

A grayscale photograph of an aircraft's landing gear system, viewed from a low angle looking up. The main landing gear is in the foreground, showing two large tires and the complex hydraulic and structural components. The tail landing gear is visible in the background. The image is semi-transparent, allowing the text to be overlaid.

EXPERT AEROSPACE SERVICE



1986

The logo consists of two overlapping green circles. The left circle contains the letters 'HPQ' in white, and the right circle contains 'AS' in white. Below the circles, the word 'DRIVE' is written in white capital letters.

1992

A black and yellow aircraft tool kit with various tools arranged in a grid on a black tray.

1970

A page from a manual with the heading '3/8" STANWELL AERO'. It features a small illustration of an aircraft and several columns of text.

1988

A page from a manual titled 'STANWILL AIRCRAFT TOOLS '88'. It has a light blue background with a grid of small icons and a list of items.



2005



2014



2016



1997



2007



FLYING HIGHER AND HIGHER. WITH TOOL SOLUTIONS FROM STAHLWILLE.

1970

Building on the excellent success of such tools as the STAHLWILLE high-performance ratchet 435 and many other tools in aviation, the tool specialist from Wuppertal starts producing tools under the name STAHLWILLE AERO. Even in those days, key issues with tools were compact dimensions and low weight.

1992

STAHLWILLE wins its first international order to equip an important European enterprise specialising in the maintenance, repair and overhaul (MRO) of large airliners. In the United Kingdom, BAE Systems (British Aerospace) becomes the first manufacturer to roll out the brand new Tool Control System for maintenance on BAE aeroplanes.

2007

The electromechanical torque wrench, MANOSKOP® 730D, launched as a world first in 2007, is used in aviation for the first time. In 2011, STAHLWILLE launches its perfectControl series, motorised, semi-automated calibrating units – and soon afterwards takes home the iF Design Award in the industrial design category.

1986

STAHLWILLE begins developing and manufacturing tools based specifically on the strict standards applicable to the aerospace industry. Amongst other things, STAHLWILLE launches HPQ® tools (High Performance Quality) and the AS Drive (Anti-Slip drive). Both series rapidly become best-sellers – in particular in connection with jet engine disassembly jobs.

1997

An increasing number of leading airlines in Europe place their confidence in STAHLWILLE's tool solutions for MRO work on their aircraft and when equipping their hangars. At the Paris air show in 1997, STAHLWILLE's Tool Control System wins the »Innovation Award«.

2014

STAHLWILLE's mobile Tool Trolley 13217 is available with specially selected sets of tools to ensure efficient, fast, reliable MRO in the aerospace industry. A year before this, one of the most influential airlines in the Middle East opted to equip its new, state-of-the-art hangar exclusively with tools, tool storage systems and tool transport solutions from STAHLWILLE.

1988

The growing significance of the aerospace segment is reflected in the company's marketing strategy: STAHLWILLE publishes its first brochure dedicated exclusively to products for the aerospace industry.

2005

In 2005, a South American airline switched over to STAHLWILLE tools, while innovative new products like the digital transducer, Tool Box 13216, the TORKMASTER software and 7707W testers soon became standard equipment in the aerospace industry. As early as 2004, STAHLWILLE redefined standards yet again by launching the electronic SENSOTORK® 713R tightening angle torque wrench with a powerful logging function for aviation.

2016

In 2016, STAHLWILLE introduces the SENSOTORK® 701: an electronic torque wrench for working in confined spaces. The torque range of 1-20 N·m covers many of the critical bolted joints found in aircraft construction.

FLYING HIGHER AND HIGHER. WITH TOOL SOLUTIONS FROM STAHLWILLE.

For over 30 years, STAHLWILLE has been recognised as being a leading partner of the aerospace industry. All over the world, customers involved in the production and maintenance of aeroplanes and helicopters rely on the solutions and expertise provided by this company – for good reason.

In recent decades, STAHLWILLE has earned itself a reputation as a capable, innovative and reliable advisor and supplier of premium tool solutions that are »Made in Germany« due to its unrivalled focus on its customers' specific needs. The result is, STAHLWILLE products are to be found all over the world – whether in the production environments of aircraft and turbine manufacturers, in the hangars used by the airlines or with specialised maintenance and repair businesses. There is hardly an aircraft builder or airline in the world that gets by without STAHLWILLE tools.

One key reason for this is that tool solutions from STAHLWILLE provide such close tolerances that they even comply with the extreme quality standards of space travel. These tools are highly resilient and renowned for their extremely long service lifetimes. Last but not least, these solutions support the aerospace industry, which is under constant pressure to reduce costs, in its efforts to blend maximum efficiency with uncompromising safety. This is achieved through solutions that match the needs of the market and meet special requirements in terms of weight, accuracy, logging and safety – foreign object damage is just one aspect.

The best remedy for aircraft on ground (AOG): quality, efficiency and safety. With STAHLWILLE.



Quality: more than just a word.

Technology in demand worldwide:
engineered and produced in
Germany.

SAFETY DOESN'T JUST HAPPEN. IT IS SUPPLIED BY STAHLWILLE.

The aerospace industry's top priority is the greatest achievable safety. All other issues are subordinate to that. Stringent standards, such as those issued by ICAO (International Civil Aviation Organization) and EASA (European Aviation Safety Agency), ensure that safety is, in effect, »built in« throughout the development and maintenance processes. When it comes to compliance with these standards, it is the quality and process capability of the tools that play a decisive role.

»Made in Germany« is a commitment at STAHLWILLE that is part of our everyday work ethic – in particular with regard to aerospace. Here, more than in many other sectors of industry, peak quality is a decisive criterion for success and safety.

Manually operated STAHLWILLE tightening tools for avionics have been specifically developed and optimised for the highly individual requirements of each application. This applies as much to materials and service lifetimes as to ergonomic design and safety. By making full use of high tensile strength, cadmium-free HPQ® materials (High Performance Quality) and ensuring production in our own precision forging shops, STAHLWILLE can guarantee extremely good durability and effectively prevent corrosion when work involves titanium alloys. The double-T profile used for the open-jaw and ring spanners reduces weight – which is ideal for work »on board«. Torque wrenches ensure that correct torques are applied and processes accelerated, while electronic torque wrenches enable individual fasteners and even complete work sequences to be programmed and the details of every single torquing operation to be logged electronically. STAHLWILLE tool storage systems made of plastic that are approved for use inside aeroplanes are both robust and light.

STAHLWILLE. Tool solutions designed for aerospace.



Accuracy

Extremely close tolerances coupled with peak load-bearing capacity and extremely thin walls, as guaranteed by the High Performance Quality alloys (HPQ®), outstandingly accurate torque technology in conjunction with compact, smooth-action fine-tooth ratchets for accurate work in confined spaces: these all combine to make STAHLWILLE.



Safety

STAHLWILLE protects against foreign object damage through its screwless construction, Tool Control System and QuickRelease – the only locking system available that securely locks every part from the drive, extension and universal joint through to the socket without forfeiting valuable space.



Durability

Tools by STAHLWILLE are simply more durable. Only STAHLWILLE offers robust torque wrenches for day-to-day use that have a virtually wear-free trigger mechanism involving a flexible rod rather than a compression spring, or spanners with the extremely rigid double-T profile.

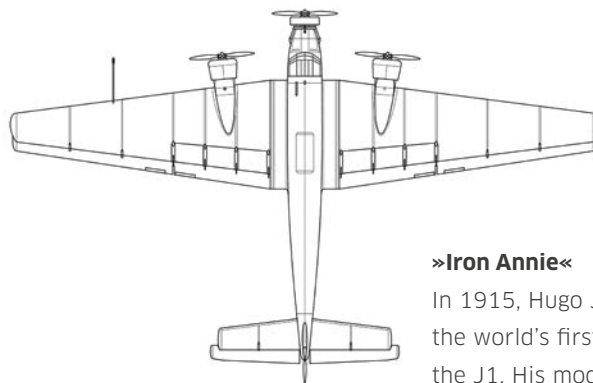


STAHLWILLE tool solutions: There is hardly an aircraft manufacturer that gets by without them, and hardly a maintenance and repair company that wants to. Wherever they are in the world.

»WE VERY CAREFULLY NURTURE THE CONFIDENCE OUR CUSTOMERS PLACE IN US.«

Aerospace is a key business segment for STAHLWILLE. In this field, STAHLWILLE, as a specialist for handtools, has repeatedly demonstrated that it is a pace-setter not only in terms of application-relevant technology but also when it comes to redefining advisory services.

Why is aerospace so particularly crucial to STAHLWILLE? Why is STAHLWILLE so important and special to the aerospace industry? Winfried Czilwa, Chief Executive Officer, answers these and many other questions in an interview, against a classic and historic backdrop. We met at the home base of one of the last remaining eight airworthy Junkers 52, at the Hugo Junkers hangar at Mönchengladbach aerodrome. In keeping with the venue, Winfried Czilwa arrived by plane – as an amateur pilot, he flew in in time for the interview in a Robin DR400.



»Iron Annie«

In 1915, Hugo Junkers developed the world's first all-metal aeroplane – the J1. His model Ju 52 was later to become the most successful commercial aeroplane of its time, and was commissioned by twelve airlines worldwide.



One of the most famous aeroplanes ever built: the Junkers was Lufthansa's standard aeroplane from 1932 on. The one shown in Hugo Junkers' hangar was built in 1949.



Mr Czilwa, as we speak we are within view of the famous »Iron Annie«.

What does an amateur pilot think when he sees a plane like that?

Probably the same as any professional pilot does. We have the greatest respect for the skills of the engineers that made flying possible. One also becomes aware of the speed at which things have developed since then. Today, anyone can just hop on board a 'plane and fly to the other side of the world non-stop - and with a safe feeling.

Why with a safe feeling?

Because flying is the safest form of travel. A report by the Allianz insurance company in 2014 found that, in the 1960s, for every 100 million passengers on flights, 133 died when their 'planes crashed. Today the ratio is 2:100 million. There are more likely to be fatalities in lightning strikes than in aircraft accidents in Europe and the USA. We at STAHLWILLE make a decisive contribution to that safety.

In detail, what contribution does STAHLWILLE make?

Through our tools and tool storage systems we support the aircraft industry in its efforts to work safely and efficiently. Wherever possible, we help to preclude human error. One key issue is foreign object damage, known as FOD. It is absolutely essential to prevent small components being left behind in turbines, for example, during production and maintenance jobs. A second large area of activity is in torque technology, because logging results is becoming increasingly important in aerospace. Thirdly, our tool solutions support work processes and help to make them more efficient. This is a decisive aspect of the success of our aerospace manufacturing and airline customers because of the immense pressure on them to cut costs.

Let's stay with torque technology.

How exactly does that fit in?

For safety reasons, it is necessary to tighten many bolted joints -

for example, in the cabin or in the immediate vicinity of the turbines - to a predefined torque. This is the case when attaching hydraulic leads

» AT STAHLWILLE, WE PLACE GREAT STORE BY PROVIDING CUSTOMERS WITH THE IDEAL SOLUTION FOR THEIR APPLICATION. «

or auxiliary modules such as oil pressure pumps and hot-air leads in accordance with specifications. This involves many different types of joints and fasteners. For manually tightened bolted joints - with frequent tool changes, all in confined spaces and without the loss of a single tool -



we can provide exactly the right solutions for these requirements, like our SENSOTORK® 701, a compact, electronic torque wrench with a fine-tooth ratchet.

On the subject of »electronics«: does this mean that high-tech developments are indispensable in aircraft construction and maintenance?

We have to differentiate here: just because something is technically possible, doesn't mean it's the best choice. At STAHLWILLE, we place great store by providing customers with the ideal solution for their application, not selling them the most expensive.

Can you explain that to me?

Electronic torque wrenches are, without doubt, worthwhile high-tech products but the issue of legal certainty is a key factor. Once an aircraft type has been granted type certification, a legally binding maintenance manual defines every

step, every bolted joint and every torque. Compliance with these prescribed procedures has to be logged in an understandable form. With STAHLWILLE electronic torque wrenches this is child's play. High-tech solutions to prevent tool loss are a different matter.

Solutions that prevent FOD?

Exactly. We have, of course, reserved radio frequencies for RFID technology. However, our experience shows that this technology for monitoring tools only results in increased safety in very few applications, compared with the relatively simple TCS tool control system. Cost effectiveness, customer benefit and dependability are factors that often mean that a simple solution is more advantageous. Since we explain issues such as this frankly to our customers, rather than just trying to sell them a solution that does not really benefit them, they have confidence in us. We very carefully nurture the confidence our customers place in us.

You mentioned technical advice. Is this something special?

Every company claims to provide "consulting" services. At STAHLWILLE, we have decades of hands-on experience in the trades and industry, and that's what counts, when it comes to giving advice. Our application engineers have knowledge of the work processes and are available worldwide. They support customers on-site while a new hangar is being configured – for example, by compiling complete sets of tools for aircraft MRO and then coordinating the deliveries. A further crucial point is that they bring home stimuli from their work in the field that frequently form the basis for innovative tool solutions – and the market shows its appreciation. Our close contact with customers and end users is a feature of STAHLWILLE that mutually benefits us all.

Made in
Germany

WL151

DL151



ONE HANGAR. 250,000 TOOLS. THE FULL RANGE, SUPPLIED BY STAHLWILLE.

STAHLWILLE has demonstrated time and again its capability in delivering on even the most complex projects. The company has recently supplied fully configured, customer-specific tool kits and tool storage solutions for the new hangar built by a leading international airline in the Middle East.

The hangar houses up to 13 Airbus and Boeing aeroplanes and 1000 aircraft maintenance staff who were all to be equipped with tools by STAHLWILLE. Orders like that require special advisory abilities and understanding of market needs. STAHLWILLE application engineers noticed that the airline's requirements lists were less than ideal for the tasks. So they spent 1200 working hours on technical reviews and gap analyses to determine the actual requirements and compile tool kits better suited to the job.

The airline selected various storage solutions equipped with FOD-preventive TCS tool inlays and a label with the name and ID number of each tool kit. Every single one of the 250,000 tools was identified with a laser engraving, so it could be assigned to a particular tool kit and a specific employee. And all of this completed within a challenging time schedule - which is something one can expect from a supplier like STAHLWILLE.



Mobile and imperial

Ideally prepared for standard maintenance tasks: Tool Trolley 13242a with 109 imperial tools. Compact dimensions, a weight of only 14 kilograms and sturdy castors make this an ideal assistant in field applications.



The perfect compilation

The red Tool Box made of sheet steel, fitted with two, three or four fully extendible drawers and a compartment under the lid, offers space and protection for around 120 tools. These can be individually configured but there are two standard sets available for aeroplane and helicopter maintenance.

FIVE INTO ONE DOES GO. FEWER TOOLS. MORE SECURITY.

When changing wheels, it is important to work quickly and safely. For a major carrier in the USA, STAHLWILLE developed a special torque wrench for service work on Boeing 737s. That tool does all the work that, previously, it was necessary to have five different torque wrenches for.

With over 830 aeroplanes, this STAHLWILLE customer conveys around 160 million passengers to their destinations every year. The airline's fleet contains more than 150 Boeing 737s.

To facilitate efficient wheel changes and simplify service work on the undercarriages of these aircraft, STAHLWILLE developed a bespoke torque wrench based on the MANOSKOP® 730N but with a broad torque range. Where the airline used to use five torque wrenches with permanent torques, they now only need this one.

A new setting mechanism prevents errors during operation: the scale only shows the five torques actually required. Instead of stepless adjustment of the torque with intermediate values, one turn of the setting knob through 360° automatically moves up or down to the next target torque - depending on which direction the knob is turned in.

The result speaks for itself: more than 240 of this new torque wrench type are in daily use with that airline. Very soon, other airlines will also be able to take advantage of this innovative design.



MANOSKOP® 730N

The tool on which the development was based. This versatile mechanical MANOSKOP® 730N torque wrench features accurate yet very fast QuickSelect setting.

In contrast to conventional mechanical torque wrenches, STAHLWILLE torque wrenches are equipped with a trigger system that employs a triggering cam. The advantage of this is the virtually wear-free trigger mechanism that also saves time, because there is no need to reset to »0«.



Changing wheels and servicing undercarriages are always a challenge:

STAHLWILLE is currently working on providing new special-purpose tools - for many different types of aeroplane.



THERE IS NO TURBINE WITHOUT FASTENERS. CONNECTIONS FOR EXTREME REQUIREMENTS.

Even if state-of-the-art gas turbines are featuring increasing amounts of carbon-reinforced materials and lightweight titanium alloys, threaded fasteners are still the most important fastening technology in aircraft turbines, and this is not likely to change. It is only this technique that will withstand the tremendous operating loads while remaining "unboltable" for regular maintenance, repair and overhaul.

Inside gas turbine engines, there are many different types of threaded fasteners. Depending on where the fastener is, it will have to cope with temperatures of up to 1800 °C and withstand extreme vibrations and windspeeds.

STAHLWILLE has all the handtools needed for turbine MRO – extremely resilient to loads, manufactured to the closest tolerances. They still offer much improved service lifetimes even if the fasteners are caked in place due to the extreme heat as if they had been welded in, necessitating considerable release torques.

After maintenance has been completed, STAHLWILLE tools are part of the established routine in reassembly. The fine-tooth ratchets enable accurate working in confined spaces and electronic torque wrenches, like the SENSOTORK® 701, also provide a logging function. Maximum protection against lost or forgotten tools is guaranteed by the TCS tool control system.



Extremely hard-wearing

STAHLWILLE spline-drive tools transmit the forces applied in the best possible way and reduce the risk of injury and damage to the fastener head.



40,000 rpm

State-of-the-art gas turbines run at up to 40,000 revolutions per minute. Any bolted joint here is subjected to the toughest loads.

TAKE OFF. LAND. TAKE OFF. SAFELY, EVERY FLIGHT.

Understandably, aeroplanes tend to spend most of the time in the air. But during take-off, landing and manoeuvring between the taxiway and runway, the undercarriage and tyres are affected by powerful forces. STAHLWILLE tool solutions play a key part in the corresponding maintenance work.

Checking tyres and undercarriage after every flight is mandatory in aviation. When wheels have to be changed, numerous bolted joints have to be unscrewed and, later, retightened to specified torques. Frequently, there is little room for movement here, just as in turbine maintenance. Precision fine-tooth ratchets by STAHLWILLE and torque wrenches with a broad torque range assist maintenance staff to deliver first-class work every time.



Fine mechanisms

With a torque range from 2 - 1000 N·m, accurate one-hand setting and a noticeable dual stop signal when the tool triggers, the MANOSKOP® 730N mechanical torque wrench is the preferred standard for undercarriage work.

Extreme loadings

With passenger planes, a scheduled wheel change is due after around 250 flights. If damage is detected during inspection, it may well be earlier. The key point is that the aircraft is back in service with the minimum possible downtime.





AN EXCEPTIONAL INDUSTRY. EXCEPTIONAL TOOLS.

STAHLWILLE is well established in aerospace and has understanding and knowledge of all the standards applicable and the areas that require bespoke solutions. Even the company's standard tool kits cover a good 80 per cent of all applications in aircraft MRO. For the remaining 20 per cent through to complete, customer-specific sets of tools, STAHLWILLE application engineers will quickly find the ideal solution.

For every requirement there is an ideal tool. One that will make the user's life that little bit easier – and not more complicated. Finding the optimum tools for a customer in the impressive full range of STAHLWILLE tools and compiling them into individual sets of tools is the task of our application engineers. This includes special-purpose solutions: for example, STAHLWILLE developed spline-drive tools from a special steel alloy used for turbine fasteners – their service lifetimes exceed those of other tools many times over.

The tool inlays and the Tool Control System were designed to meet the stringent safety requirements of the aerospace industry. In comparison with highly complex storage and monitoring systems using RFID or cameras to log every tool removal, our systems stand out because of their simplicity, reliability and low costs. Thanks to the sculpted tool recesses in signal colours, the user can see immediately if a tool is missing. This keeps the attention of the worker and does not delegate responsibility to a highly susceptible, complex, computer-based solution. Last but not least, STAHLWILLE's QuickRelease safety locking system offers the only system on the market that securely protects extensions, universal joints and sockets against loss right through to the bolting point.



FOD compliant

The drawers in the STAHLWILLE TTS 95 and TTS 95VA Tool Trolleys are available as a roller-mounted option instead of being in ball-bearing mounted pull-out rails. Yet another added-value feature for FOD prevention.



Safety at a glance

Tool inlays with the TCS tool control system feature sculpted cut-outs in a signal colour: the worker can see immediately if a tool is missing.

SCREWLESS. ACCURATE. EFFICIENT. FINE-TOOTH RATCHETS.

Fine-tooth ratchets by STAHLWILLE work as reliably as a Swiss watch and are still as sturdy as their daily work schedule requires. Thanks to the very small ratchet angle, they enable bolt tightening even in very confined spaces. The screwless construction and QuickRelease system make them the preferred choice for service work in the aerospace industry.

Thanks to their 80 teeth, compact fine-tooth ratchets by STAHLWILLE have a ratchet angle of only 4.5°. Tightening a fastener only needs a very small amount of lateral movement. This makes STAHLWILLE fine-tooth ratchets ideal for work on turbines and similar assemblies, particularly as both the ratchet and the handle are screwless and compliant with FOD requirements.

When it comes to load-bearing capacity, STAHLWILLE fine-tooth ratchets exceed even the requirements of ISO standards. The specially constructed mechanism on the inside - with heavy-duty Spirolox® rings to absorb the axial forces from the rotary drive - is enclosed in a dust-excluding housing and allows the user to benefit from smooth action, even when applying high torques.

With sizes of 1/4", 3/8" and 1/2", all the most popular drives are immediately available with reversible clockwise and anticlockwise operation - as well as a comprehensive range of shell tools. In addition, thanks to the tightest manufacturing tolerances, STAHLWILLE achieves extremely good fitting accuracy between the square drive and the insert tool, which reduces deviations to an absolute minimum. In addition, the QuickRelease system ensures rapid tool changes and guarantees at the same time that no shell tool can be inadvertently released and lost during MRO operations.



QuickRelease

QuickRelease is the only system worldwide that secures every shell tool from the drive through to the bolting point in a way that is absolutely safe. So tools cannot become detached and go missing, even when working with extensions.



80 teeth

Thanks to the large number of teeth, STAHLWILLE fine-tooth ratchets have a tight ratchet angle of only 4.5°. As a result, they enable bolt tightening in even the most confined spaces, in comparison with conventional fine-tooth ratchets.



FOD compliant

STAHLWILLE fine-tooth ratchets for aerospace are constructed without any screws. The handle and lever arm are a single unit. The "vital organs" of the tool are securely encapsulated and no small components can get lost during work.



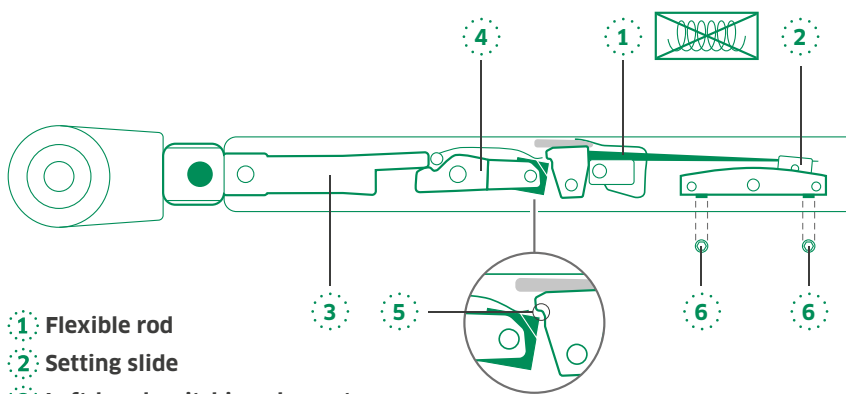
415SG-QR N 1/4"

435SG-QR N 3/8"

512SG-QR N 1/2"

Product family

STAHLWILLE, as the first and only manufacturer to do so, offers a family of fine-tooth ratchets with 80 teeth and steel handles. All the drives - 1/4", 3/8" and 1/2" - generate an extremely small ratchet angle of only 4.5°.



- 1 Flexible rod
- 2 Setting slide
- 3 Left-hand switching element
- 4 Right-hand switching element
- 5 Triggering cam
- 6 Adjusting screws

Flexible rod instead of a compression spring

STAHLWILLE's unique trigger mechanism with the flexible rod does not require a compression spring, so resetting the wrench to »0« after each fastener to unload the spring is not necessary. The system is virtually wear-free.

STAHLWILLE TORQUE SOLUTIONS. AS DIVERSE AS YOUR FIELDS OF APPLICATION.

STAHLWILLE is recognised worldwide as the specialist in the field of manually operated torque tools for the aerospace industry. The company has appropriate, efficient solutions available for every conceivable application.

The production and maintenance of aeroplanes and helicopters hardly provides opportunities for automation. There are simply too many different fastener types, too large a range of torques to be applied, and the workflows are too complex. This makes it all the more important to have manually operated torque tools that enable our customers to work quickly, efficiently and, in particular, safely. Manual torque tools bearing the name STAHLWILLE cover the full range of bolted joints in the aerospace industry at unrivalled standards of quality. Ergonomically designed, accurate measurement and reliable clicking.

Whether it is the classic tool, the purely mechanical torque wrench, or torque wrenches with the electromechanical trigger mechanism that is unique in the market, through to special-purpose solutions that guarantee peak accuracy in confined spaces, or programmable models with a logging function that will guide the user through even the most complicated joints and entire work sequences, STAHLWILLE has the answer. We also have the necessary measuring equipment. STAHLWILLE is the only German manufacturer of torque wrenches that also offers torque testers and calibrating units. All available from a single source – even for testing and calibrating in compliance with the new DIN ISO EN 6789:2017.



Logging function

Electronic torque wrenches by STAHLWILLE are able to log every single torquing operation in detail. Managing maintenance lists consisting of many pages is now a thing of the past.

Electromechanical triggering

As the only manufacturer, STAHLWILLE unites the advantages of two worlds in one tool: MANOSKOP® 730D and 714 measure digitally and click noticeably, just like a mechanical torque wrench.

Intuitive

Electronic torque wrenches and tightening angle torque wrenches are equipped with an intuitive control system – providing maximum functionality and easy operation.

ABSOLUTELY ACCURATE. EVEN IN CONFINED SPACES. SENSOTORK® 701.

An increasing number of bolted connections in the aerospace industry have to be tightened to a specified torque – and frequently in restricted spaces. The SENSOTORK® 701 electronic torque wrench is extremely compact and tightens fasteners in low torque ranges reliably and safely, even in awkward working spaces.

SENSOTORK® 701 is compact, slim and lightweight. This fine-tooth ratchet for clockwise and anticlockwise tightening with 80 teeth requires only a tiny ratchet angle of 4.5° and thus enables accurate working even when space is at a premium. The torque range begins at 1 N·m and goes up to 20 N·m. This means that this tidy hand tool covers a multitude of critical bolted joints in aircraft construction – and boasts a display deviation value of only ± 4%.

The SENSOTORK® 701 is operated easily through the LC display using the intuitive single-button system. There are three operating modes available. In the track mode, the SENSOTORK® 701 shows the currently measured value. The peak hold mode indicates the highest measured value. In the user mode, additional functions can be configured in conjunction with the STAHLWILLE SENSOMASTER software, such as predefining evaluation functions for an individual joint.

The LEDs integrated in the SENSOTORK® 701 indicate to the user, with the aid of traffic-light colours, whether the tightening operation is within the tolerance, above the advance warning threshold or outside the tolerance altogether. In addition, calibrating intervals can be defined and comprehensive logs created.



QuickRelease

The tried-and-tested QuickRelease system permits rapid, efficient tool changes while locking extensions and shell tools reliably in place – there is no way they can inadvertently become separated from the tool.



80 teeth

The fine-tooth ratchet in the SENSOTORK® 701 operates with absolute precision and provides a ratchet angle of only 4.5°. The internal mechanism offers a smoothness of operation that has created a new standard in the market.



FOD compliant

The fine-tooth ratchet in the SENSOTORK® 701 is permanently installed and is a screwless construction, which prevents FOD. In addition, the QuickRelease system prevents hazardous loss of tools even when working in hard-to-reach places.



One software package for all.

With its SENSOMASTER software package, STAHLWILLE has made a centralised PC tool available for reading out and configuring all electronic STAHLWILLE torque wrenches. The software automatically detects the tool and synchronises any fasteners and work sequences that have been generated on the PC.



MORE SECURITY. MORE CONTROL.

CHECK AND CALIBRATE WITH STAHLWILLE.

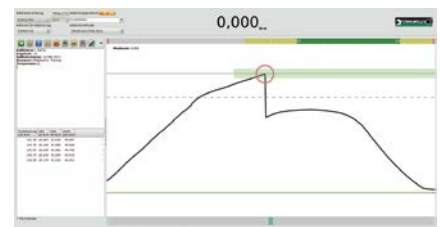
STAHLWILLE is the only manufacturer in Germany that provides both the torque tools and the corresponding testing and calibrating technology from a single source – including innovative software solutions. For enhanced safety in production and maintenance.

The SmartCheck torque tester, winner of the iF Design Award, is compact, can run on mains power or with batteries and is ideally suited for attaching to the wall or positioning on a workbench. Inside, it contains particularly accurate, robust measuring technology that informs the end user within a very short time whether or not the torque wrench is still within the specified tolerances, needs adjusting or whether there is a case of human error.

The 7707 W electronic torque wrench tester enables both rapid inspection of the tool and user training sessions on controlled tightening.

SmartCheck and 7707 W have one thing in common: they both guarantee peak process and audit reliability because checks within the compulsory testing intervals are a simple matter.

If calibration is scheduled, the manual and semiautomatic calibrating units in the perfectControl series ensure maximum efficiency. They too have been awarded the iF Design Award. When linked to the PC through a USB port, and in conjunction with STAHLWILLE's proprietary TORKMASTER software, these units allow very fast testing and calibration – now in compliance with the latest DIN EN ISO 6789:2017 standard. They can also be linked up to computer aided quality assurance (CAQ) systems.



Everything at a glance: TORKMASTER

The parameter databases stored in the TORKMASTER software enable efficient testing and calibration in compliance with applicable standards, now including the DIN EN ISO 6789:2017. The system provides several testing methods, live view of the torque progression, tool history and management of inspection, measuring and test equipment. Calibration certificates are printed off straight from the software – or exported as a corresponding PDF file.



A multitude of sockets

Besides combination spanners for spline-drive profiles, STAHLWILLE's range includes what is possibly the most comprehensive and diverse in terms of spline-drive sockets. In HPQ® quality and constructed as part of the QuickRelease system, they guarantee excellent work results and the highest standard of FOD safety.

UNCOMPROMISINGLY DURABLE. SPLINE-DRIVE.

When tightening fasteners with very high tensile strength ratings, as is often the case in the aerospace industry, high torques are frequently needed. Outstanding force transmission and maximum protection against slip-off are essential here. And this is where spline-drive tools by STAHLWILLE are indispensable.

With many fastener profiles, cam-out forces can occur when tightening and these can cause the tool to slip. This is not the case with spline-drive profiles which have twelve spline teeth angled at 60°. In comparison with hexagon or 12-point profiles, these profiles offer much improved contact with the fastener, which results in reduced surface pressure.

Spline-drive tools by STAHLWILLE do not merely conform with aerospace standard MS-33787 in every aspect, a particular quality feature of these tools is the extremely close manufacturing tolerances and long service lifetimes. This is, on the one hand, because STAHLWILLE spline-drive products are manufactured exclusively at our own precision forging shops in Germany and, on the other, because we use only extremely robust alloys and very accurate manufacturing processes.

This is how we make tools whose tight fit is a market-leader feature. For improved force transmission and greater efficiency and safety when working on aircraft components. They deliver excellent protection against conditional wear & tear and damage to costly fasteners. This commitment is incorporated in the name STAHLWILLE HPQ® (High Performance Quality). Worldwide.



More durable

Special-purpose alloys and exceptional know-how in manufacturing give spline-drive spanners and sockets from STAHLWILLE service lifetimes that are unparalleled in the market.



Light

STAHLWILLE spline-drive spanners with the double-T profile and STAHLWILLE sockets with their thin wall thicknesses reduce weight. This is an indispensable characteristic in aircraft maintenance - where every gram counts.



Accuracy made in Germany

As with all STAHLWILLE tools, spline-drive tools are manufactured to the closest of tolerances and exclusively in Germany.

GIVING SAFETY THAT EXTRA TWIST. STAHLWILLE WIRE TWISTING PLIERS.

Aeroplanes and helicopters are subject to powerful vibrations and widely varying temperatures and pressures. Even if fasteners are correctly tightened to specifications these influences may still cause fasteners to work loose. For this reason, some joints are required to have a positively locking safety mechanism. This is an ideal application for the STAHLWILLE wire-twisting pliers.

One of the most commonly used retaining systems in the maintenance of aeroplanes and helicopters is the thread locking device: one such example consists of a safety wire that is threaded through holes drilled in the fastener heads, passed through a fixed anchor point and then twisted using the wire-twisting pliers. This system has proved its worth in work on aircraft engines and cowlings.

The wire-twisting pliers made by STAHLWILLE are a further contribution to eliminating FOD. They are made exclusively of metal components. Their accurately machined, induction-hardened cutters will not fracture even if the tool falls to the floor inadvertently. The handles are arrested by a durable leaf spring rather than a highly susceptible coil spring.

Add excellent ergonomic design: these pliers enable fast, efficient, safe working because they are made with a thicker-gauge shank than competing products and can be gripped more securely. The jaws grip the wire reliably without damaging it. The tool simplifies threading the wire, the rotary action can be reversed and locked and creates a twist in a single action that will not work loose of its own accord.



Made in Germany

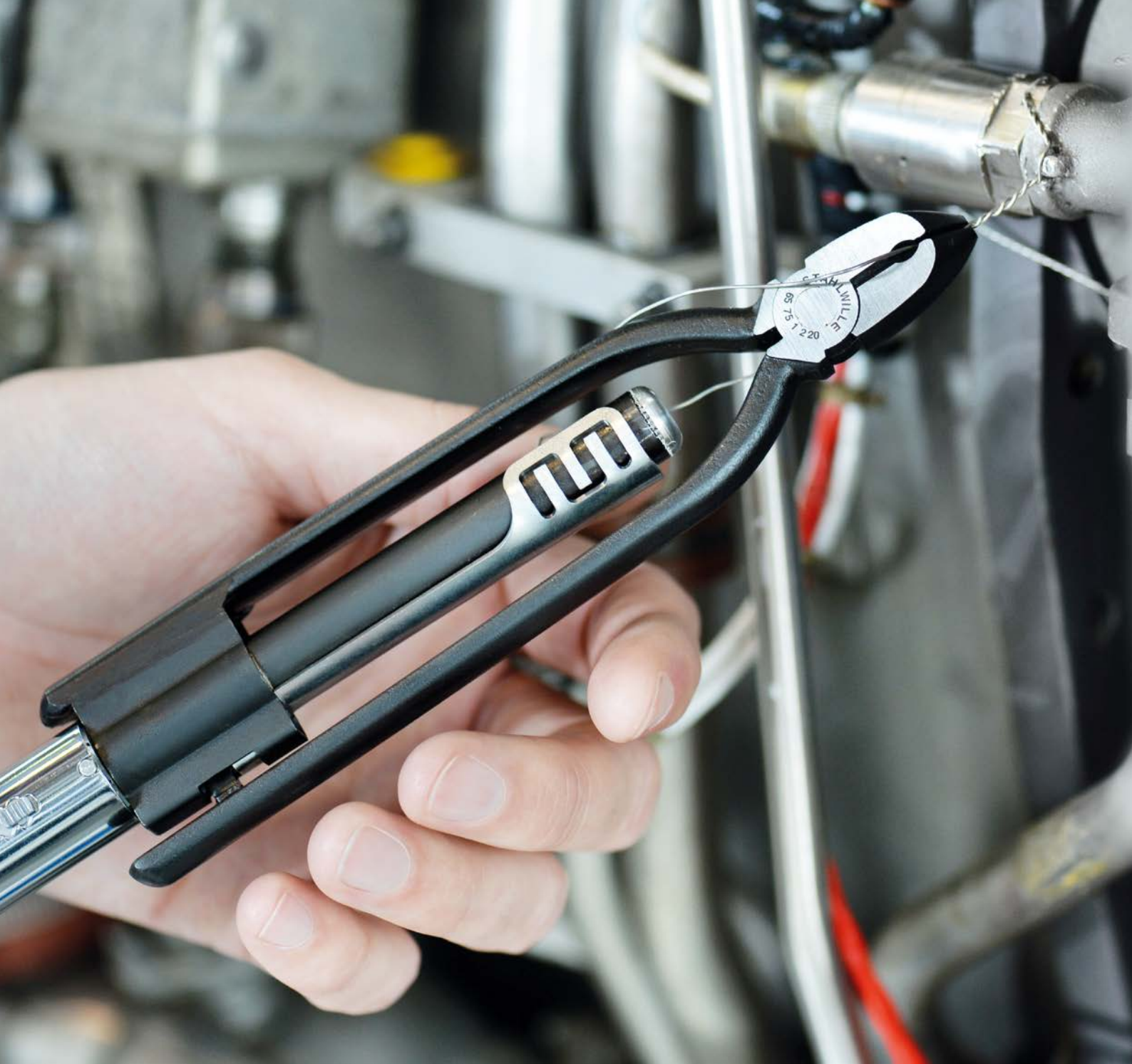
Wire-twisting pliers by STAHLWILLE are the only ones on the market not manufactured in the Far East and stand out because of their uncompromising workmanship, efficient operation and outstanding quality.

Efficient

The head of the pliers is equipped with a special grip pattern that prevents the wire being bent and thus facilitates fast threading. After the wire ends have been twisted, the wire-twisting pliers automatically crimp them.

FOD compliant

End pieces and cut-offs from the safety wire can no longer go missing. Additional safety is provided by the hardened cutting edges, impact resistant leaf spring and a complete lack of plastic components.



L 230



L 280

Simply effective: safety wire

Two fasteners are linked together with a wire, which is then twisted. STAHLWILLE wire-twisting pliers make this an easy, effortless task - and a completely safe one. These pliers are available in two different lengths.

Made in
Germany



Every tool has its clearly defined space. At a glance, you can see where each tool belongs, saving you time and, as a result, money.



The push-out recesses facilitate tool removal and promote faster, more efficient working.



Conveniently mobile - each of the drawers can be turned into a mobile carry-box by attaching one of the transparent lids.

BECAUSE EVERY MINUTE COUNTS. TOOL TROLLEY 13217.

Every minute an aircraft spends on the ground in unscheduled stops costs money. To ensure work can be carried out as efficiently and quickly as possible and AOG times are kept to a minimum, mobile tool storage solutions that are approved for work on-board, such as STAHLWILLE Tool Trolley 13217, are in high demand.

The STAHLWILLE Tool Trolley 13217 is the ideal companion for aircraft mechanics. With this solution, the tool they need is immediately accessible, whether in the hangar, on the tarmac or in the cabin. Even comprehensive tool-kits that cater for almost all service tasks can be easily moved from A to B - and where necessary, into the cabin - thanks to a pair of load-resilient castors, extendible handle and compact outer dimensions. The optional finish with a high-visibility reflecting surface also guarantees best possible staff safety when working in dark surroundings. The version with four swivelling castors provides even greater mobile convenience. This version ensures upright, topple-free transport and has parking brakes.

The robust plastic housing, outer dimensions 585 x 457 x 381 mm, has room for up to eight drawers, each of which can be removed individually and, thanks to the transparent lid and handle, can be used separately as a closed case. Besides the universal set of tools consisting of 104 items, there are sets of tools compiled specifically for the aerospace industry. All the tool-kits are placed in close-fitting TCS tool inlays - for maximum protection against tool loss.



Sophisticated

Concealed under the lid are a removable tray with handles and two transparent drawer covers.

Versatile

Easily removable drawers with endstops and three different drawer heights. Drawers can be inserted in any order.

Ingress protection to IP67

Also available as a dust and waterproof IP67 version - with additional seals, closures and a pressure equalizing valve.



STAHLWILLE TOOL SOLUTIONS. THE ONE-STOP SHOP FOR AVIATION.

STAHLWILLE undertakes to meet every tool requirement in the shortest possible time, provides proactive support in planning investments and even supplies the corresponding testing and calibrating technology. One name ... one source. Wherever you are in the world.

STAHLWILLE offers one of the broadest, best equipped ranges of tools for aviation in the entire market. In order to meet these high self-imposed quality demands, this tool and torque technology specialist develops and produces exclusively in Germany and on the basis of the standards applicable to the aerospace industry.

In a continual process of analysis and optimisation, our experienced application engineers, together with our customers, tailor FOD-safe solutions to meet new challenges. They will compile bespoke tool-kits, tool storage systems and tool transport solutions and, if necessary, will coordinate development of special-purpose solutions.

If customers require calibration technology and testing technology for torque tools, STAHLWILLE can meet those requirements with freely mountable torque testers and even semiautomatic calibrating units.

STAHLWILLE customers can rely on peak quality: STAHLWILLE is certified to DIN EN ISO 9001 and accredited by the German authoritative body DAkkS to DIN EN ISO/IEC 17025:2005. Single-sourcing for tools in aerospace can mean only one thing: STAHLWILLE.



Standards compliant

STAHLWILLE products for aviation are created on the basis of standards such as E DIN EN 3709, E DIN EN 3710, SAE AS 954-E, MS-33787, SBAC, TS 48 AS 40605/40606, MIL-W-8982, ASME B 107.5M and RR JDS 1200.01.



Broad range of products

With over 4000 products – metric, imperial and for all popular profiles up to and including spline profiles – this expert supplier has one of the most comprehensive and best quality ranges on the market.



One name ... one source

From tool-kits and storage or transport systems through to torque tools and corresponding testing and calibrating technology: no manufacturer of torque tools offers a comparable range of know-how.



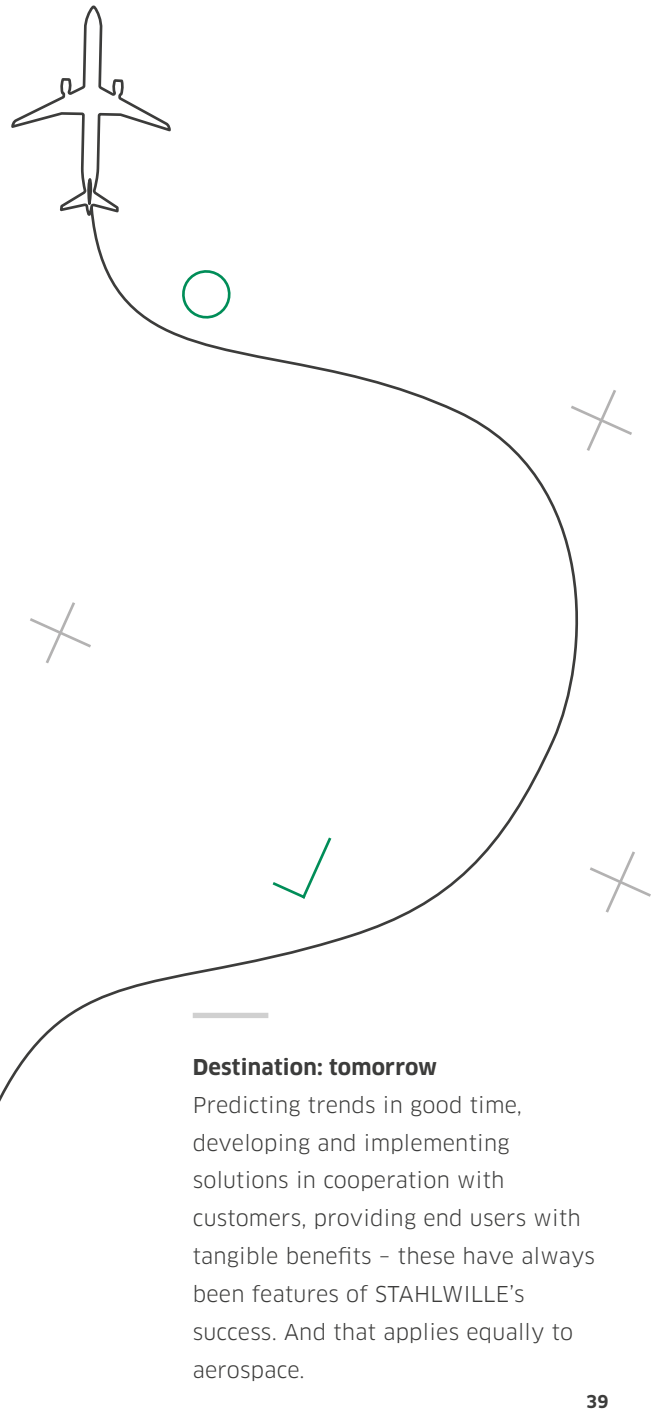
PREPARING THE JOURNEY'S DESTINATION. STAHLWILLE LOOKS INTO THE FUTURE.

Development cycles for passenger 'planes are long and, once in service, they are often in use for decades, which makes it that much more important to plan ahead. Today, STAHLWILLE is already working on staying the best partner of aeroplane manufacturers and maintenance and repair businesses tomorrow.

The production and maintenance of aeroplanes are subject to almost the same upheavals as other industries. In all likelihood, automation and the application of automated fastener-tightening machines in aircraft construction shops will one day be standard. However, in maintenance, repair and overhaul, craftsmanship will continue to play a crucial role. Solving problems and conducting individual repairs will remain firmly in the human domain.

Nevertheless, computerisation is moving forward in the aerospace industry: the requirement to log results is already considerable. The demands on torque technology with a logging function are already high and are increasing. Interlinking tools and components – as envisaged under »Industry 4.0« – is a further demanding trend that is expected to become established in aerospace in the medium term.

STAHLWILLE is fully at home in these fields – and is ready to provide answers to the questions that will arise. These may concern electronic torque wrenches with a logging function that are integrated in networked production and the user's maintenance sequences by radio contact. This is just one example that shows that, at STAHLWILLE, the future has already begun.



Destination: tomorrow

Predicting trends in good time, developing and implementing solutions in cooperation with customers, providing end users with tangible benefits – these have always been features of STAHLWILLE's success. And that applies equally to aerospace.

