

MAGAZINE OF THE
SCHMIDT + CLEMENS GROUP

update

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HUMAN RESOURCES

Passion
Innovation
Tradition



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Dear Readers

The financial year 2019 was initially characterized by a revival in demand, resulting in sharply rising nickel prices by the middle of the year. In the second half of the year, however, a slowdown of the worldwide economy could be observed, accompanied by a downward trend in demand.

The worldwide political situation remains difficult. In Europe, the euro crisis is still far from over; on the contrary, the zero interest rate policy being pursued by the European Central Bank, paired with the dark clouds that can be seen building up on the economic horizon, suggest there could be trouble ahead, with the outcome wholly uncertain.

In Germany, the politicians have wasted yet another year by failing to tackle important structural reforms. Instead, we have a failed energy transition policy, continuing high taxes and levies, and further excessive bureaucracy. The levy to subsidize renewable energies and the high level of wages and salaries mean, among other things, that we continue to have to shift wage-intensive work activities abroad. The additional eight-day holiday leave entitlement that was agreed in the latest collective industry pay settlement will cost **S+C** around 1.8 million euros in Germany in lost work output. With an entitlement to vacation leave now standing at 38 days per year, Germany today holds an inglorious first place in Europe.

We have to operate in the face of international competition and adjust our cost structures accordingly. However, we can only maintain

our clear commitment to Germany as our operating base if the framework conditions are right. But unfortunately, they are tending to worsen. It remains to be hoped that the collective pay agreement for 2020 will be characterized by marked restraint on the part of the IG Metall union as far as their wage demands are concerned.

Within the scope of our “Ambition 2020” strategy, we have launched a number of projects aimed at securing the long-term future of the Schmidt + Clemens Group. The focus is thereby on achieving healthy growth and an assured return on sales.

An exciting new project is the “Innovation Hub Bergisches RheinLand” (IHBR), which **S+C** will participate in for three years and in which we have also taken a seat on the Advisory Board. The Innovation Hub is intended as a vehicle in which small and medium-sized industrial businesses will in future join up with computer science and mechanical engineering experts from the Gummersbach Campus of Cologne Technical University with the aim of realizing innovative Industry-4.0 projects. In the Technology Center, joint business and university project teams will develop and simulate digitalization ideas on a virtual basis. The model factory will then enable the projects to be tested and trialed in terms of feasibility.

The IHBR is the first regional 2025 project to progress to realization. The official organization running the Innovation Hub will be located on the Steinmüllergelände, a

brownfield site in Gummersbach, where construction work has already started.

We are looking forward into the 2020 financial year with mixed feelings. We are starting out with a strong level of orders on the books, but the worldwide conditions make forecasting very difficult.

At this point, my thanks go to our shareholders, our Advisory Board, and above all our customers for the confidence placed in us. I also wish to thank our employees throughout the world. They are our capital! It is only through highly motivated and skilled personnel that we can consistently demonstrate our high performance capability.

Good luck!

Jan Schmidt-Krayer
Managing Partner



Foreword

As everyone knows, the political and economic environment within which we had to operate in the 2019 financial year was difficult; nevertheless, the S+C Group once again closed the year with a satisfactorily positive overall result.

The new perspectives opened up in the Installation Services division proved worthwhile, with a major contract booked in 2018 in the Near East being successfully completed. After making allowance for the lower margins that are now available as compared to previous years and also the lower levels of capacity utilization of the plants due to the worldwide sanction policies, the results achieved by **S+C** can in fact be rated as good. Factors that have contributed to this have been the continued uncompromising implementation of the strategic goals as formulated, the improvements in the production processes thanks to the transparency provided by the process data, the rational and reasonable cost savings, the quality improvements, and not least the far-sighted personnel policy.

The main focus will continue to be on the strategic orientation. With close collaboration between the senior management and the international managers, work continued on practical implementation of the "Ambition 2020" strategy.

Pursuing this strategy will enable us to not only defend our leading market position, but also expand it further, in particular in the Petrochemical Industry. The aim is to strengthen the core business through better market penetration, expansion of the existing markets, and also product differentiation. The ambitious target is, by the year 2020, to achieve total annual sales for the Group as a whole of 300 million euros and a rate of return of 6.5 percent.

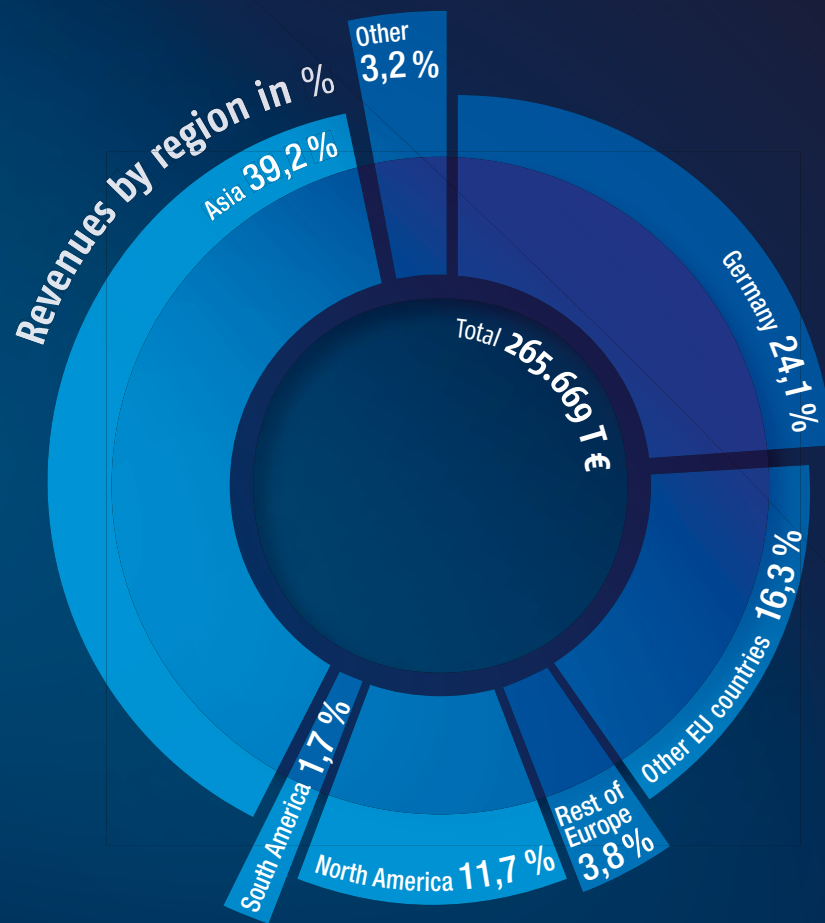
This can only be achieved through intensified sales and marketing efforts and a corresponding innovation and communication culture within the Group. Special attention will continue to be paid to the fostering and development of our skilled employees and management personnel in order to bring about the necessary improvements in the production processes and in the establishment of uniform production standards and transparent cost structures.

2020 is expected to see a modest improvement compared to 2019.

The Advisory Board wishes to thank all the employees of **S+C** for their good work and commitment, the management for their constructive actions, our business partners for their cooperation and the confidence placed in us and, of course, the shareholders for their valuable support for this long-established family business.

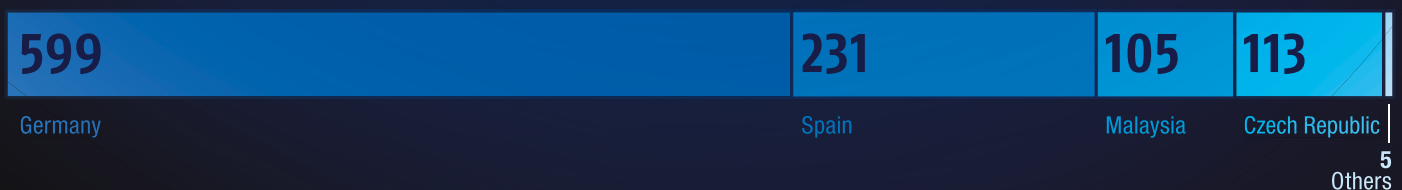
Lutz Werner
Chairman of the
Advisory Board



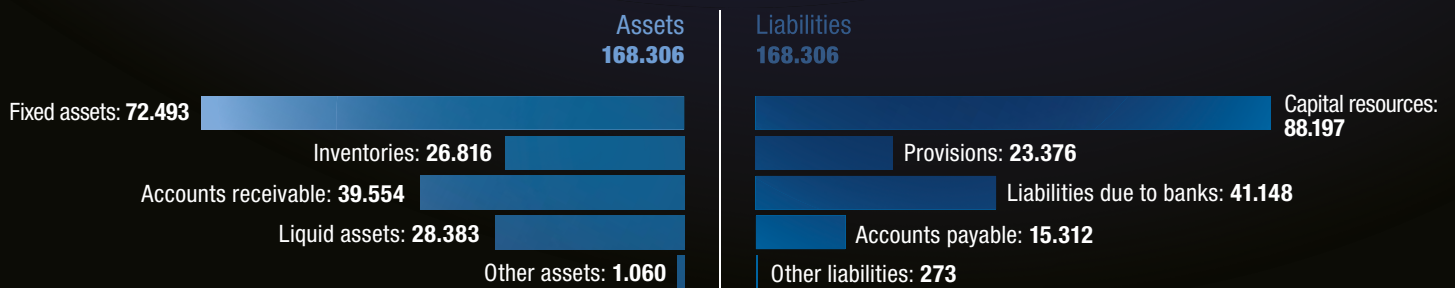


Facts and Figures 2019

1.053
S+C Employees



Consolidated Financial Statement for the S+C Group in T€





Constant market for chemical & petrochemical products

2019 saw a general slowdown in worldwide economic growth. Among the reasons for this were the trade war between the USA and China, the political turbulences in Europe, and also the violent protests in Hong Kong.

Fortunately, the constant market for chemical and petrochemical products impacted positively in 2019 on the demand for spuncast tube coils for use in steam crackers. Ethylene production is forecast to grow in the next few years at a rate of around 3.0–3.5 percent per year. This positive trend is expected to occur primarily in the USA, China and the Middle East. The positive development in the steam reformer sector (production of upstream products -for ammonia, methanol and hydrogen production) is mostly to be found where the necessary feedstock (methane gas) is available at low cost. In 2019, this was especially the case of the Asian and Middle East regions. The annual consumption of artificial fertilizers (ammonia-based) will continue to rise by around 3 percent per year,

especially in the aforementioned regions. The development in refinery capacities in the field of hydrogen production over the next few years is expected to be moderate (around 2 percent per year); the development in the next few years in the field of methanol production will, however, tend to stagnate or even decline, with overcapacities present all over the world.

In 2019, the steel producing industry had to cope with growing challenges in the industry, and will continue to do so in the coming years. The positive trend in 2019 for the replacement business and the building of new, large-scale plants has resulted in the generation of huge overcapacities on the one side, facing a stagnating steel market on the other. In the field of direct iron ore reduction, therefore, the main thrust of spending up to 2022 is expected to be on replacement investments.

In 2019, the new order intake was on a high level, with a growing share accounted for by

the steam cracker sector, especially in Europe. The ever increasing pressure in the Petrochemical Industry to improve the energy efficiency of the plants and reduce the CO₂ emissions is highlighting the essential need to implement new technologies, especially in Europe. In **IMPROOF**, a major project partly funded by the EU, both **S+C's Centralloy® HT E** material and also the **SCOPE®** profile were deemed to be the best technological solution. As part of the project, the combination of both technologies is currently being tested and compared to standard technologies at the facilities of one of our customers and partner in this ambitious project. Both technologies, which have already been used by many customers for a number of years, have now established themselves in the steam cracker sector and are increasingly being used in all parts of the world.

In the **S+C** Installation Services division, the company was able to successfully complete a major project in the Middle East, involving



replacement of the complete collector section of a steam reformer. The work preparation required, which was performed over several months, such as the detailed planning and organization, coordination with other project partners – both internally at **S+C** and also externally – and consultation with the customer's own local maintenance people on site, ultimately led to a great deal of customer satisfaction, due to the customer's expectations regarding practical implementation, time frame and costs being exceeded.



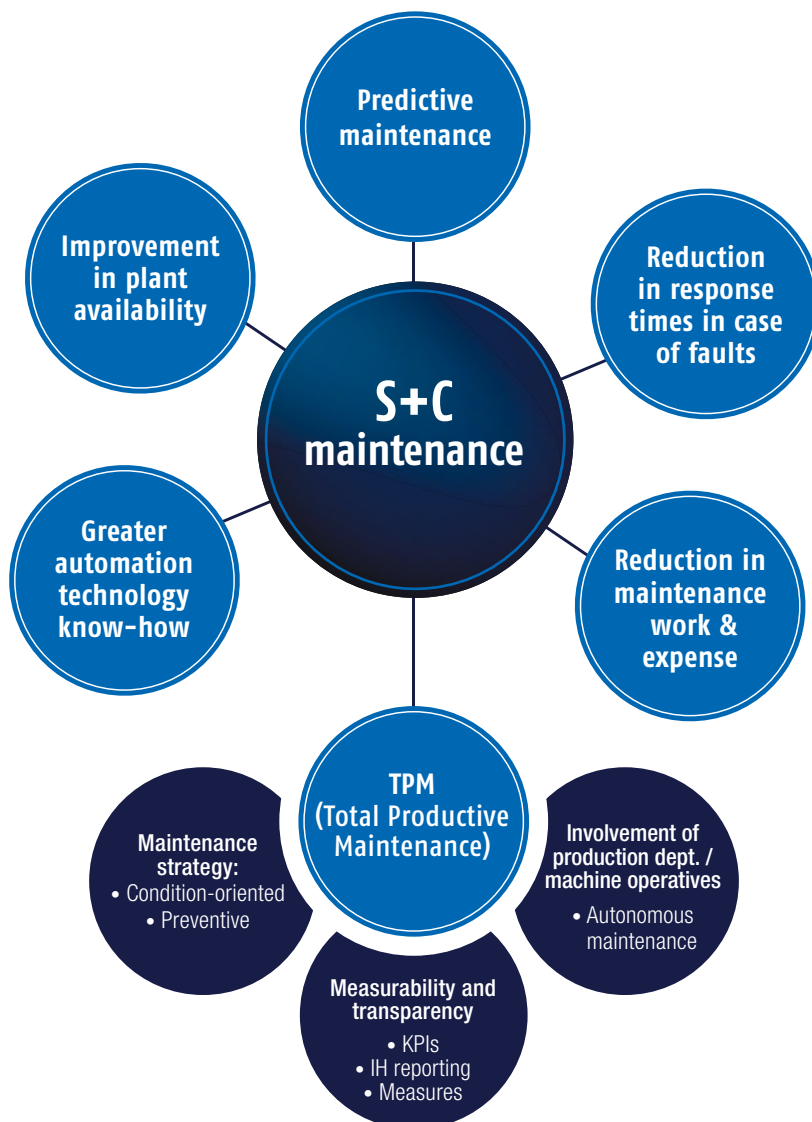
A new project was launched in 2019 with the purpose of reviewing the **S+C** service concept and consolidating the activities in an "**S+C Services**" department. This merging of "**RDS Services**" (materials analysis, customer advice and evaluation of customer data) and "**Installation Services**", i. e. bringing together the technical skills and resources available in those areas to create a joint unit, will result in greater flexibility in the handling of inquiries and the execution of projects.



Successful optimization processes

In the era of Industry 4.0, information and data are everything. They provide the basis for important insights, and with their help, production processes can be substantially optimized.

One such improvement is the introduction of **TPM (Total Productive Maintenance)**. This shows very clearly the highly positive effects that close cooperation between maintenance and production can bring. Involving the machine operatives in the maintenance process by having them perform visual checks and minor inspections not only results in improvements in plant availability and efficiency, but also in a reduction in the work and expense for maintaining the machines. Today, smooth production processes are facilitated by automated fault messages. They improve the maintenance response times, and transparent figures made available for reporting purposes enable analysis of the state of the components in our production machines. Our targeted spare parts management system is a further key element. As well as plant availability, the topic of sustainability of the energy and environmental goals also plays a major role. Through our new energy management system, we are in the position to conduct analyses of our specific consumptions, undertake energy-related improvements, and so meet the stringent requirements for our ISO 50001 certification.



Focus on technological further developments

The **S+C** Group adopts an uncompromising stance as far as its technological leadership is concerned. This applies equally to the constant further development of our products and materials and also to our production processes. Continuous further development in the area of production control through reproducible process parameters, lessening of the mental and physical stresses and strains on the employees, coupled with simultaneous advances in work safety, along with constant improvements in our energy and environmental balance are also of equal importance in this context.

In the field of secondary production for static castings, test operation of a cleaning robot was started in October 2019. The device operates on seven axes and enables us to handle around 70 percent of the parts spectrum with a minimal number of clamping procedures required. The continuously growing demand for our **flagship product SCOPE®** has triggered the purchase of a further processing machine in Kaiserau. In order to meet the growth in demand for tubes from the market for the direct reduction of iron sponge, two deep-hole drilling machines have been converted at our

Spanish production site. Both machines were able to return to service after only eight weeks. The performance capability and substance of the machines should enable a boost to productivity of around 25 percent in this segment. A further phase of expansion at our works in the Czech Republic was marked by the commissioning of a dual track smelter. Equipped with an intelligent furnace control system, this has enabled our liquid tonnage to be doubled, with enhanced energy efficiency.

For the current 2020 financial year, some significant budget amounts have been made available for investment. The principal hardware concepts concerned include investments in auxiliary time-optimized production equipment. Through improvements to handling and material flow concepts, in particular in the field of automatic welding and welding seam preparation, the machinery and equipment have been almost completely decoupled from the hoist equipment.

A major part of technological endeavors in 2020 will be devoted to the **"Smart Factory"**

project, which was already launched in 2019. For this, an initial reference project will be carried out to digitally capture the machinery and process data for one production line. In the further course of the project, intelligent algorithms based on neuronal networks will provide the basis for making product-specific quality forecasts and influencing process-structuring control circuits.



Difficult year for procurement at S+C

2019 turned out to be a difficult year for the **S+C** Group in relation to procurement. While it proved possible to achieve higher savings in percentage terms in all areas of Purchasing and Logistics, major fluctuations in alloy prices, especially for nickel, largely swallowed up the buying-in advantage. The price of nickel rose in 2019 from around 11,500 USD per metric ton at the start of the year to a peak of some 18,500 USD per metric ton. With a simultaneous fall in prices of high-alloy scrap, this resulted in a heavy price burden, which for the most part negatively offset the savings achieved in procurement. The scrap prices fell in some cases from > 90 percent

of the current LME to < 70 percent. Despite these circumstances, **S+C** nevertheless succeeded in effectively lowering the procurement costs. This was due to the numerous measures that in some cases had already been initiated and implemented in previous years. A key role was also played by new, innovative ideas as well as strict attention to purchase cost controlling. In the year under review, a special unit dedicated to this purpose was established at **S+C**, making it possible to identify potential weaknesses more effectively than before and immediately initiate appropriate measures where necessary.

Heat-resistant materials convincing customers worldwide.

Business Development

Nowadays, turbulent markets offer opportunities for innovation and new business, but they also hold the risk of missing trends. As part of the “[Ambition 2020](#)” corporate strategy, the Business Development Department underwent reorganization at the start of the year. The goal is to recognize megatrends, analyze them, and assess the opportunities and risks for the **S+C** Group. In numerous project groups, initial ideas were developed, and visits to trade shows and conferences as well as intense research of the literature provide the basis for initial analyses. Working in close consultation with Innovation Management and the Research & Development Department, the aim is to set the course for ensuring the long-term success of the Group.

Special Products

For the Special Products division, the financial year 2019 ended on an unsatisfactory note. The slowing economy, especially in the second half of the year, led to a sharp fall in the new order intake. The numbers in Common Machine Construction in particular were the principal reason why the ambitious goals were not achieved. The political intention to achieve climate neutrality by the year 2050

had a massive impact on the business. In the field of Power Technology, a profound change of approach is necessary if the leap from fossil fuels to regenerative methods is to be achieved. The growth in world population numbers is an issue especially in the areas of water supply and water treatment. With our Duplex materials family, we can make a strong contribution to ensuring continuing water supplies also in the future.

Special Products achieved successful sales above all with its heat-resistant materials. The special, and in some cases patented, alloys of **S+C** are becoming increasingly firmly established in the field of high temperature applications. This fact, paired with competent expert advice, convinced customers throughout the world to opt for energy-efficient materials from **S+C**. The division is looking forward to the future with cautious optimism. Especially the restructuring of the sales hubs, along with a broadening in the range of materials – also to take account of more complex casting geometries – warrant a modestly optimistic outlook for 2020. Initial economic signals indicating a slight revival in the market situation confirm these trends.

Additionally, the sales synergy between **S+C** Kaiserau and **S+C** Alfanametal should be

highlighted, for it enables more targeted marketing efforts. Key focuses in 2020 are, first of all, on the **S+C** Hydrosymposium being held in Olomouc, Czech Republic in autumn, where the latest developments and trends in the field of “[Hydropower](#)” will be presented to a select circle of customers. A number of high-profile national and international speakers have already agreed to take part. The event will be held over two days and will be rounded off with a tour of the **S+C** Alfanametal plant. At [IFAT](#), one of the world's leading fairs that will take place in Munich, the latest technical trends will be presented before an audience of professionals. We will also take part for the first time, with a lecture, in [Powdermet 2020](#) in Montreal, as a way of providing customers in North America with the opportunity to inform themselves of our material developments at first hand.

To highlight the outstanding market position of Special Products as a system supplier for static, precision and centrifugal castings and also of forged materials, **S+C** will participate in the [CastForge](#) Fair in Stuttgart. Through the extremely positive resonance of this event last year, a correspondingly sustained effect for **S+C**'s day-to-day business and the sales revenue generated by it is also anticipated this year.



Participation is also planned in the Duplex-world in Düsseldorf and the Stainless Steel World and MAP in Japan. The primary purpose of all of these participations is to bring the special benefits of our extensive range of S+C materials to the attention of a wider trade audience.

As part of the Ambition 2020 project, a range of workshops are offered for the employees in Special Products, all of which have the purpose of generating greater understanding of the different problems of our customers and so equipping our personnel to engage in an even more intense dialog with our customers.

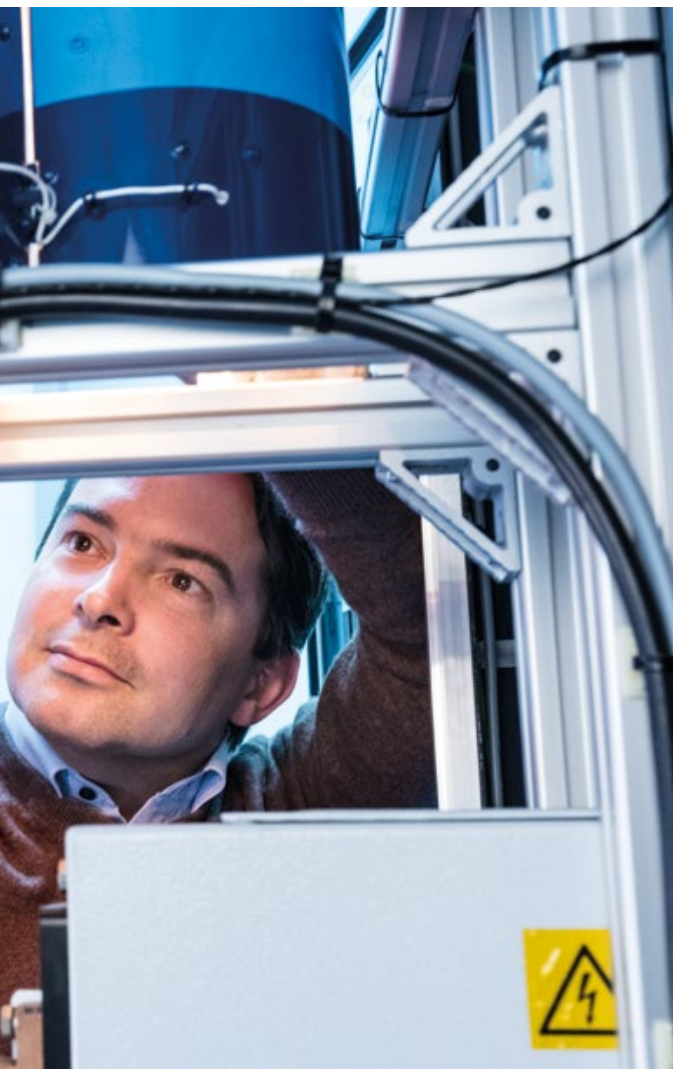


Research & Development in tune with customers' needs

In the year under review, the Research & Development Services (RDS) department was once again closely involved in the partially EU-funded **IMPROOF** project. **S+C** is the sole material supplier to be included in this joint project with well-reputed universities and industrial partners. **S+C**'s participation is due to the outstanding material properties of its **Centralloy® HT E** concept, in combination with its internal profile technology system **SCOPE®**, which jointly contribute to achieving the ambitious goal of the project, namely of creating an energy-efficient steam cracker with a reduction in CO₂ emissions at the same time. To test this concept, **S+C** equipped a steam cracker of one of the project partners in May 2019 with **SCOPE® Fusion HT E** coils, among other things. The steam cracker was also fitted with an extensive array of additional metering devices, with the result that precise statements can be made regarding the performance of this technology. Initial results in comparison with a furnace using standard materials are expected this year. Working in close cooperation with production, a software solution was implemented and developed further that models

the centrifugal casting process at **S+C** and permits in-depth analysis e. g. of the solidification behavior. This allows production improvements to be simulated and assessed quickly and at low cost. Additionally, the production-mirroring process chain available at the Technology Center enables resource-saving review of the simulation results. This means that new ideas can be implemented in the centrifugal casting process with no detrimental impact on customer orders.

Last year, the RDS Test Center saw a sharp increase in its workload and sales revenue. As well as many standard laboratory tests, the RDS materials experts also produced numerous investigation reports on ex-service customer material. This is a clear indication of the confidence placed by our customers in our unique combination of an extensively equipped Technology Center with expertise in the field of high-temperature materials and their behavior in practical application. Working in close cooperation with our customers, the experts in our RDS Customer Support Team have performed numerous process



analyses on the basis of operating data, and have generated proposals for process optimizations and better material selection. The know-how obtained from this has been used to generate case studies for a variety of applications, enabling us to respond quickly and efficiently to individual customer requests and inquiries and present the benefits arising through the use of **S+C** technologies from both a technical and commercial angle. In the field of intellectual property, RDS has invested in a new patent monitoring software system. This opens up new possibilities for **S+C** to monitor competitor patents quickly and efficiently. As well as this application, the

Efficiency improvements thanks to substantial investments in software



software is also used for the early identification of market and material trends. **S+C** participated actively in a large number of conferences. One example particularly worth mentioning was a lecture on new developments in the field of reformer outlet systems given at the [IMTOF Conference](#) in London. The main focus of the lecture was on the interactions between choice of material and construction design, and drew on **S+C**'s know-how in relation to mechanical design and the use of an FEM software solution. The result of this was that weak points in the stipulated construction design could be overcome through the choice of suitable materials. Lectures are also planned once more for 2020, for example in a workshop on new steam cracker technologies at the University of Gent, which is also linked to the aforementioned [IMPROOF](#) project.

Total headcount

On December 31, 2019, a total of 1,053 people were employed within the S+C Group world-wide, of whom 599 (apprentices/trainees included) were working at the parent site in Lindlar-Kaiserau, Germany. In the year under review, apprentices/trainees accounted for 4.17 percent of the workforce, which is a high level. At the present time, 25 apprentices and students are in vocational training at S+C. There are also an additional four trainees at the Kaiserau plant.



Human Resources is

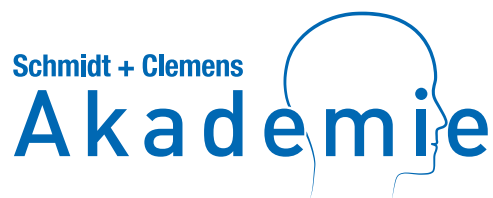
Report on equal opportunities and equal pay

Measures to achieve pay equality between men and women

Schmidt + Clemens GmbH + Co. KG is a corporation with employee co-determination and recognizes the sectoral collective bargaining agreements. In the case of employees paid on the basis of the collective pay agreements, these agreements also contain gender-neutral criteria for job evaluation and the appurtenant levels of pay, so equality of pay for men and women is already anchored in the collective remuneration system. For employees outside the collective agreement system, their remuneration and pay development arrangements are defined by a grading system. For groups of work positions of comparable value, uniform pay structures (basic remuneration bands, variable pay components and fringe benefits) are in place. The value of work positions is determined on a gender-neutral basis using an analytical valuation procedure.

Measures to reconcile work and family

We offer employees at our headquarters site in Germany the possibility of individualized work time models, and assist them with a range of family-friendly measures and options, such as various different part-time and home office arrangements. Our personnel also have the opportunity to place their children in our own S+C kindergarten, which is located on the works premises and is open all year round.



an important strategic interface.

Implementation of strategic HR measures based on "Ambition 2020"

The 2019 financial year saw the implementation of various individual projects under the "Ambition 2020". Three of these fell within the remit of HR: The first of these was the "S+C Business Bikes" project, which we were able to carry out in June 2019 with our partner Euro-Rad. This project offers our employees the opportunity to lease a high-quality bicycle. As of December 31, 70 members of the workforce were actively using their bikes – equivalent to a rate of 11.69 percent, which is an above-average figure compared to other companies. Opinions expressed by the workforce concerning the introduction of the S+C Business Bikes are consistently positive. The next extensive project concerned the introduction of a new Group-wide competence model. The aim of this was, on

the basis of the business figures, to develop a competence model tailored to S+C's needs. The particular challenge this involved was to achieve a reasonable balance between aptitude-related complexity and practice-relevant simplification. In addition to the detailed concept of the competence model, the appurtenant training programs, information materials and implementation documents were also created. The training activities for the management staff were successfully completed in December 2019. In the coming weeks, the employees will also receive training, so that the new feedback process, which is based on the "S+CAMP1" competence model, can be held for the first time in summer 2020. And as the third project under Ambition 2020, the existing target agreement

process was also subjected to critical review and optimization. As a result of the analysis, and with effect from calendar year 2020, the agreement of personal targets in connection with the PSS (Profit Sharing System) will be abolished. In future, Group EBT will be the only factor used for calculating bonuses. This is in line with the goal of achieving closer international cooperation.

In the year under review, several apprentices/trainees of S+C once again took their final exams at the IHK (Chamber of Industry and Commerce), and once again, three of them were among the best in the Oberberg Region. One of our apprentices was even named the best foundry mechanic in the State of North Rhine-Westphalia.

Other HR initiatives

In addition to the strategic projects, we also started in the financial year 2019 to look at the topic of "interface communication", and this will also continue to occupy us in 2020. The aim of this measure is to define greater transparency regarding the roles and responsibilities of the individual areas and to identify and tackle acute problem fields in the area of interface work. This project was pioneered by Project Management, which launched a series of workshops at the start of the year in cooperation with the S+C Academy.

Outlook for 2020

As one project finishes the next one starts – so also in 2020, further part-projects will again be developed and completed. This will include, for example, the further elaboration of a proposal for a so-called Cafeteria Model and the development and/or modification of further HR and personnel development tools on the basis of the new competence model. The subject of "employee reintegration management" (ERM) will be drawn up and rolled out together with the Works Council.

