trouble-free interaction between the electric drive and the other vehicle components.

With IAV Elocity, we are not only improving the quality of air and life. For fleet operators and OEMs, launching into tomorrow's urban mobility quickly and cost-effectively has never been as easy. This brings together ecological and economic sustainability.



A photograph of three golden paper cut figures holding hands, set against a bright blue sky with light, wispy clouds. The figures are simple in design, with circular heads and rectangular bodies. They are positioned in a line, with the middle figure slightly behind the other two, creating a sense of depth. The lighting is bright, casting soft shadows on the figures.

5 Social Responsibility

Social Responsibility

The people in our company are key to our success. They determine the prosperity of IAV.

Our workforce is characterized by **cultural diversity**. More than **60** nationalities are represented in our globally operating company.

We treat all staff equally, regardless of nationality, citizenship, pregnancy or parenthood, marital status, sexual orientation, skin color, gender, disability, veteran status, religion or ideology, age, race, social/ethnic origin or political opinion, provided the latter are based on democratic principles. Personal dignity, privacy and personality rights are respected by everyone. Our interaction with one another is honest and characterized by respect and responsibility.

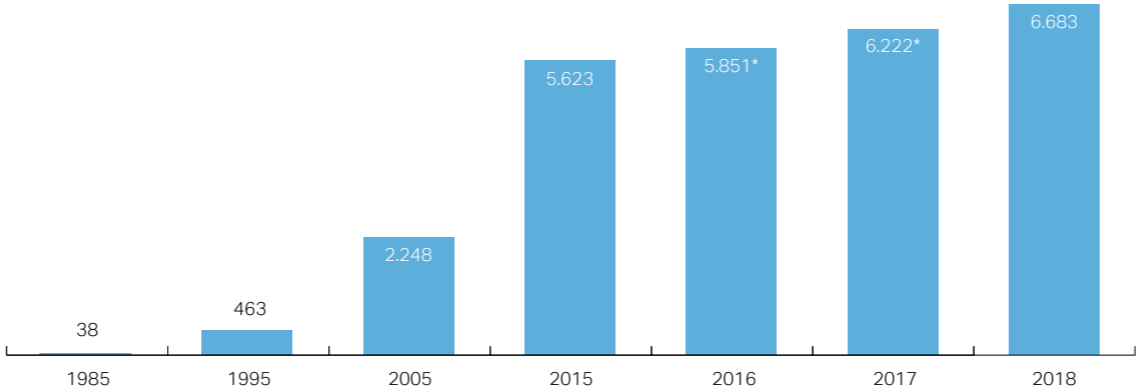
Every member of staff plays his or her part in this. That is why long-term staff development is a top priority at IAV. To this end, we try to create above-average framework conditions for our employees.

IAV has had constant organic growth in its workforce and turnover for years. This is invariably achieved with a long-term vision and on a sustainable basis. For instance, since its foundation in 1983 the company

has not made any forced redundancies in this highly competitive environment.

Numerous macroeconomic crises have been overcome because of long-term staff planning and policy. For example, during fluctuations in capacity utilization we are helped by flexible working time accounts and working time arrangements as well as a well-established in-house labor market.

Full-time staff at the end of the year (IAV GmbH)



* Corrected figures because of change in calculation basis.

5.1 Remuneration and collective agreement

The IAV pay system is based on the principles of fairness and transparency.

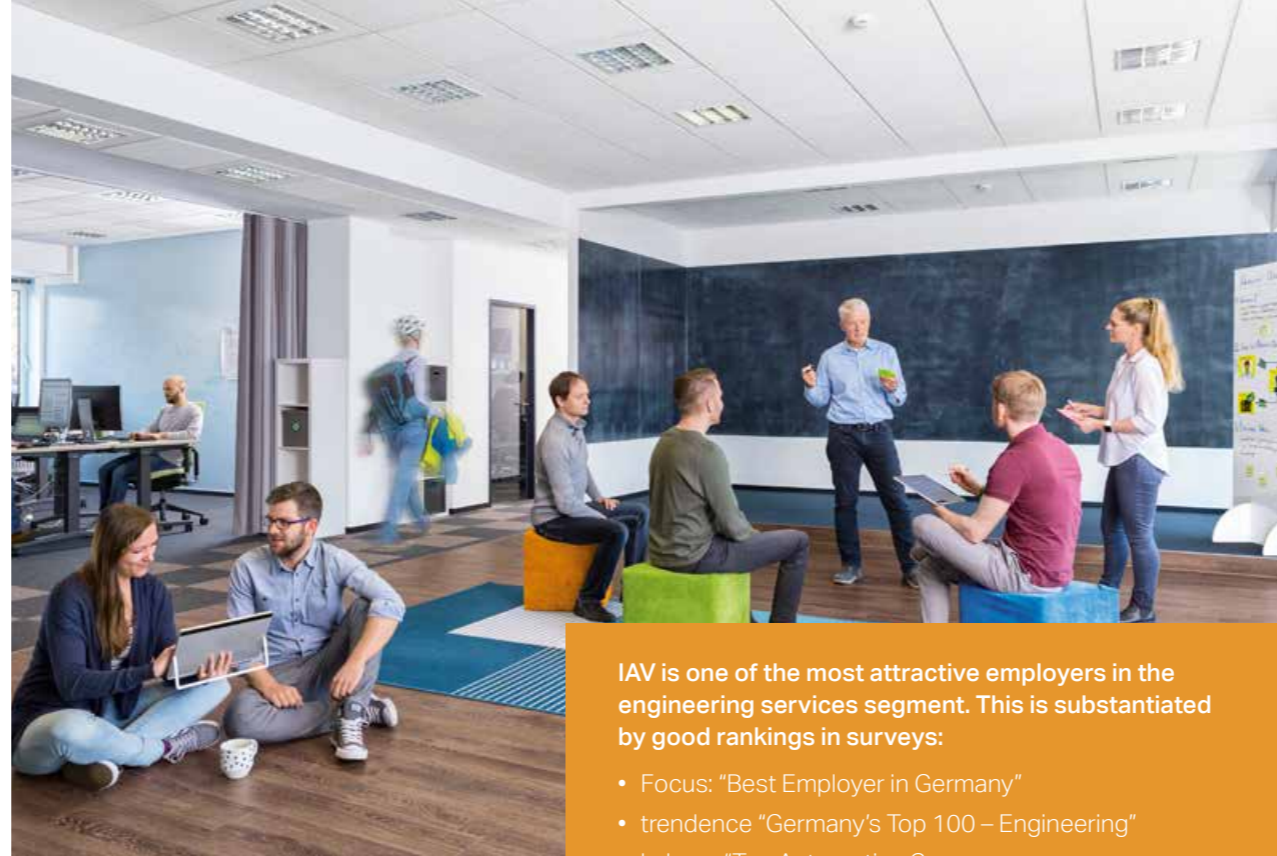
In 2018, too, we are still one of the few engineering service providers with a collective agreement and employee participation at every site respectively in every region.

In 1989, we were the first engineering services provider to conclude a general and collective pay agreement, and for decades we have cultivated intensive co-determination and employee participation in partnership. Within IAV GmbH, the collective agreements extend to every member of staff [102-41].

The staff include senior executives, employees not covered by collective pay agreements, staff on the negotiated pay scales, agency workers, student workers, diploma students and interns [102-41].

The period of validity, terms and conditions are negotiated in collective bargaining between employee representatives and the management.

As part of the IAV GmbH collective agreement on the company pay agreement negotiated in 2018, it was agreed to increase pay and apprentices' remuneration in two stages. On April 1, 2018 the first-stage increase of 4.3% came in and a one-off payment amounting to 300 euros. From January 1, 2019 there is a further increase of 2.3%; the collective agreement runs until



IAV is one of the most attractive employers in the engineering services segment. This is substantiated by good rankings in surveys:

- Focus: "Best Employer in Germany"
- trendence "Germany's Top 100 – Engineering"
- kukunu "Top Automotive Company"

May 31, 2020. The collective agreement is the first component of the "IAV+" collective pay system with which the German metalworkers' union IG Metall and the management aim to make the company fit for the future. The collective bargaining partners have also agreed to transfer the existing pay scale table into a pay grade table.

In addition to the amended pay table with greater permeability, IG Metall and the management agreed on guidelines for a co-determined effectivity and efficiency program in order to further develop the work at

IAV effectively, fairly and in a future-oriented way. As part of the program, staff were invited to submit ideas on the topic. Several hundred ideas were submitted, assessed and taken into account in the program. The best ideas were awarded prizes.

Numerous fringe benefits, such as the company pension scheme and supplementary components like reduced rates for public transport tickets, special terms and conditions for cell phones and car leasing, complete an attractive package for our employees. On special occasions such as a wedding, starting a family



The collective agreement encourages young staff and, by creating career prospects, boosts the enthusiasm of university students for IAV.

or an anniversary, we offer special bonuses such as special leave days or personalized gifts.

5.2 Collective agreement for students

Special emphasis must be placed on our collective agreement for students, which is unique in Germany. It intends to create a general company framework for students in the different phases of their academic education. The aim of the training period is to enable the students to become familiar with and proficient in IAV's workflows and methods. It comprises a period of study and in-company practical work. The collective agreement contributes to the development of young talent and enhances the students' loyalty by creating career prospects.

This collective agreement also covers our PhD students, students combining a degree course with work placement, and apprentices.

The large number of students who work at IAV as a trainee, student worker or during their final theses, underlines our aspiration to develop young employees as much as possible through our own training.

5.3 Employee excellence through ongoing training

We are the technology leader in our fields of business and have acquired a top position internationally – primarily thanks to the highly skilled people who work for IAV. That is why the further and continuing training of

our staff has always had high priority. In the 2018 financial year, it was possible to raise the number of training sessions per member of staff by almost 12%. In future we will be further intensifying our efforts. In the 2018 financial year, 86,469 hours were invested in the continuing training of our staff, on both multidisciplinary (career-specific and in-house) training and technical (external) training [404-01].

In the process of digitization, IAV is increasingly promoting skills in fields such as artificial intelligence, big data analytics and IT security. To enable us to reinforce our leading role as engineering partner in future, we are boosting our recruitment activities in the areas of software and IT. At the same time, we are investing a great deal in the depth and breadth of our employees' skills. In our Digital Lab, we are exploring inter alia new mobility concepts and at the same time trying out new working methods and forms of work.

Hours of training per employee

	2018	2017	2016
	Hours per employee	Hours per employee	Hours per employee
Total	13.3	12.0	12.1
Technical training	5.1	6.7	6.9
Multidisciplinary training	8.2	5.3	5.2



Average number of full-time and part-time employees at IAV (headcount)

	2018	in % of total	2017	in % of total	2016	in % of total
Number of men	5,664	85%	5,289	85%	4,973	85%
Number of men part-time	224	3%	201	3%	181	3%
Number of men full-time	5,440	81%	5,088	82%	4,792	82%
Number of women	1,019	15%	933	15%	878	15%
Number of women part-time	327	5%	292	5%	273	5%
Number of women full-time	692	10%	641	10%	605	10%
Total	6,683	100%	6,222	100%	5,851	100%

With our in-house “Staff Transformation” project, we are ensuring that we prepare our employees in good time for new challenges and skill them individually for new activities.

In our annual staff orientation interviews, we particularly focus on the skills development of staff. What skills will be required in the future? What skilling and continuing training measures could be suitable? The staff orientation interviews are offered to all IAV employees covered by collective agreements. In the 2018 financial year, the take-up rate was 66% [404-03]. We also use the meeting to co-define duties and targets and review performance. The employees have the opportunity to give open feedback to their line managers and their impression

of team development. This, too, is part of our corporate culture characterized by openness, fairness and partnership.

5.4 Staff development

Flexibility, continuity and further training are the fundamentals of our company. We appoint managerial staff extensively from our own ranks.

IAV attaches particular importance to offering each individual a plethora of personal development and career opportunities. There is great scope for the development of talent and managerial staff in our dynamically growing company.

Our career model comprising leadership, project and specialist careers is being constantly developed, and adapted to new forms of work and working methods.

We complement our comprehensive training measures for our talented staff with varied components such as our in-house mentoring program.

5.5 The advancement of women

IAV aims to have a proportion of women in management positions commensurate with the staff structure. To this end, we have established inter alia a mentor model, designed to prepare women at an early stage for a new leadership role.

IAV has established various measures on equal opportunities and equal pay for its staff.

A key instrument is the existing company pay agreement, in which every member of staff is categorized on the basis of job requirements, irrespective of gender [405-02].

IAV GmbH's shareholders' objective is to raise the share of women on the Supervisory Board. On August 16, 2018, Katja Ziegler was appointed Chief Commercial Officer (interim), thus succeeding Michael Schubert. She was formally appointed Chief Commercial Officer on January 1, 2019. This makes the proportion of women in the management 25 %.

In the 2018 financial year, there were no women in the management. Existing measures and further conceptual ideas have been drawn together in an overall concept with the aim of raising the share of women.

On top of that, for the period until June 30, 2022, the management has decided a target of 6% for the share of women in management positions on the first management level and 2% for the second management level [405-01].

To enable even more skilled women to feel addressed by IAV in the future, we give targeted support to formats or network organizations that address this group. One example is the "Women@Chassis" network platform founded by IAV. The Women@Chassis platform also has a training character, meaning the

participants are able to actively garner something for their day-to-day work. So far, the content has been communication (between men and women), one's own strengths/weaknesses, as well as challenges of the new world of work.

On the university and school level, too, we support numerous initiatives and formats that help increase women's interest in technical issues.

5.6 Staff retention

Generally speaking, there is a high degree of staff loyalty with our company. This is substantiated largely with a staff turnover rate (< 6%) that is very low for the sector, and long years of service with the company (on average eight years) [401-01].

Numerous company sports groups at each of our development centers and sites, along with joint events, such as the company-wide soccer or beach volleyball tournament and the joint participation in running events, contribute to a marked sense of community.

Through summer or Christmas parties for the workforce and team events co-funded by the company, we likewise create an attractive working environment for our staff.

We regularly gauge the mood among our employees by staff surveys. In follow-up review meetings and workshops, we develop approaches for improving our cooperation and corresponding measures are imple-

IAV has a very low staff turnover rate and a long length of service with it.

mented. The next survey for 2019 is already in the pipeline.

In 2018, the staff including students partook in the success of the company in the shape of a special bonus.

5.7 Support at individual stages of life

Our staff are supported by various instruments to achieve an optimum balance between job and private life.

With the protection of our "Flexible Working Time" company agreement, our employees can basically influence their working hours themselves. Separate provisions have been drawn up for employees on call, doing shift work or service work.

Our company agreement on mobile working shows the commitment of management and the General Works Council to the objective of changing the IAV work and leadership culture in the long term and promoting an atmosphere of trust in the company. Mobile working enables employees to work off IAV company premises



IAV is also rated by external university students and professionals as one of the most attractive employers in the industry.

and thus enable a flexible arrangement of working time and place of work.

Mobile working gives staff greater individual scope and security of planning in balancing work and private commitments. This creates greater scope for the employees' creative and productive phases as well as better work processes, which altogether produce added value for company and staff alike.

In addition, our employees throughout Germany have the option of using services from a family service provider. These family-supporting services are

available to all our staff and provide a broad spectrum, ranging from regular childcare and childcare in emergency situations and during holiday periods, through nursing care assistance to house hunting [401-02].

5.8 Staff recruitment

IAV is also rated by external students and professionals as one of the most attractive employers in the sector. This has been substantiated for years by studies on employer attractiveness, for example by Focus, trendence and kununu.

A career portal of modern design accessible by cell phone enables us to offer anyone interested a profound insight into our corporate culture and values. The portal provides a clear overview of the broad

spectrum of positions vacant at IAV. Awards such as that from potentialpark confirm our professional employer branding.

IAV has close links with the research landscape through a large number of joint ventures with higher education institutes and support for numerous student projects such as Formula Student, Eco Marathon and the CaroloCup. Thus, in so many ways we play our part in a good transfer of knowledge between research and practical application. With these exciting projects we offer students incentives to apply their knowledge to the real world and to expand it.

Every year we are involved in more than 50 student career fairs, providing students through excursions with profound insights into our work as an engineering partner. All these activities make it easier to recruit young talents.

In addition, IAV is strongly committed to arousing interest among schoolchildren in technology. The company supports many school projects and initiatives not only with funding but also by mentoring schemes.



The prizes are presented by the chairman of the panel, Prof. Müller (Berlin University of Technology), at a ceremony in Berlin.

5.10 Promoting knowledge transfer

As a company we organize several specialist conferences, such as the Berlin Powertrain Symposium and the Hybrid and Electric Vehicle Conference. Every year these events bring together the leading experts from business and science. They also help establish IAV as a recognized expert in the sector and strengthen the network. These formats give us valuable input for improving our range of services. In addition, IAV is involved in many of the sector's benchmarking groups; it is also the go-to expert for government committees on technological issues.

We promote and support an open exchange of knowledge. Many in-house formats such as our Know-how Forum, podcasts and Wikis encourage the transfer of knowledge above and beyond divisional borders, fostering open specialist discussions.

5.9 Talent Innovation Day

The founder of IAV, Prof. Dr Hermann Appel (1932-2002), defined our company's DNA. He broke new ground time and again. His outstanding ideas created the foundations for so many developments in science and business. This is a path that we consistently embark on.

We accept applications from Bachelor's degree, Master's degree and PhD students who wrote outstanding theses on topics related to future mobility.

As part of our Talent Innovation Day, every year we acknowledge outstanding scientific degree theses and doctoral theses by awarding the Hermann Appel Prize.

Altogether we award € 15,000 in prize money.

A panel of judges comprising representatives of industry and science assesses the theses and decides on the winners.



In addition, IAV provides specific sports programs to help staff unwind from everyday stress and strain at work and from physical challenges.

5.12 Occupational health and safety

Our utmost priority is health and safety at work. Every employee is entitled to a safe and healthy work environment. In keeping with this principle, IAV complies with the applicable occupational safety standards and regulations. In addition, these standards and regulations form the basis for managing health and safety at work throughout the company. In this we observe applicable specific standards and our aim is to obtain certification under ISO 45001 by June 30, 2019. At the time of the publication of the report on June 30, 2019, IAV had successfully completed the certification process.

The health and safety requirements are integrated in our organizational structure and processes, and are put into practice at our sites. In this way risks are systematically ascertained, assessed and minimized at source. In our work we take it for granted that it is our duty to comply with all relevant legal provisions governing health and safety at work and the corresponding accident prevention regulations.

Accidents at work, occupational illnesses and work-related health risks are continually reduced. Our executives are obliged to actively and responsibly help implement health and safety management.

5.11 Health management

Our objective is to keep a constant eye on the health, efficiency, ability to cope with pressure, motivation and satisfaction of staff, as well as to take measures whenever necessary to achieve the following key aims:

- to maintain and promote health in the long term
- to maintain and restore fitness for work
- to reduce work-related health risks
- to prevent disability and chronic illness
- to make the workplace safe and healthy

In this context we offer our employees numerous facilities in the socio-cultural and functional working environment:

- needs-oriented provision of ergonomic office furniture such as height-adjustable tables and back-supporting office chairs
- areas for communal use such as break rooms, kitchenettes, meeting points etc.
- creative spaces and other responsive office concepts conducive to creativity and productivity
- bicycle stands
- adequate lighting at every workplace created by a high proportion of window areas and smart lighting
- a comfortable atmosphere created by panel heating and static cooling systems

By applying an active information and dialogue policy between line managers, occupational safety and health officers, staff representatives, company doctors and third-party firms, we create the conditions for the development of safe processes and ensure a high level of safety at work.

At every development center and every IAV office site, occupational health and safety committees work together with employer and employee representatives to constantly improve health and safety at work [403-01].

Hazard assessment and assistance

[403-04] IAV staff are given the requisite assistance from occupational safety officers and company doctors based on the risk assessment. Test drivers, for instance, can select the scope of examinations they require from an exhaustive catalogue of check-ups. Our occupational safety team assists and advises staff and line managers in selecting the appropriate programs of measures.

Accidents at work

[403-02] An important figure in occupational safety is the accident rate. The statistics used are the recordable accidents at work per 1,000 full-time employees in a calendar year. The number of full-time employees is worked out in line with DGUV V2 (German Statutory Accident Insurance). The accident statistics cover occupational accidents with at least three lost days of work in line with DGUV V2.

In 2018, IAV GmbH had an accident rate of 4.5 accidents at work per 1,000 full-time employees. That puts IAV clearly below the administrative sector's employers' liability assurance association's (Verwaltungsberufsgenossenschaft) insurance average (12 notifiable

accidents at work per 1,000 full-time employees, status: 2017). In addition, no employee of IAV GmbH has been fatally injured in a work-related work or been sick with an occupational illness in the reporting period.

Occupational safety statistics

Occupational safety at IAV	2018	2017	2016
Accident rate per 1,000 employees ¹	4.5	4.13 ³	3.64
Online tuition relating to occupational safety	8,271	6,021	6,224
Hazard assessments ²	329	320	288

¹ Number of industrial accidents with at least three lost days of work per 1,000 full-time employees

² The figure quoted is the total number of safety assessments recorded so far

³ Corrected figures because of change in calculation basis



6 Societal Responsibility

Societal Responsibility

IAV's aim is to set standards and assume responsibility, not only with its products and services, but also in the way it behaves in relation to its business partners and the environment. As a responsible member of society and corporate citizen, we therefore practice respect, appreciation and tolerance when dealing with the people around us.



6.1 Working in partnership

Some of IAV's added value comes from its business partners. Purchasing is based on defined processes and role-based decision-making powers. Vendor management is an integral component of our purchasing policy and an operational tool for

successfully managing the relationship between suppliers and IAV.

Enforcement of sustainability standards along the entire supply chain is not yet systematic. IAV has initiated a number of measures designed to ensure systematic enforcement and is working on implementing them.

IAV ranks suppliers in terms of availability, confidentiality and integrity, as well as expertise and performance. During 2019, there are plans to introduce a Supplier Code of Conduct [205-02]: the aim is to assert our values and our understanding of sustainability in our supply chain.

Suppliers that have an influence on performance processes are selected very carefully. The first step in the selection process is comprehensive research (e.g. German Association of the Automotive Industry (VDA) questionnaire, certificates, supplier's self-reporting form). Depending on the performance process, this contains questions on compliance, responsibility and environmental protection. Suppliers are approved only if they meet our requirements.

[102-45] In reaching business decisions, IAV is not be

influenced by special interests or factors bearing no relevance to the matter at hand. For example, IAV works according to the two- (or more) man rule and has introduced other measures to avoid conflicts of interest.

6.2 Human rights and child labor

Human rights form the basis for responsible interaction between people. IAV promotes respect for human rights and refuses to be involved in human rights violations. The Universal Declaration of Human Rights is our reference framework [102-12]. All forms of forced labor, child labor, modern slavery and human trafficking are strictly prohibited at IAV, and IAV demands the same from its business partners.

IAV sources deliverables and services from business partners that are mostly based on the work of highly skilled employees. The vast majority of our suppliers are based in Germany and the rest of Europe. The laws in force in the European Economic Area prohibit child and forced labor. In all cases, we make sure we respect the laws of the countries in which we operate. When buying in products and services, our business partners and their production locations are tied to our Code of Conduct.

In the 2018 financial year, IAV GmbH was a member of 17 associations:

- ASQF e.V.
- Bundesvereinigung Logistik e.V.
- CAN in Automotion (CiA) e.V.
- Deutsches Verkehrsforum e.V.
- DIN Deutsches Institut für Normung e.V.
- FIB – Freudeskreis des Institutes für Verbrennungsmaschinen Braunschweig e.V.
- Förderverein Industriemuseum Chemnitz e.V.
- Förderverein Technologiestiftung e.V. (TSB)
- Marketing Club Berlin e.V.
- Mobility Transformation Center
- Open Hybrid LabFactory e.V. (OHLF)
- SD Card Association
- Trägerverein Wissenschaftlich-Technisches Zentrum für Motoren- und Maschinenforschung Roßlau e.V.
- VBKI Verein Berliner Kaufleute und Industrieller e.V.
- VDA Verband der Automobilindustrie e.V.
- Verband Deutscher Maschinen- und Anlagenbau e.V.
- Verband der Bahnindustrie in Deutschland (VDB) e.V.

This enables us to have a transparent supply chain and helps prevent child and forced labor.

6.3 Political lobbying

IAV defends its interests within the public opinion-forming process but does not engage in systematic lobbying.

IAV has not made any donations to political parties during the reporting period.

Opinion-forming activities take place in compliance with statutory rules on openness and transparency and are centrally monitored. In the case of personal political work, no reference may be made to any function or position at IAV.

[102-13] IAV is actively involved in a large number of associations.

In addition, numerous employees and executives are members of various working groups and committees.

6.4 Data protection

IAV respects the right of individuals to decide what happens to their own personal data.

We see the protection of personal data as an integral part of our corporate philosophy. We place great value on complying with the data protection regulations both in the context of our own data processing and in the framework of projects for customers and business partners, as well as in the development of new products and services.

We acknowledge the principles of data protection: lawful and fair processing, transparency, limitation to specified purpose, data minimization, accuracy, storage limitation, integrity, confidentiality and accountability.

Data protection management system

The focus in 2018 was on implementing the General Data Protection Regulation (GDPR) within the company. The project "IAV fit for the GDPR" analyzed the status of implementing the GDPR at IAV. The results indicated that IAV already has a high level of data protection.

Even after the GDPR came into effect, the number of enquiries from data subjects remained on the same low level. There were no notifiable data protection incidents in 2018.



The focus for 2019 consists in implementing the areas of activity ascertained during the project. This will enable us to raise the significance of data protection at IAV even more and to continue safeguarding the high level of data protection [418-01].

IAV has established a data protection management system to constantly safeguard compliance with the data protection regulations and their verifiability. The system is subject to an on-going process of further expansion and improvement, bringing it in line with the constantly changing regulations.

IAV has appointed a Group Data Protection Officer to warrant a high level of data protection throughout the Group.

IAV has an internal data protection team that deals with questions relating to data protection and takes

care of data protection management, including aspects such as further development of the company's specific data protection and data security measures, integrating new data protection regulations in the business processes, adjusting the internal regulations and producing the necessary documentation. The Group Data Protection Officer and the data protection team advise the organizational units and technical departments and are involved in relevant decisions. The data protection team is constantly available to all IAV employees and to customers and business partners via a central contact address.

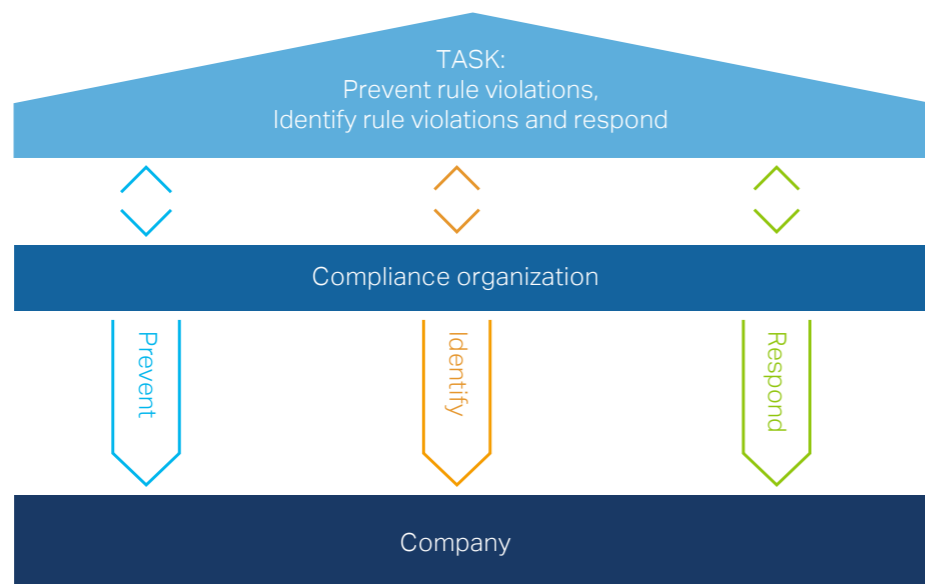
Awareness measures such as general and specific training courses and publications on the intranet ensure that the relevant requirements and regulations are communicated within IAV.

Essential activities and measures are coordinated with the company management.

6.5 Compliance and ethics

IAV's aim is to set standards and assume responsibility – not only with technology, but also in terms of our conduct and interaction with colleagues, business partners and the environment. IAV stands for responsible management in terms of corporate governance and compliance. The executives of IAV and all the company's employees have a duty to comply with legislation and internal rules and policies. We expect the same integrity from our business partners, and this is a precondition of any lasting business relationship. The compliance program ensures implementation and further development of IAV's compliance standard.

Central responsibility and coordination in this matter are provided at Management Board level by the Chief Compliance Officer (until June 12, 2018: CEO Michael Schubert, from June 13, 2018 interim CCO Katja Ziegler). During the financial year 2018, IAV once again received no fines or monetary sanctions for failure to comply with legislation and/or regulations in the social and business sector, apart from the cases named in the section "Plea Agreement with the US Ministry of Justice" [419-01]. Similarly, IAV also received no fines, sanctions or warnings for failure to comply with product safety legislation and regulations or with voluntary codes of conduct [416-02].



Integrated approach within the company

Compliance has become a key part of good management. IAV is guided by the principles of the German Corporate Governance Code (Deutscher Corporate Governance Kodex, DCGK) and the UN Global Compact [102-12]. Under the DCGK principles and statutory provisions, the company bodies have to ensure compliance with laws and corporate policies. Responsibility for compliance and the organization is derived from this comprehensive managerial responsibility.

IAV Compliance Management System

To fulfill its managerial responsibility in terms of compliance and organization, the Management Board

has set up steering and controlling instruments and maintains a Compliance Management System (CMS). The CMS is continuously improved and monitored. [307-01] [419-01]. A hybrid centralized/decentralized organizational structure was chosen to implement the Compliance Management System.

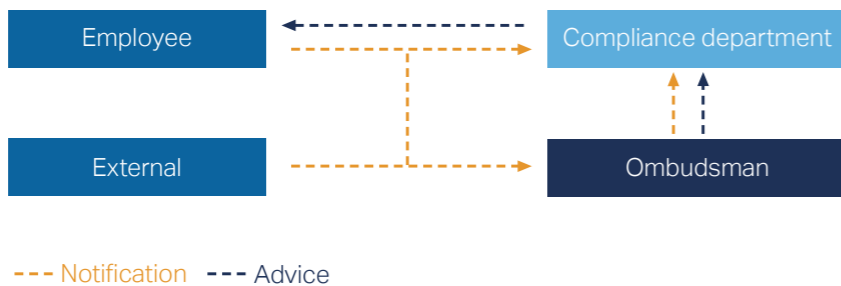
The Compliance Management System is used as a systematic safeguard against compliance risks and negative consequences of rule violations for the company, its management, executives and employees. It covers IAV GmbH and its wholly- and majority-owned subsidiaries. In the event of particularly serious incidents, the Management Board informs the Supervi-

sory Board promptly and introduces corrective measures.

The Compliance Management System is based on the Compliance Program. The Code of Conduct is accompanied by internal compliance policies, internal processes, policies and the employment contracts in force. The areas covered by the policies are based on the results of the risk analysis and the content of the Code of Conduct. At regular intervals – at least once a year or ad hoc as required – the compliance policies are reviewed and, if necessary, updated.

Another central element of IAV's Compliance Management System is the IAV whistleblower system. It enables employees and business partners to notify an independent body of potential violations of rules on a confidential basis. These notifications can be submitted to the compliance officers or to an external ombudsman – an independent lawyer not tied to IAV. Employees can also talk to their direct line manager or Works Council at any time. Whistleblowers acting in good faith will not suffer any disadvantages. The information will be processed in a systematic assessment procedure and corresponding measures will be derived.

For a compliance management system to be successful, managers and staff need to be informed of its content during mandatory training sessions and activities.



Information paths in the IAV compliance information system

In addition to the training courses pertaining to the Code of Conduct (see page 12 and 13 for further details) that give all IAV employees a uniform understanding of compliance, our executives receive special training on compliance risks in everyday business operations.

The relevant technical departments receive training on emission legislation in the framework of technical compliance. Face-to-face training sessions help executives understand, recognize and manage their own role and function as managers with regard to compliance risks [205-02] [412-02]. In addition, all employees receive specific web-based training on the topics of data protection, occupational health and safety and information security.

In addition to the training activities, a number of communication channels are used to raise awareness of compliance.

A statistical record is kept of staff trained as a percentage of the entire headcount. It is included in the number of training days per employee [205-02] [412-02].

Anti-corruption

IAV advocates fair, unbiased competition. IAV does not tolerate bribery and corruption.

The corruption risk for IAV GmbH is ascertained regularly in the context of the KPIs based on compliance enquiries and risk analysis. If a corruption risk changes, the company takes continuous steps through awareness-raising measures such as training sessions, manuals and policies.

An evaluation of the Compliance Management System, particularly in the 2018 reporting period, found no significant corruption risk for staff or the

Management Board based on the IAV portfolio [205-01].

All IAV executives and the monitors they appoint have received anti-corruption information through the Compliance Management System. This also includes the employee representative body [205-02].

All IAV employees are given access to anti-corruption information when they join the company. Under "employees" we include executive staff, employees covered by collective agreements and those who are exempt from collectively agreed terms, agency staff, student workers, degree candidates and interns [205-02].

When the Code of Conduct forms an integral part of the contract, business partners receive information from IAV accordingly. The Code of Conduct is published on the IAV homepage. IAV has also looked at producing a Supplier Code of Conduct. This will be published in 2019 and act as the contractual foundations for our business relationships with our partners [205-02].

There were no confirmed cases of corruption during the reporting period. IAV penalized one employee under labor law during the reporting period, due to a conflict of interest. There were no sanctions on the grounds of suspected corruption. No legal proceedings under public law were brought against IAV or its employees on corruption grounds during the reporting period.

In 2018, no contractual relationships with business partners were terminated or not renewed for corruption reasons [205-03].

Anticompetitive practice and violations of antitrust laws

IAV is committed to fair and transparent practices in business competition. Competition and antitrust legislation must be complied with. Any agreements with competitors that could restrict or prevent competition are prohibited. This applies, in particular, to agreements with competitors on prices, pricing strategies, bids, capacity, terms and conditions, market shares or technologies.

IAV has drawn up a compliance policy on this issue and communicated it within the company.

IAV is not facing any pending legal cases because of anti-competitive practices or violations of antitrust or anti-monopoly laws [206-01].

During 2018, IAV once again received no fines or monetary sanctions for failure to comply with legislation and regulations in the social and business sector apart from the cases named in the section "Plea Agreement with the US Ministry of Justice" [419-01].

Plea Agreement with the US Ministry of Justice

In December 2018, IAV reached agreement with the US Ministry of Justice to settle an investigation and concluded a so-called plea agreement. The investigation looked at IAV's role regarding the use of a so-called "defeat device" by Volkswagen to bypass US diesel exhaust standards. More than ten years ago, IAV had assisted Volkswagen with the development and implementation of this software function, which violates US law. The plea agreement with the US Ministry of Justice ascertains that IAV played only a minor role.

In the context of the plea agreement, the US Ministry of Justice and IAV agreed on the payment of a fine amounting to \$ 35 million and the appointment of an independent monitor for a two-year period. The payment of the fine and the start of the monitor's work will follow upon obtaining judicial approval of the agreement. The monitor's task will be to verify compliance on the part of IAV with the terms of the agreement, particularly regarding measures for further reinforcement of IAV's existing compliance and ethics program.

IAV sees the settlement as an important step towards becoming a better engineering partner for the automotive industry and a stronger company. Our minor role is not an expression of what IAV stands for as a company, business partner and employer. The agreement explicitly acknowledges that IAV has already

taken steps in the past to expand and improve the compliance program. The emphasis is now shifting increasingly to environmental issues such as sustainability and technical compliance. Besides legal and regulatory compliance, it is our intention that the already initiated improvements within the product development process live up to our responsibility for the environment and for society at large [206-01] [307-01] [419-01].

6.6 Funded projects

Funded projects give IAV the opportunity to pursue developments and research co-financed by the German government and the EU [201-04]. These projects are supported with € 18 million in public funds, including € 5.6 million in 2018. These innovative projects are proprietary developments, some of which have a potential market launch date a long way in the future.

Publicly funded proprietary engineering projects make a major contribution to the technological progress of our society, strengthen existing sectors and support

Public support in funded projects in 2018:
€ 5.6 million

the development of new future sectors. For IAV, the funded projects help us expand our expertise and reach a future-proof know-how lead. They are becoming increasingly important in the age of digitization and technological and environmental change. This is also reflected in the range of technological fields involved in funded projects. There are also signs of a clear shift from “conventional” automotive topics to current mobility issues. Particularly in key research areas such as digitization, autonomous driving and e-mobility, publicly funded projects are increasingly being used to establish know-how for customer projects in important, new future fields.

The following projects can be named as just a few examples of strategically significant topics:

Automated shuttles in the urban context: HEAT and OTS

In the HEAT project (“Hamburg Electric Autonomous Transportation”), IAV is working with other partners to see how autonomous shuttle buses can be integrated in real urban traffic. IAV is responsible for the vehicle concept and its on-going development, contributing its many years of experience in engineering autonomous vehicles. The shuttle bus developed by IAV for the project is about 5 meters long, 2 meters wide and 2.6 meters high. It weighs about 4 tons. It offers space for a maximum of ten passengers. HEAT’s automatic control system is based on cameras, radar and lidar,

with additional roadside infrastructure also being installed. The joint project by the City of Hamburg (BWVI), the public transport company Hamburger Hochbahn, Siemens Mobility, IKEM, DLR and IAV is being supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

The test phase is organized on a step-by-step basis so that the experience gained in the individual phases can be integrated in the subsequent project steps. Gradually the route is being extended, the degree of automation raised and the speed increased. The project comes to an end in fall 2021 with the use of the automated shuttle at the World Congress on Intelligent Transport Systems (ITS). Among others, the objectives include validating the suitability of autonomous shuttle buses for use in public transport, enhancing public perception and boosting customer acceptance for autonomous driving, as well as gaining experience and expertise in the field of autonomous vehicles.

HEAT is an exciting challenge, but not necessarily new ground for IAV. The project follows on directly from the “OTS 1.0 – Optimized Transport System” project based on self-driving electric vehicles. This entails developing an autonomous, electric vehicle for local public transport (by road). The aim is to investigate specific approaches for future mobility concepts (infrastructure and vehicle) as well as corresponding business models. Due consideration is given to the legal implementation possibilities and acceptance by society at large.



Both projects pave the way for new mobility solutions in the urban context. They will make road transport more efficient and cities more livable. In this way, sustainability is directly beneficial to city-dwellers..

EMBATT goes FAB: up to 1000 kilometers with one battery charge

In the “EMBATT goes FAB” consortium project, IAV’s experts and their project partners are researching new technologies for manufacturing bipolar batteries. The special thing about the EMBATT batteries is that they have a bipolar structure. Similar to fuel cells, they consist of stacked electrodes connected in series. This eliminates the need for numerous housing components and connection elements, saving costs and space in the vehicle. The free space can be filled with additional active material so that the battery can save more



energy and extend the vehicle’s range. The prime target the engineers are working towards consists of achieving 80% volumetric efficiency as the basis for a range of up to 1,000 kilometers with one battery charge.

This is exactly the appeal of lithium ion bipolar batteries. Up to now they have only been made and tested on a smaller scale for use in the lab and technical center. IAV and partners thyssenkrupp System Engineering GmbH, Daimler AG and the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS) intend to change that now. Since mid 2018, they have been working in the “EMBATT goes FAB” project on getting the highly promising new technology ready for the next level. After producing the batteries on a small scale hitherto, the intention is to use larger machines for the individual process steps at the thyssenkrupp pilot plant in Pleiße near Chemnitz.

In addition to technical issues, the project partners are also looking at the ecological footprint of the battery and the battery management system, as well as the subsequent costs. The “EMBATT goes FAB” project will run through to the end of 2020. Then it will be a case of finding potential partners interested in setting up a pilot production line for manufacturing the larger cells. Besides OEMs and tier-1 suppliers, manufacturers of solar batteries can also benefit from the new technology. Batteries with higher volumetric density can be a driving force not only behind sustainable e-mobility but also for local, remote production of solar power.



mobileVIEW: short-term warnings of heavy rainfall

With the “mobileVIEW” project, IAV is bridging the gap between the water industry and the automotive sector. Connected rain sensors in vehicles act as rolling measuring stations with the data evaluated in the cloud. This allows for timely detection of heavy rainfall incidents, leaving the waterworks and flood protection agencies enough time to take countermeasures, and helps to avoid unnecessary damage to the infrastructure and to the environment.



EnerGlider: novel wind turbine for upper winds

IAV is involved in another funded project in the wind energy sector, called “EnerGlider”. The aim is to develop a novel wind turbine for upper winds to operate 24/7. It will be based on a self-launching glider, whose motion energy in specific flight phases is converted into electricity by a winch with a generator unit. IAV’s role in the project consists in developing the control system for the generator unit on the offshore platform as well as the control and navigation concepts for the glider and the overall system.

VanAssist: zero-emission delivery of goods

IAV is developing integrated vehicle and system technologies for automated driving to permit nearly zero-emission, automated deliveries of goods in urban areas. Besides autonomous driving in the urban setting, the focus here is on intelligent assist functions for parcel deliveries with autonomous driving functions, as well as radio-based interaction between delivery agent and vehicle. “VanAssist” can thus help to reduce traffic volumes and emissions in the urban setting.

6.7 Sponsoring and donations

Sponsoring is a part of IAV’s corporate culture in the context of its corporate social responsibility. Our sponsoring policy ensures a uniform sponsoring culture in terms of the aims that IAV pursues with its donations and sponsoring activities. To ensure this, every request is assessed and decided on by an independent in-house committee.

Through our sponsoring activities, we support individuals, groups, organizations and events with money, benefits in kind and services. IAV makes donations to and sponsors selected non-profit organizations and causes. Donations and sponsoring activities are carried out after running through a standard approval process managed by the Communication & Marketing department. This ensures transparency and rules out conflicts of interest. IAV does not arrange donations or sponsoring activities that could damage the reputation of IAV. Using donations or sponsoring to bring about a particular decision, for instance a contract from a customer, or for political, religious or ideological purposes, is prohibited.

We do not see donations as sponsoring because donations are made without any direct (contractual) benefit in return – usually for charitable causes, emergency aid etc. Nevertheless, donations are also governed by our sponsoring policy. Membership fees do not come under sponsoring and are managed through a separate decision-making process.

Community projects:

- “Little Scientists” (“Kleine Forscher”): In supporting the kindergarten initiative “Little Scientists’ House” in Gifhorn, we help fire young talents with enthusiasm for engineering.

→ www.haus-der-kleinen-forscher.de/nc/de/netzwerk/lokales-netzwerk-land-kreis-gifhorn/

In 2018, IAV supported the initiative and campaign “Chemnitz is neither gray nor brown” in Chemnitz with a donation. The campaign stands for respect, education and peaceful cohabitation.

IAV did not make any political donations in the reporting period.

Examples of sponsoring activities

IAV sponsors a wide range of events and activities. When it comes to sponsoring, the focus is on enthusiasm for engineering and mobility. We want to appeal to a wide range of beneficiary groups.



University projects:

- Formula Student: teams of students build a racing car and compete with one another once a year on the Hockenheim racetrack
- Symposia organized by students or student body meeting
- Carolo Cup: students build a low-budget, energy-efficient autonomous vehicle that can be navigated round a course without any errors to the greatest possible extent.
- Shell Eco Marathon: school pupils and students construct a vehicle that completes a certain distance with as little fuel as possible and they take part in the Shell Eco Marathon, one of the world's largest efficiency competitions in the mobility sector.
- RoboCup German Open: scientists and students let their teams compete in the robot soccer competition.
- Sponsoring of symposiums organized by students or student body meetings

Examples of donations

IAV has a set budget for supporting social projects (total amount 2018: € 10,000). Since 2018, this amount has been divided equally between the five key regions for IAV. Organizations in Berlin, Gifhorn, Chemnitz/ Stollberg, Munich/Ingolstadt and Sindelfingen/ Stuttgart each received € 2,000. The organizations supported by IAV are chosen by the local works council in consultation with the company management.

For example, IAV presented a € 2,000 donation to the charity ready4work e.V. in Gifhorn to support the creation of additional training opportunities with the Regional Training Association (Regional Verbund für Ausbildung e.V. – RVA). ready4work supports young people who have not been able to find a training program for more than twelve months despite their own efforts.

An aerial photograph showing a winding asphalt road on the left side of a lush green forest. A vibrant blue river flows through the center and right side of the image, surrounded by dense trees. The scene is captured from a high angle, looking down on the landscape.

7 Environmental Responsibility



Environmental Responsibility

[G4-14] IAV is aware of its responsibility to the environment, to society and to its employees and consciously sets itself the task of combining business success with ecologically responsible conduct, with special emphasis on the economical use of resources and the avoidance of environmental impacts. Our aim is to exploit, throughout the company, all possible energy-saving potentials in the operation of our buildings, plants and vehicles.

IAV's environmental policy ensures that ecological aspects are taken into account at an early stage in investment decisions in order to restrict to a minimum the consumption of resources and emissions from our buildings and other facilities. The development projects which we carry out on behalf of our customers comply with all current and future legal requirements.

In the 2018 reporting period, IAV received no substantial fines and non-monetary sanctions for failure to comply with environmental laws legislation and regulations, with the exception of the cases stated in the section "Plea Agreement with the US Ministry of Justice". [307-01] Similarly, no cases were raised in the dispute settlement proceedings owing to non-compliance with environmental laws and regulations, with the exception of the cases stated in the section "Plea Agreement with the US Department of Justice" [307-01].

7.1 Environmental protection

It is our aim to use our expertise and our innovative power to support IAV's business partners and customers in developing resource-efficient technologies. Our

activities are geared toward the development of cutting-edge, economical and environmentally friendly products [103-02].

We pay strict attention to environmental protection and are continuously seeking possibilities for improvement in all our working processes. Natural resources must be used rationally and economically, and unnecessary environmental pollution must be prevented. Active environmental protection is a matter of course to us, while the improvement of our own energy efficiency is a fixed component in the provision of our services. Our use of simulation systems and diverse test benches and dynamometers enables us to eliminate a large number of high-impact flights, vehicle movements and prototypes. IAV thus makes an active contribution to protecting the environment. The use of

modern communication media (videoconferencing, web meetings etc.), avoiding many business trips, is a further environmental benefit [103-02].

We conduct regular energy audits and consistently implement measures to enhance efficiency. New IAV buildings are constructed and operated in conformity to state-of-the-art energy standards [103-02].

7.2 Environmental Management System

Global change is one of the greatest challenges of our age, the prime focus being on climate protection and the sustainable use of resources. These topics play a central role at IAV. We focus on developing new technologies and are continuously optimizing our operational environmental protection practices and our resource efficiency [103-02].

IAV has implemented an environmental management system in conformity with ISO 14001 in order to improve and concentrate our activities in the field of environmental protection, and had this certified for the first time in 2018. An important element in attaining this is the publication of IAV's updated environmental policy in its integrated management manual. Here we refocus the orientation of our own environmental protection activities, while simultaneously expanding our scope to include upstream and downstream processes at our suppliers and service providers [103-02].

Our intention here is to determine all inputs, outputs and environmental effects over the entire life cycle of



all processes, products, buildings and facilities in order to attain greater transparency and a substantiated basis for the future planning and development of energy efficiency. The protection of the environment, reduction of life cycle costs and the assurance of health, comfort and well-being in our buildings are the principal aims of our sustainability strategy [103-02].

7.3 Resource consumption and efficiency

As a company active in the field of automotive engineering services, IAV operates a diverse range of test facilities, computing capacities and vehicles. We also maintain several tens of thousands of square meters of office and workshop space for our employees and practical work at hand. IAV GmbH successfully passed an energy audit in accordance with DIN EN 16247, Part 1, in 2016. This audit result is valid until August 2020.

A total energy consumption of some 387 million MJ (2017: 290 million MJ) resulting from our business activities was recorded for the year 2018. The greater part of this, at around 37 %, was made up by fuels for operating our vehicle fleet and engine dynamometers, followed by approx. 33% for electricity. Nearly 25 % was accounted for by thermal energy needed for the air-conditioning of our buildings. Energy recuperation and feedback into IAV's internal grid from the engine dynamometers enabled us to meet nearly 4 % (2017: 3%) of our total energy demand and around 10% (2017: 8%) of total electric power demand from this source. Energy needed for cooling and for generating steam is currently not recorded separately, and this data is included in the figures mentioned above. There were no sales of energy or any energy feedback into the public grid in 2018 [302-01].

Energy demand

GRI-Index	Description	Amount of energy 2018	Percentage 2018 (%)	Amount of energy 2017	Percentage 2017 (%)
302-1 a.	Consumption of fuel from non-renewable sources (gasoline, diesel, hydrogen)	144.30 TJ	37.3 %	97.53 TJ	33.5 %
302-1 b.	Consumption of fuel from renewable sources (E30, E100)	2.43 TJ	0.7 %	0.96 TJ	0.3 %
302-1 c.i.	Electricity consumption	127.89 TJ	33.0 %	103.38 TJ	35.6 %
302-1 c.ii.	Consumption of energy for heating/consumption of gas	95.61 TJ	24.7 %	80.51 TJ	27.7 %
302-1 c.iii. and 302-1 c.iv.	Consumption of energy for cooling and generation of steam	Not separately recorded		Not separately recorded	
302-1 d	Energy sales	0 TJ	0 %	0 TJ	0 %
	Energy used from energy feedback	16.71 TJ	4.3 %	7.99 TJ	2.8 %
302-1 e	Total energy consumption	386.94 TJ	100 %	290.36 TJ	100 %

The calculated rise in energy consumption compared to the previous year is explained essentially by an improved and more consistent recording of individual consumptions, as well as an increase in test facility services as part of additional commissioning for vehicle homologation projects for licensing in accordance with WLTP (EURO6d/ EURO 6D). Assessing the total energy consumption and the number of 6,683 employees results in an energy intensity rate of 59,165 MJ/employee (2017: 44,074 MJ/employee). The consumption of energy not arising directly in relation to IAV's activities (for business trips using rail or air transport, for example) is not taken into account here [302-03].

For smaller sites, in particular, billing of the various energy sources takes place only annually, and the final annual energy bills are not yet completely available at the time of this report; for this reason, the data for 2017 has been included in the calculation for these locations. For individual vehicles in the fleet, no recorded consumption data was available. These vehicles are therefore not taken into account. The aim is to close this gap in our statistics for the next report [302-01].

Data supplied by the energy utilities, such as data surveys for smart meters and final annual invoices, and our own measurements, were used in some cases for

acquisition of this data. The energy content of the quantities of fuel consumed was determined using the relevant conversion factors [302-01].

Environmental impact of IAV's company fleet

The continuous modernization of the company's fleet of vehicles and the systematic creation of incentives for selecting vehicles with low CO₂ emissions made it possible to reduce the fuel consumption of the company's vehicle fleet and the real greenhouse gas emissions derived from this by more than 15 % compared to the previous year.

IAV proposes the purchase of e-vehicles and vehicles with low CO₂ emissions on the basis of the company vehicle policy.

The environmental impact of IAV's vehicle fleet has been modeled respectively calculated using information provided by the internal fleet management tools. The following background data is used for this calculation:

- Real-driving fuel consumption (RDE)
- Vehicle information (make, model, fuel type, emission class)
- Mileages from leasing agreements

E-mobility and charging infrastructure

IAV currently operates 54 AC charging stations, each with a charging capacity of 22 kW. In addition, one 150 kW DC charging station each is available for e-vehicles at the Sindelfingen and Gaimersheim locations. Two charging stations are publicly accessible at our Berlin site. These charging stations serve not only our test vehicles and the purpose of testing charging technologies, they also enable our employees and our guests to charge their vehicles. IAV's charging infrastructure is continuously being expanded and is an important element in new building projects. Charging of e-vehicles is free for our employees and our guests.

Water consumption

A total water consumption of some 91,000 cubic meters [2017: 55,600 m³] was recorded for the year 2018. This water was mostly obtained from the municipal water utilities. Roughly 3% of the demand was met through wells from groundwater. There was no utilization of surface water, groundwater or rainwater. The final invoices for the year submitted by the water utilities were used for calculation of consumption [303-01].

For future calculation of the reductions achieved in water consumption, from now on the year 2018 will be used as the reference year and the consumption figures determined for it are set as reference quantities.

Measures to increase efficiency

IAV is pursuing a whole series of activities focusing on energy efficiency, water efficiency and waste avoidance. In addition, IAV is also implementing a raft of other measures to improve ecological, economic and social sustainability [302-04]:

- Analysis of life cycle costs from the idea, via planning, construction, operation and refurbishing up to and including demolition/disposal
- Reduction of operating costs by means of process optimization and common standards
- Enhancement of space efficiency by means of optimized utilization planning and purchasing of furniture
- Greater flexibility in site/space use thanks to third-party utilization, including sub-letting
- Enhancement of building value via sustainable concepts for facility technology

Measures already implemented for the reduction of water consumption take the form of [303-01]:

- Sustainable use of rainwater via the utilization of swale infiltration at the Großmehring site
- Reduction of water consumption via two-stage water flushing and sensor-controlled urinals

Waste management

All varieties of waste are collected separately at IAV GmbH and disposed of in the prescribed manner. We thus make an active contribution to environmental protection. Adherence to the German Waste Management and Product Recycling Act and the Commercial

Waste Regulations is a matter of course for us. IAV employs a Company Waste Officer who, inter alia, informs the persons responsible for waste at the sites about any legislative changes, agrees the sorting, collection and disposal of waste with them, and drafts an annual report concerning the waste disposed of [306-02].

A total waste volume of around 450 tons was recorded for 2018 (2017: 398 tons). This was made up of just under 82% (2017: 74%) non-hazardous and 18% (2017: 26%) hazardous waste [306-02].

Disposal is performed via certified disposal companies. Actual disposal is documented by means of

certificates. Each individual disposal company is responsible for deciding on the mode of disposal in each case. In accordance with the German Waste Management and Product Recycling Act, reuse, reprocessing for reuse and recycling are in all cases to be preferred over any other disposal route (e.g. thermal valorization). It was possible in 2018 to reuse or recycle around 43 % (2017: 60 %) of non-hazardous and around 21 % (2017: 17 %) of hazardous waste [306-02].

Here, again, 2018 is set as the reference year and the figures determined for it as relative reference quantities for future calculation of the reduction achieved in the volume of waste produced and increases in the rates of reuse and recycling [306-02].

Leakage of hazardous substances

Thanks to the consistent planning, operation and maintenance of our facilities, concerned about safety and environmental protection, there was no significant leakage of any harmful substances during the 2018 financial year [306-03].

Transportation of hazardous goods

IAV has defined processes for the transportation of hazardous goods. The company has appointed a Hazardous Goods Officer to assure and monitor adherence to applicable internal and external rules and for further development in this field. The officers dealing with road and maritime transport are examined by the Chamber of Commerce and Industry. In addition, the

GRI-Index	Description	Quantity E 2018	Share 2018	Quantity E 2017	Share 2017
306-2 a	Hazardous waste	79.34 t	100 %	104.2 t	100 %
306-2 a.i.	Hazardous waste – reuse	0 t	0 %	7.9 t	7.6 %
306-2 a.ii.	Hazardous waste – recycling	16.72 t	21.07 %	10.2 t	9.8 %
306-2 a.v.	Hazardous waste – waste incineration	48.27 t	60.84 %	44.8 t	42.9 %
306-2 a.ix.	Hazardous waste – R12 (in acc. with Annex 2 KrWG) *	1.6 t	2.02 %	0.3 t	0.3 %
306-2 a.ix.	Hazardous waste – other waste for disposal/recycling	12.75 t	16.07 %	41.0 t	39.3 %
306-2 b	Non-hazardous waste	371.24 t	100 %	294.3 t	100 %
306-2 b.i.	Non-hazardous waste – reuse	10.49 t	2.83 %	17.2 t	5.8 %
306-2 b.ii.	Non-hazardous waste – recycling	149.52 t	40.28 %	160.6 t	54.6 %
306-2 b.v.	Non-hazardous waste – waste incineration	102.16 t	27.52 %	83.2 t	28.3 %
306-2 b.ix.	Non-hazardous waste – R12 (in acc. with Annex 2 KrWG) *	75.64 t	20.37 %		
306-2 b.ix.	Hazardous waste – other waste for disposal/recycling	33.43 t	9 %	33.3 t	11.3 %

* KrWG = German Waste Management and Product Recycling Act

Hazardous Goods Officer and other employees also possess certification for Personnel Category 1 of the IATA Dangerous Goods Regulations (DGR) and are thus authorized to ship hazardous goods by air. These officers are located at the various company sites. There is regular reporting and also ad-hoc notifications to management on this topic.

The IAV employees involved with the transport of

hazardous goods are instructed in line with their tasks and activities. These employees are supported by the Hazardous Goods Officer and assisted in transporting hazardous goods.

There were no notifiable occurrences for which an accident report as defined in Annex 2 of the Hazardous Goods Officers Ordinance would have been required during the reporting period.

8 About this Report



About this Report

8.1 Definition of the report content and topics

[102-46] The report content was defined on the basis of a stakeholder analysis and its reconciliation with the measures planned for the financial year and carried out.

The reporting draws on existing report structures and key performance indicators. Information that was lacking or demanded by the GRI standards was added.

Stakeholder analysis

As part of the reporting, a stakeholder analysis was conducted focusing on sustainability. It was carried out [102-43] in the form of a "survey of sponsors": in-house sponsors were defined to represent a group or individual stakeholder, answering questions and giving their assessments of how crucial the aspects were from the perspective of their particular group. The primary selection criterion for the sponsors was their relevance in terms of expertise and content.

[102-42] The stakeholders were selected on the basis of an analysis of the environment. This identified the

key stakeholders with which IAV interacts. They include clients, suppliers, staff and other groups.

[102-40] Stakeholder groups taken into consideration:

- Clients
- Suppliers
- Staff
- Employee representatives
- Shareholders/Supervisory Board
- Investors
- Local authority representatives
- Competitors and counterparties
- NGOs
- Chartered accountants and auditors

[102-46] The key issues identified are nothing new to IAV. In the appropriate sections and corporate divisions within IAV, they were implemented, enhanced, regularly scrutinized and reported to the management. Most of them were put into practice in management systems.

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8.3 List of Abbreviations

Abbreviation	Explanation
BEV	Battery Electric Vehicle
CoC	Code of Conduct
CS	Corporate Sustainability
CSR	Corporate Social Responsibility
DCGK	<i>Deutscher Corporate Governance Kodex</i> (German Corporate Governance Code)
DGR	Dangerous Goods Regulations
DIN	<i>Deutsches Institut für Normung e. V.</i> (German Standardization Institute)
GDPR	General Data Protection Regulation
GmbH	<i>Gesellschaft mit beschränkter Haftung</i> German limited liability company
GRI	Global Reporting Initiative
HGB	<i>Handelsgesetzbuch</i> (German Commercial Code)
ISO	International Standardization Organization
LCA	Life Cycle Assessment
NGO	Non-Governmental Organization
RDE	Real Driving Emissions

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Impressum

Sustainability Report 2018 financial year

IAV GmbH
Ingenieurgesellschaft Auto und Verkehr

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Publisher

IAV GmbH · Carnotstraße 1 · 10587 Berlin
Phone +49 30 3997-80
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Contributing editor

Christian Buck

Picture credits

IAV, Christian Bierwagen, iStockphoto, Max Lautenschläger

Postproduction

Highlevel

Layout

publicgarden GmbH

Publication

June 30, 2019

Legal disclaimer

We gathered the information and data contained in this report with the utmost care. All the content of the report was checked by those responsible for it. Nevertheless, we are unable to rule out errors. Insofar as we make statements on the future development of our company, they are based on information and forecasts available at the time of publication. The current Sustainability Report was published on June 30, 2019 and is entitled "IAV Sustainability Report 2018".