



ALWAYS IN MOTION



TASOWHEEL – GLOBALLY LOCAL

Tasowheel is a family-owned Finnish company with a strong, versatile experience in providing customer-specific, first-class solutions and components for diverse power and movement transmission needs. Close collaboration and long-term cooperation with our global customers are key components in our business. We understand our customers' needs and goals and provide solutions that deliver real value. By constantly investing both in people and in latest machine technology at our own plants in Tampere and Tikkakoski, we can provide our customers with the best solutions and service.

Despite the latest technology and modern manufacturing facilities, skilled employees are still the key to our success. We have highly qualified and experienced employees, who come from a wide variety of educational and cultural backgrounds, making it possible for our team to tackle complex challenges and to exceed the expectations of our international clients.



WATCH OUR VIDEO!

Sales Director Roman Mertechev tells you about Tasowheel operations and secrets of success.

CREATING VALUE WITH SUCCESSFUL CO-OPERATION

Our customers are globally operating companies in various industries. We aim to build long-lasting partnerships with them and have succeeded in that goal. We support our customers with solutions and services created by professionals for professionals.

By committing ourselves to the continuous development of our operations and the search for new application areas for our products, we help our customers find business opportunities and gain a better competitive advantage. By investing in cutting-edge technology, we give our customers possibilities to meet future challenges – be it better efficiency, more compact product size or lower energy consumption.



| Tasowheel was founded in 1979



OUR CORE VALUES

Customer orientation

We understand our customer needs, providing active and individual service.

Success together

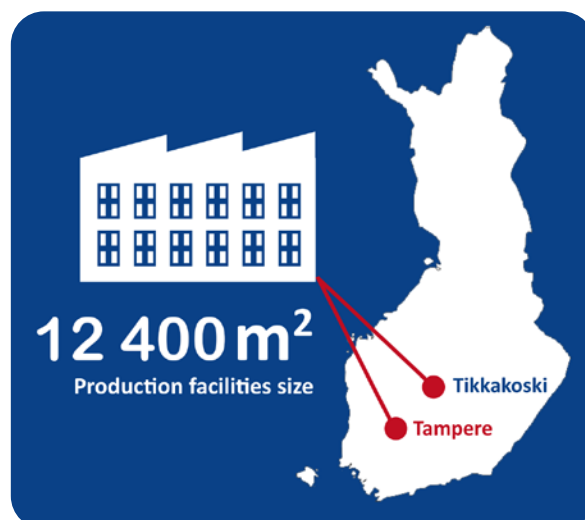
We respect each other, valuing professional skills. Our co-operation will ensure mutual success.

Learning and regeneration

We want to learn continuously and update our know-how.

Continuity and profitability

Confidential relationships lay the foundation for a long and fruitful co-operation.



23.5 M €

Turnover 2022

>90%

Indirect export

135

Employees

11

Average working
years at Tasowheel



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QUALITY ON-DEMAND – AGILE PROCESSES DIMINISH THE COMPLEXITY OF GEAR MANUFACTURING

The production process of highly demanding transmission components includes several manufacturing phases, each with special requirements for machinery and expertise. We offer a flexible and effective full production cycle for gear manufacturing that lets our customers forget all complexity.

QUALIFIED RAW MATERIALS

The hallmark of our services is an uncompromised quality policy, covering the entire production chain from raw materials to the final product. We only accept high-quality materials from a selected network of suppliers.

EFFICIENT MACHINING

The gear manufacturing process starts with traditional machining operations, such as cutting and turning. We have optimized this initial phase to be as efficient as possible. In high demand, we rely on our trusted machining partners to enable a full focus on serving our customer in the pivotal phases that follow.

FLEXIBLE AND FAST MANUFACTURING

Gear hobbing, hard turning, and grinding are our core competencies that bring the brightest value to our customer. We constantly reinforce our skills and invest in the most advanced

technology and smart automation to support our global competitiveness in serial production. Multi-machine operation is key expertise enabling flexible and efficient production. Our versatile options for automation vary from ring loaders and portal robots to fully automated cells - the level of automation is customized to best meet the customer needs.

HUMAN-MACHINE COLLABORATION

We are proud of our cutting-edge machinery and highly qualified employees who know how to unleash its full potential. This exceptional combination ensures the highest quality, a smooth process, and excellent service. All our operations utilize flexible manufacturing systems that enable working on customer demand.

REAL-TIME PRODUCTION MANAGEMENT

Intelligent, real-time production planning represents the core of our manufacturing process. Production plans derived from a continuous Sales and Operation Planning process consider both current customer demand and prognosis. An Advanced Planning and Scheduling system (APS) ensures that accurate on-time information is available throughout the organization and the right resources are applied to the right orders at the right time.



| Manufacturing Manager Aleksi Isoaho



| Senior Operator Lauri Mäkelä masters the latest manufacturing technology

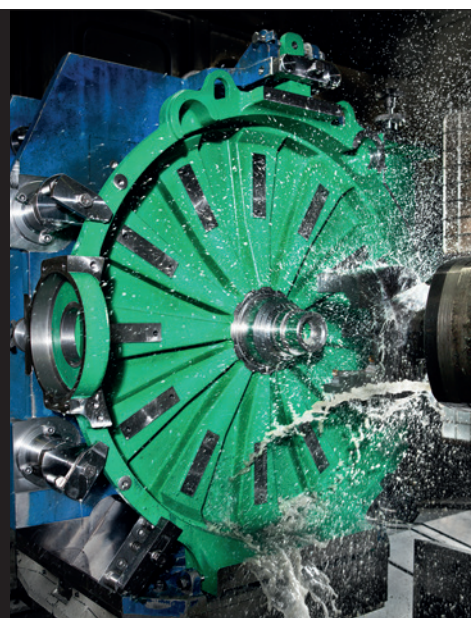


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 Email: jari@vahti.fi



QUALITY COMES FIRST

We take quality seriously. Quality control is not a separate function but an integral part of our process. Employing a variety of intelligent methods and tools, we want to make sure that it is our customer that returns, not the product.

MEETING THE HIGHEST DEMANDS

We meet the tightest quality demands of all industries. A control plan is one of the core elements of APQP, which is an integral part of our manufacturing process. It describes all measurements, inspection frequencies, and quality checks required at each phase of the manufacturing process, and the instructions regarding actions taken if any non-conformance is detected. This ensures that the customers get exactly what they order.

STRUCTURED PROCESSES

Our product quality plans follow a highly structured APQP (Advanced Product Quality Planning) process, starting from a throughout understanding of customer needs and expectations.

To enhance reliability through design, we use FMEA (Failure Modes and Effects Analysis). It enables us to analyze potential reliability issues early in the development and take actions to overcome them. When designing new product quality, we check the FMEA document for any remarks that might affect. If any potential problems are identified, we determine their effect and take preventive measures before production begins.

IMPORTANCE OF DOCUMENTATION

We understand the value of high-quality documentation. For us, documentation is not a formality but an invaluable part of the design and manufacturing process. Proper documentation is essential to quality and process control. It improves predictability and helps to ensure operational efficiency.

If any problem is detected, we employ the 8D problem solving model to identify, correct, and eliminate quality problems. Any production biases or complaints launch the 8D process that helps us to determine the root cause for the problem and to establish the most effective corrective actions.

A statistical process control program enables the statistical evaluation and an accurate analysis of all measured data. The targeted capability analyses let us analyze and evaluate the production processes.

ADVANCED MEASURING EQUIPMENT

We have invested heavily in advanced measuring devices for quality control. These include, e.g., six coordinate measuring machines, optical measuring machines, and gear measuring machines measuring the accuracy of tooth profiles. Some of our machine tools are equipped with integrated measurement capabilities, providing the possibility to measure the workpiece in-machine during or after its manufacture.

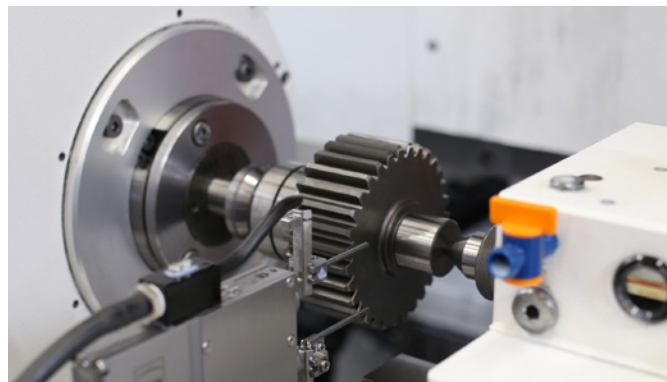


| Senior Quality Specialist Joonas Jokinen

A properly planned and executed measurement system analysis evaluates the uncertainty, accuracy, repeatability and reproducibility of the test equipment and assures that it is appropriate for customer requirements.

COLLABORATION AS A KEY TO SUPPLIER QUALITY

We partner with suppliers who are aligned with our best-in-class quality objectives. Detailed requirements and standards for supplier quality are determined in a supplier quality manual. In controlling supplier quality, collaboration is our key guiding principle.



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MACHINING
SINCE 1978**



Konepaja Seppo Suomi Oy manufactures high quality parts according to customer requirements. We offer turning and milling parts made with modern machinery. We have FMS production line for hydraulic blocks and we can offer thermal deburring service for metal parts. High quality and delivery accuracy are our strengths.

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WORLD-CLASS PROFESSIONALS AT YOUR SERVICE

Five-axis machining generally demands more complex machine setups and good knowledge of CAM programming. The latest machines are equipped with advanced control features that handle most challenges, still, the users need to know how to utilize the versatile options and features available in a multi-axis setting.

Tasowheel has currently seven 5-axis machines in Tikkakoski and one in Tampere. The resource integration between the manufacturing facilities enables flexible production. Our 5-axis experts are world-class professionals with the best know-how of the latest technologies and enthusiasm to continuously develop the processes to unleash their full potential.

MORE ACCURACY WITH 5-AXIS MACHINING

Five-axis machining enables machining multiple sides of a part in a single setup. It offers a host of benefits for industries requiring intricately produced complex components. Finishing every phase at one time reduces total cycle times and improves quality.

MORE SPEED AND QUALITY

Modern 5-axis technology enables efficient machining of almost any 3D-contoured surface, including the wings for turbocharger or accurately curved shapes. Because of the increased accuracy, the required machining time per unit is longer, but the total cycle time is dramatically reduced compared to traditional CNC machining. Fewer setups and less handling save time and make the process less prone to errors.

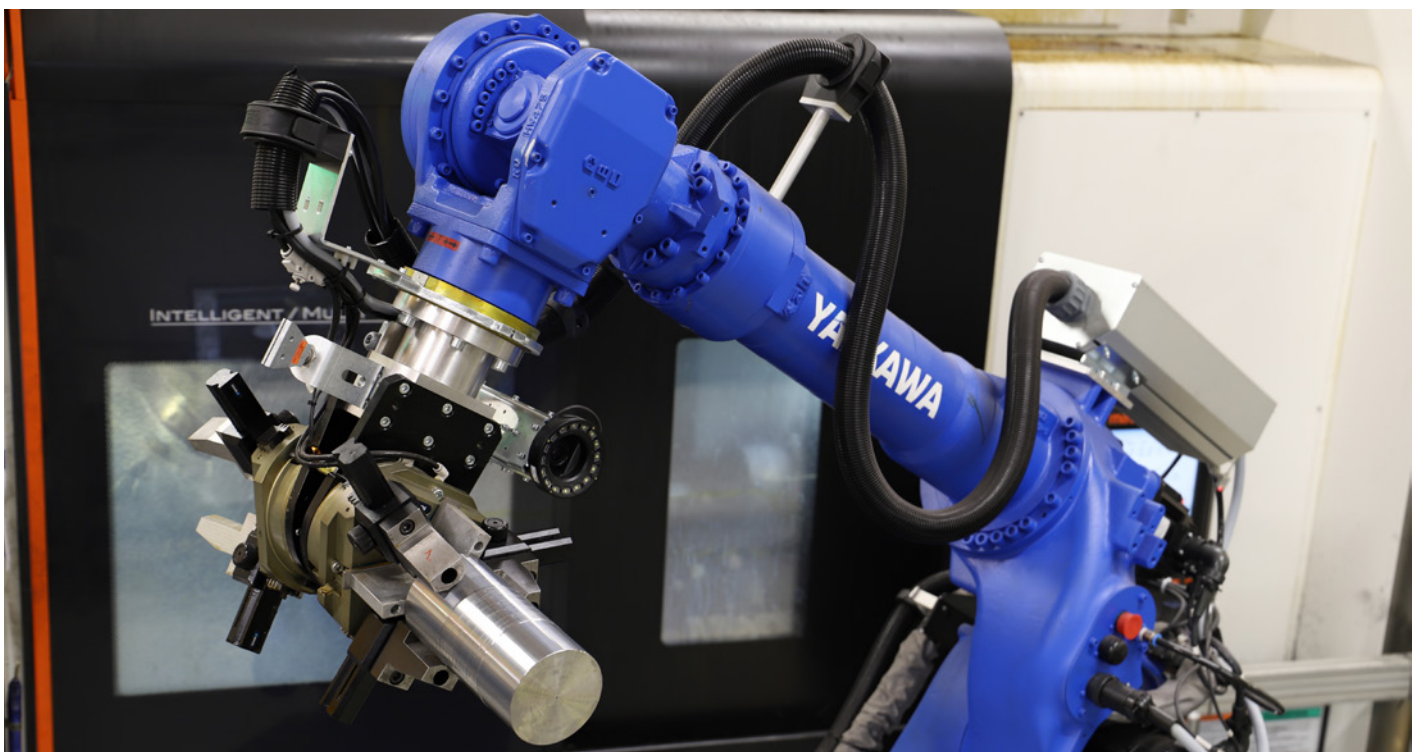


Development Manager Tommi Rautiainen and Production Manager Antti Kautto make sure that the production process in Tikkakoski runs smoothly.

COMPONENTS AND ASSEMBLIES FOR THE HIGHEST DEMANDS

Tasowheel Tikka produces first-class hydraulic components and tested assemblies. Our assembly services include the manufacturing of components, integration, and testing.

We are especially known for producing components and assemblies that feature demanding raw materials, complex geometry, tight tolerances, and superior surface quality. Manufacturing and testing high-pressure components are one of our key competences.



| Automated workpiece loading for 5-axis machining operation



HIGH-PRESSURE COMPONENTS NEED BULLET-PROOF TESTING

Components with the highest use pressures are especially used in fuel lines. All components for high-pressure fuel pumps are to be tested for possible leaks to prevent safety risks and loss of engine power. Hence, they follow their own, advanced testing procedures that meet with the strictest quality standards.

Some components require an additional quality classification. In those cases, a classification authority is invited to participate in our testing process.

Appropriate testing requires comprehensive knowledge of hydraulics and a complete understanding of the end-use of the component. With our deep and wide experience in design, manufacturing, and testing, we understand the impact of every minor configuration on product properties and performance.

SPARE PARTS FOR A LIFETIME

We are a trusted supplier of industrial spare parts, ensuring our customers the availability of high-quality spare parts at the right time with a minimized inventory. With our long-term customers, our finetuned process covers the manufacturing, testing and worldwide distribution of spare parts.

MEDIUM HEAVY MACHINING SERVICE

CNC
KONEISTUS OY

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FINLAND'S FIRST ECM MACHINE IMPROVES EFFICIENCY AT TASOWHEEL

The operation of an ECM (electrochemical machining) machine is based on a method where the workpiece surface is being finished using anodic metal dissolution. It offers several benefits compared to traditional machining. For instance, aerospace and transportation widely use ECM technology in the component production of engines and fuel systems.

While the engine technology has become more ecological, the fuel rail pressures have significantly increased. Higher pressures enable better efficiency, but they also burden the parts of the fuel line. ECM technology helps improve the product geometry and remove its internal tensions. As a result, the parts tolerate higher rail pressures.

SENSITIVE AND ACCURATE TOOL FOR SERIAL PRODUCTION

The electrochemical process enables accurate access to the product's complex inner shapes. That's why ECM machines are efficient in guaranteeing both the quality of the surface and the inner shapes. The technology can be used on both soft and hardened phases of the workpiece. However, a tailored tool is needed for each product, so the technology is at best in serial production.

The process itself only takes a few minutes. With the tool as the cathode and the workpiece as the anode, an anodic reaction occurs in the presence of an electrolyte fluid. The process removes material from the workpiece surface in a precise and repeatable manner. The shape of the tool regulates the amount of material being removed and determines the final geometry on the workpiece surface.

The machine is fast and handy, and all it requires from the user is great caution. Although the machine looks simple, it is very sensitive. Impurities can break the tool, and exactly right composition of the electrolyte fluid is crucial.

After the process is complete, the workpiece needs rinsing. The electrolyte is extremely corroding, so a quick after-handling is a must.

NEW POSSIBILITIES FOR R&D

Finland's first ECM machine has already raised interest among Tasowheel's customers. The finest thing about ECM technology is the way it handles the intricate shapes of a product. It brings new efficiency to the machining of complex inner shapes, finishing every phase at the same time.

The new technology is especially efficient if its benefits are already identified in the phase of product development. That way, it is easy to plan the product and production to be as efficient and compatible as possible.



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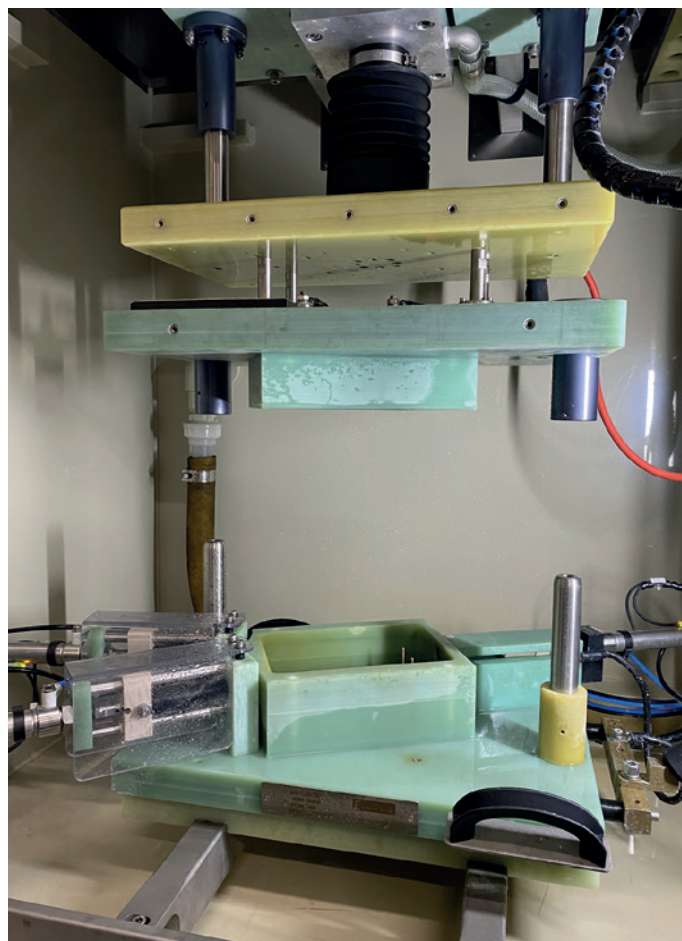
Transmissions

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- Power up to 90 kW and torque 20 000 Nm

BEVI



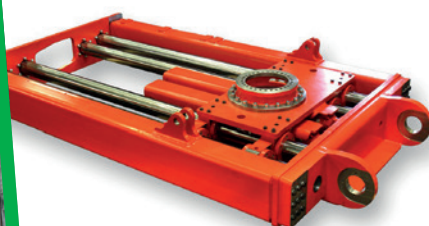
Mika Järvenpää using Finland's first ECM machine in Tikkakoski.



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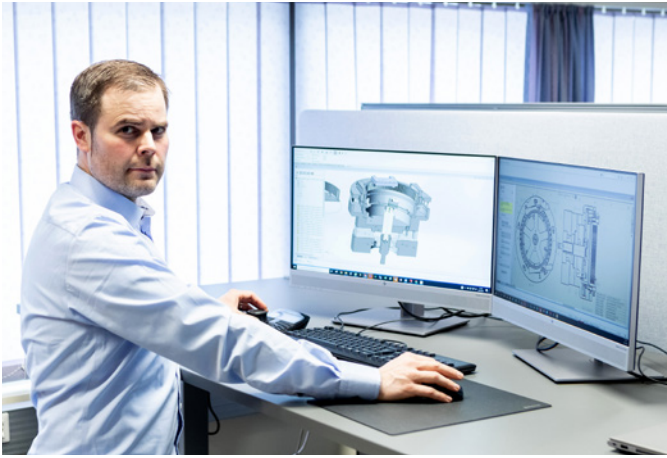
ALVARIN METALLI is a versatile machine workshop that supports the technology industry. Our clientele consists of operators on practically all fields of industry.

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COMPETITIVE ADVANTAGE WITH DESIGN SERVICES



| Design & Tooling Manager Kai Kiistala

We know how to make a bullet-proof manufacturing plan. Understanding the requirements of the product and the production, we help customers get exactly what they want, often with lower costs than planned. Cooperating with the customer's designers, we can modify the product design for better producibility and cost-effectiveness.

MODIFICATIONS THAT MATTER

Our experts analyze the design elements in terms of producibility. Sometimes, slight change in the structure or materials make the production more cost-effective. Or if there are only minor differences between the products - would modularity be an option? Producing in bigger batches is less expensive than manufacturing five variants with a tiny difference.

GOOD COMPROMISES

Sometimes a small compromise to the design gives great advantages without putting a crimp on quality. Tight tolerancing often determines the methods needed. It may have a costly impact on final assembly, so it should always add value to the product. Functions of the product matter.

EXTRA PHASES – EXTRA TIME

Abandoning a non-definitive attribute may cut off a costly phase in production. Is grinding a must or would a best-in-class turning do? If the workpiece surface loses its shape in quenching, a special coating both solves the problem and reduces production phases.

BEST VALUE THROUGH TEAMWORK

We serve our customers as a team of experts in various fields: product design, raw materials, manufacturing, methods, and measuring. Analyzing the design plan from all perspectives, we can define the best solution together with the customer. Afterwards, we evaluate our process and articulate improvements for consideration.

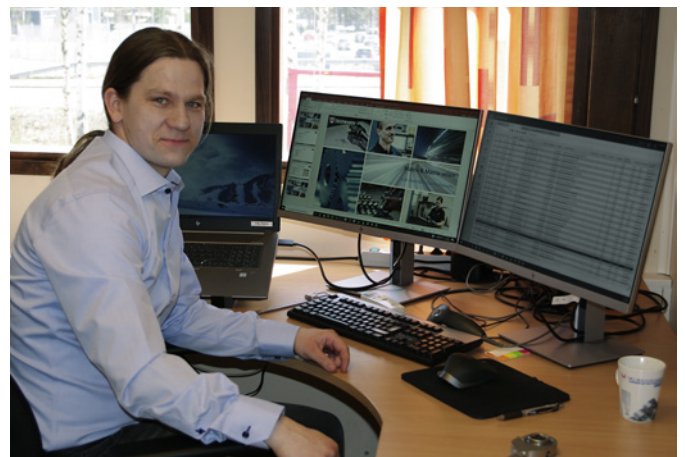
CUSTOM FIXTURES SUPPORT PRODUCTIVITY AND PRODUCT QUALITY

Not even the most advanced machines can produce best-in-class products without high-quality fixtures.

When a customer order is placed, the design work of product-specific fixtures begins. The primary task of these fixtures is simple: to ensure proper mounting of the workpiece in the manufacturing machine. The quality of the product depends on these specific tools, mainly individually created for each product and machine. As the product range is wide, with great variation in size and form, one fixture seldom serves two different parts.



| Development Manager Tommi Rautiainen



| Production Engineer Olli Rosti

The fixtures are complex systems, containing of up to tens of different parts. The most common materials include steels, aluminium, plastics, and 3D-printed plastic. Certain product attributes, such as tight tolerances, complex forms, or thin structures, set requirements for fixture design. Lately, the intense use of ring loaders has affected it even more. The fixtures need to be equipped with accurately designed grippers to ensure that the ring loader places them exactly onto the right position. The tool change and set-up must also be rapid to avoid idle time.

Tasowheel has answered to these needs by technological investments. 3D printing and new technologies enable shorter lead

times, and special fixtures can be efficiently produced with a modern wire cutting machine.

Creating a functionally adequate fixture requires comprehensive understanding of the product and its requirements, of the manufacturing machine and production processes. Our designers work in-house and know the production machinery and the processes throughout. This ensures fixtures that perform well and last long.



TOGETHER WE CAN DO IT BETTER

**Quality tool service and manufacturing
from Finland.**

CULTURE OF CONTINUOUS IMPROVEMENT

Tasowheel aims at continuous improvement in all operations. The three key pillars are business development, employee well-being, and sustainability.

BUSINESS DEVELOPMENT FOR FUTURE RESILIENCE

One of our core strategies is to work according to One Tasowheel ideology, striving towards an outstanding customer experience in all touchpoints. Production efficiency is systematically improved to support future resilience. Smart digitalization and collaboration with customers and partners create new models for flexibility. Our procurement strategy and management are further developed according to the principles of One Tasowheel.

HAPPY AND HEALTHY PERSONNEL

We take care of our talents. Workplace wellbeing relates to all aspects of working life, from the quality and safety of the working environment, to how our people feel about their work. We constantly improve workplace wellbeing by investing in new solutions for distraction-free working and good ergonomics and offering comprehensive training opportunities that support employee competence and feelings of mastery.

Total employee wellbeing is supported by a variety of physical activities, such as borrowable e-bikes, office workouts and exercise vouchers. We were among the first employers to support the cycle to work scheme.



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STRATEGIC SUSTAINABILITY

For us, sustainability is a strategic choice. We use the Eco-Vadis scorecard to measure our performance in the areas of environment, labor & human rights, ethics, and sustainable procurement. We are ready to make every change needed to make the world a better place for the generations to come. Our latest energy-saving measures include joining an energy efficiency agreement, a transition to led lighting, as well as new energy-saving ventilation and cooling systems. The waste heat from our compressors is effectively utilized. The free charging for electric vehicles and the cycle to work scheme encourage our personnel to consider their own choices for the environment.



Development Manager Petri Keski-Korpela enjoying the distraction-free working environment of a Framery pod.

Office workout in Tikkakoski

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