Portal Milling Machines in Perfection
Anyone who wants to be successful needs to think on a grand scale, courageously crossing borders and constantly developing further. Portal milling machines from Zimmermann help companies to branch out in new directions and implement their visions without constraints. Even huge components for wide-bodied aircraft or models of whole car bodies can be made on the versatile and individual customized machines in top quality. Everything is possible. This is true for Zimmermann as a company and for its products.
Something large calls for precision. Anyone who only wants to scratch the surface, disregarding quality and accuracy, will not achieve his goal. That is why you need a clever and reliable head which with know-how and experience can think through the smallest details in advance. For in the end that is what makes the difference when consulting customers and customizing milling solutions based on portal technology from Zimmermann.
Whether composites, aluminium, titanium or other materials: professional machining of different materials calls for the right machine concept. Anyone who doesn’t just want to bash his head through the wall needs to bring dynamic and power into harmony with the concrete task. Only when the means and ends are perfectly matched can one achieve precise results. This is as true for the customer’s application as for the development at Zimmermann.
Zimmermann has had to do with free-form surfaces machining right from the start. Since its foundation in 1933 it has been concerned with the removal and modification of the outer surface of many different types of material. With the milling machines came the customers, with the demands opened up new possibilities and with the technical developments came the product-specific innovations. Today Zimmermann is one of the world’s leading manufacturers of high-tech portal milling machines, impressing the world with innovative solutions “Made in Germany”. The smallest details and largest dimensions, speed and thoroughness, performance and value-for-money – these are the areas in which the company has come to excel. At the center of all we do is the customer and his conviction that the purchase of a Zimmermann portal milling machine has really paid off. And that not only on the surface but when you take a closer look.

Rudolf Gänzle
President, CEO
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The automotive industry is continuously facing new challenges on the world market, which regularly call for innovations to be implemented faster and with greater precision. Ever shorter development cycles for more model variants, the latest equipment, environmental protection, lightweight construction combined with increased safety and appealing in design – these are the constraints which manufacturers can only satisfy with customized machine concepts, individually tailored to their specific requirements. Portal milling machines from Zimmermann help the automotive industry of today to achieve their goals of tomorrow.
“In automotive development speed is the key to success. At our company within a few months – under enormous time and cost pressure – we are able to produce a finished prototype car ready to drive. One precondition for this is the high availability and manufacturing quality of our machine tools. Our two FZ 37s as well as the FZ35 are absolutely dependable and can stand up to this pressure. Furthermore the fast reaction and delivery times of Zimmermann’s efficient service team are of great importance to us. Thus we can ensure highly accurate machining, improve the performance of the cars and maintain our competitive advantage.”

Volke Entwicklungsring GmbH
Michael Rückner
CAD/CAM – Rapid Prototyping

“...We bought the FZ 37 at a very good cost-performance ratio. Zimmermann was able to assure us of this. They gave us fast and unbureaucratic support in customizing the machine to our specific needs. The versatility of the machine has helped us to considerably speed up our process. This has been a great benefit and thus today our overall process chain is much faster, more accurate and more efficient.”

Schweikert GmbH
Rainer Schweikert, President, CEO
Portal milling machines for the aerospace industry

Absolute safety, changing processes and lighter but yet highly stable materials: this is the situation with which the aerospace industry is confronted today. Any company seeking to increase the range of its aircraft at the same time as reducing consumption requires individual solutions, capable of adapting to a wide variety of materials and new processes. And for all this, cost effectiveness remains the key – and here nothing beats experience. With portal milling machines from Zimmermann the aircraft industry can strike the right balance to have the optimal technology for its specific requirements in the future.
“Portal milling machines today have generally reached a very high standard. The real added value today lies in complete systems which with customized clamping technology ensure flexible and above all fast changeover of large components. User friendliness, versatility and cost effectiveness combined with the agility of the supplier are what counts. Producers of milling solutions who are successful in the marketplace today provide individually tailored solutions based on a cost-effective standard.”

Airbus
Dr. Achim von Arciszewski,
Vice President Production VTP
A 380/A 400M

“When we gave up aluminium machining and changed to carbon-fibre composites we looked around for the right milling machine. We found this in the FZ 35 which, for us, represents the optimal synthesis of portal size, spindle strength and stability. The machine also impressed our American colleagues and led them to purchase a Zimmermann machine too. We are still very pleased with Zimmermann today because their service is fast and effective too.”

GKN Aerospace GmbH
Erich Metzger,
Facility Manager
The demands made by the engineering industry on milling solutions are continually increasing: quality and speed are becoming ever more important, whether in tool- or pattern-making, shipbuilding or where railways or power generation are concerned. Anyone wanting to see his design quickly become reality, who wants to present a perfect prototype to decision makers or has to face up to the tough realities of series production has no alternative to a portal milling solution, whose speed and precision simply cannot be beaten. These are the qualities which motivate Zimmermann - not only when designing portal milling machines but also in service.
“We now have three Zimmermann machines. Above all the consistency and standardization of the operating controls of all the machines means we can easily switch between different materials and use the machines flexibly. Whether it is the FZ 25, the FZ 30 or our latest purchase the FZ 42, the machines are almost self-explanatory. They produce excellent results and, if ever necessary, can be put right easily by Zimmermann Service in a very short time.”

Modellbau Nachtigall
Karl Nachtigall, President, CEO

“Our demands on a portal milling machine are very wide ranging: rigidity, speed, flexibility and precision. Thus both in single-part manufacture and series production we use the FZ 42 from Zimmermann. This machine is extremely economical and support is always unbureaucratic, fast and cooperative. And whenever we have a new application, Zimmermann always has a solution at the ready.”

mag-tec GmbH
Martin Gansloser, President, CEO
Uniqueness is the key to the markets of today. For this reason Zimmermann’s customers have increasingly individual demands as to innovative and versatile solutions for their particular applications. Under tough international competition, it is the quality of their products and components which counts as well as keeping costs more than ever under control. To satisfy customers’ individual requirements optimally in a rapidly evolving market, Zimmermann has adopted a courageous new approach in response to changing requirements for its products. We aim to deliver the highest standard of technology while having core competencies like milling head development in-house. So that our customers get what they really need.
Great stability and dynamic performance for the highest expectations. Anyone wishing to machine large components or hard materials with utmost precision for optimal results can depend on gantry-type heavy portal milling machines. Maximum machine stiffness meets high speeds. 5-sided, 5-axis machining is what makes this possible. The result: Excellent surfaces finishes and exact dimensional details – in record time. And that over a range which is unique.

The design concept of the FZ 42 machine aims to provide extremely high structural stiffness combined with highly dynamic drives. This is achieved by a considerably strengthened portal and compound-filled columns with an enormous stability, enabling the machine to attain excellent surface finishes and a high dynamic performance. Above all it is ideally suited to machining of steel, castings and heavy materials such as titanium. In combination with spindle changing systems, cost-effective complete machining can be achieved.

As a universal machine for metal machining, above all the FZ 37 is designed for highly dynamic machining of different materials. The machine’s structural stiffness makes it very suitable for high speed machining. The FZ 37 can satisfy all quality requirements and assure efficient milling results.

The FZ 38 is a technically perfected, above-driven portal milling machine designed for the use of highly dynamic linear drives. These give the machine very high chip removal rates, depending on part geometry, making it an ideal way of increasing productivity. High dynamic performance and speed as well as high accuracy and surface finish are what characterize the FZ 38 thanks to the use of direct drives in all axes.
The FZ 33 is the latest engineering made by Zimmermann. The FZ 33 fulfills demanding tasks in the automobile and aerospace industries as well as in many other fields in every respect. The standardized and yet modular development process permits fast and costeffective tailoring to the customer’s wishes. The FZ 33 is synonymous with versatility, high precision and efficiency.

The FZ 32 is designed for fast, 5-sided machining of aluminium and composite materials. The machine is also characterized by high structural stiffness and low moving masses. Thus the FZ 32 is both highly dynamic and capable of producing excellent surface finishes.

The FZ 25 is excellently suited for dry machining of very large, light workpieces. It permits extremely high machining accuracy and surface finishes. Above all, it is the size of the working areas which makes this machine a top model for milling polystyrene, resin and plastics.
6-axis portal milling machines

This class of gantry-type light portal machines is ideal for large components and lighter weight materials. Compact milling heads – placing little strain on the kinematics of the machine while permitting high dynamic performance – are at the heart of the solutions. The machine is just right for anyone wanting outstanding surface finishes, quickly, at a reasonable price.

With the new FZ 100 portal milling machine Zimmermann has managed to achieve 6-axis machining using the newly developed M3 ABC 3-axis milling head. This concept sets new standards in the volume machining of aluminium, composite and model making materials as well as in the High Speed Cutting of steel and cast iron, where conventional 2-axis fork heads with A- and C-axis have long reached their limits in the 5-axis simultaneous machining.

The world’s first three-axis milling head M3 ABC from Zimmermann opens up completely new dimensions in productivity. It provides three degrees of freedom and large swivel angles and is thus unservedly flexible in its use. Despite its additional axis, the milling head is extremely compact, further increasing its flexibility and performance.
Classic portal milling machines

Proven and practical technology in a classic design: that's what characterizes the classic portal milling machines from Zimmermann. Easy access from all sides where space is restricted; the milling heads used are all-rounders, an appropriate choice for all applications. Price and performance are in complete harmony with each other – no wonder the FZ 30 and the FZ 35 have remained classics in the Zimmermann range up to the present day.

The FZ 35 is heavy enough to machine all kinds of metals. The machine design offers great flexibility, suitable for an enormous range of applications right up to simultaneous 5-axis machining. Complete machining in a single setup means that dimensional accuracy and surface finishes of a very high quality can be attained.

The FZ 30 is Zimmermann's bestseller. A flexible combination of high stability and stiffness. Constant moving masses and highly dynamic drives make it suitable, above all, for machining plastics, aluminium and kirksite. The constructive layout also helps to ensure easy clamping and setup and changeover of the machine.
An experienced team always has the right strategy to suit different requirements. Zimmermann milling heads are like a successful team: they are available in a wide inter-coordinated range, ready for every challenge our customers may come up with. Depending on the workpiece material, the required removal rate or surface finish, Zimmermann offers the right heart for the milling task. At the core of the solution are Zimmermann’s 2- and 3-axis milling heads – a key competence of enormous significance. Thus Zimmermann provides exclusive and patented milling head solutions.
VH 6

Powerful and flexible. The VH 6 uses its high power and enormous torque for really tough milling jobs. The torque drive used ensures maximum dynamic characteristics and positional accuracy - tailor made for all applications where maximum performance is required. The VH 6 is based on MuST® technology.

VH 30

One for all. That's why the VH 30 is at the heart of the Zimmermann milling head range. The wide range of applications of the VH 30, ideally suited to constantly changing tasks, is the key feature of this universal fork head.

VH 20

Simply compact. That is the VH 20. Particularly mid-volume machining of lightweight materials and aluminium as well as finish-machining of steel are among its specialities. But it really comes into its own where high performance coupled with low weight and/or compact size is concerned.

VH 12

The milling head VH 12 is available for particularly demanding machining tasks. It has extremely strong bearings for high holding forces during simultaneous movements and a very high performance branded spindle with user-friendly characteristics. Its single side bearing ensures perfect access to critical cutting areas.

VH 1

Simple and light. That is the concept of the VH 1. Suitable for the FZ 15 and FZ 25, this milling head effortlessly machines materials such as polystyrene, lightweight plastics, and fibre-reinforced composite materials. It is ideally adapted to the stability of light machines and their machining tasks.

M3 ABC

The world’s first three-axis milling head M3 ABC from Zimmermann opens completely new dimensions in productivity. It provides three degrees of freedom and large swivel angles and is thus unreservedly flexible in its use. Despite its additional axis, the milling head has an extremely compact appearance, further increasing its flexibility and performance.
Portal milling machines are masters of versatility. Moving masses are extremely low, above all facilitating machining of large workpieces. Whereby 5-sided, 5-axis machining helps to mill even complex shapes from a block of material in just a short time. The construction reduces any vibrations which occur to a minimum, permitting high dimensional accuracy and surface finish as well as maximum machining performance to be achieved. For anyone aiming at optimal machining results, the portal is the gate to success!
5-axis machining permits optimal milling of even the most complex contours. Large side-steps can be achieved using toric tools, resulting to good surface finishes and considerable time savings.

5-sided machining makes it possible to machine even complex and large parts in a single setup. This leads to greater precision and reduces throughput time.

Portal milling machines from Zimmermann are characterized by the high structural stiffness of the side columns. This is achieved through the use of fibre-reinforced materials, leading to good vibration damping and thermal stability of the machine.

Advantages are also derived from the FEM calculation of the portal structure. Thus, by taking the dynamic behaviour of the machine into account, optimal structural rigidity can be obtained. Only a small mass needs to be moved, the stability is still maximized. Efficient machining is the result.

When defining working areas within the portal milling machine, creativity knows hardly any limits. Zimmermann has already implemented various clamping table concepts, integrated partition walls, tandem or duo versions and a variety of pallet changers.
Zimmermann portal milling machines use three different types of drive systems depending on the type of application: worm drive, linear motor or ball screw drives. We determine their specific advantages for our customers during the course of the individual consultation. What is important to us is to put factors such as wear, energy consumption, maintenance costs, noise or performance into perspective for our customers. What our customers require is what drives Zimmermann.

### Comparison drive technology

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<tr>
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<th>Ball screw</th>
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<tr>
<td>Feed rate</td>
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<td>Feed force</td>
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<td>Repair costs</td>
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<td>Return on Investment (ROI)</td>
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**Better** - Better performance or lower cost compared to other options.

**Worse** - Worse performance or higher cost compared to other options.

**Rack-and-pinion**

The very dynamic worm drive offers a very good balance between cost and benefit. Any conceivable length of axis is possible and in addition it covers the widest range of applications.

**Linear motor**

Anyone focused on reducing non-productive time should go for a linear motor. The niche solution for special applications is suitable for fast repositioning and changes in direction due to its rapid acceleration.

**Ball screw**

The classical drive for short axes is characterized by high precision, low initial investment and as a result good cost-effectiveness.
To be able to deliver what the customer needs is the guiding principle for Zimmermann. Everyone looking for more than just optimal machining and surface quality has come to the right address. Because we are experienced in supplying overall turn-key solutions which, along with the portal milling machine itself, also satisfy all the additional technical requirements: whether software, intelligent clamping technology, additional tools or extraction systems for dust and swarf. We also bring our professional expertise to bear and provide individual project management, from the initial idea right through to project completion. Zimmermann delivers it all.

Maximum machine utilization is achieved by optimizing the production logistics. Thus, for example, machine downtime can be reduced to a minimum through parallel setups. Whether pallet changer, partitioning of the work area, shuttle or alternating tables, logistic factors, size and weight of the workpieces – these are the factors on which the choice of the right concept for your application is based.

Depending on batch sizes, variety of the machining tasks or changeover cycles, Zimmermann portal milling machines employ different clamping techniques. Flexible clamping systems may be equally appropriate here as dedicated fixtures for particular components.

Tool changers have a special significance as the link between the workpiece and the machine. Our customers decide how many tool positions they require and define where the tool changer is to be positioned on the machine.

Dust and swarf interfere with the clean flow of the machining operation. Whether health & safety aspects to do with dust particles or questions of dirt accumulation with chips: here too Zimmermann has the right answer. From chip conveyors to complete housing of the machine there are a wide range of solutions. We recommend a fully encapsulated machine for further noise reduction.
While running complex production processes, different interacting components require exact harmonization. Only when each individual component fulfills your requirements completely will the whole process run smoothly. Portal milling machines from Zimmermann are designed and manufactured individually to meet your specific requirements and of course adapted precisely to the production environment in your company. Whether there are special demands concerning production logistics, reducing dust and noise emissions, sophisticated safety concepts, clamping fixtures or tool design – Zimmermann will work out the perfect solution for you.
The different formation of dust and swarf may result in damage to the particular layers. To avoid this, swarf and coolant media must be continuously removed. Conventional extraction bells are pushed to their limits here, as the holes are located in inaccessible areas. The solution from Zimmermann: an individually developed delta-shaped bell which reaches all the holes without colliding with the component. With its own NC axis the bell can be aligned exactly over the drilling position. A special bell-changer ensures that the designated “Delta Bell” is used for the different tools. It is tailored to the particular tool, thus achieving optimal extraction efficiency and assuring process reliability.

When we hear the generic technical term “fully automated production” we initially think of several operations, linked together by devices such as robots, palette changers, etc. However, for smooth interaction of all the components, maximum process reliability and minimum manual intervention in the individual operations are required. Together in close cooperation with our customers, the Zimmermann competence team combines the detailed solutions to an ideal overall concept: Whether a special coolant filtration system for wet cutting of composites, a cleverly designed software to ensure that tool changing is both fast and reliable or separately controlled cooling circuits to minimize environmental influences, Zimmermann unifies / combines in close cooperation with the customer the detailed solutions to an ideal overall concept.

Where previously large components were manufactured in sections and finally completed by joining up the individual sub-components, today there is a clear trend in diverse industries towards the manufacture of larger components in one piece. To further increase economic efficiency it is crucial to develop manufacturing processes which permit complete machining in as few individual setups as possible. Zimmermann solves this task by combining large work areas with exceptionally high precision, outstanding work area accessibility and by using the latest clamping and milling techniques.
When you intend to work together in partnership for a long time you need principles on which to base your cooperation. Zimmermann and its customers can only jointly achieve their objectives when both pull together. Thus personal responsibility for the successful completion of a project is of great importance to all of us. A commitment by Zimmermann is like a handshake – you can be sure we will do our utmost to find the optimal, most versatile solution for each customer. We take responsibility for our actions. Both our customers and our employees know that we are always striving for a win-win situation.
BASED ON FAIRNESS
Production facilities

Zimmermann remains committed to its production location near Stuttgart, one of the major high-tech regions in Germany. In this region highly qualified and motivated employees meet state of the art equipment and workplaces. This unique combination ensures Zimmermann machines on highest technological level—today and in future. Sustainable growth, however, will only be possible through further expansion on the world market. Beside important activities in Germany, Europe and South America, our attention is mainly focused on North America and Asia. Thus Zimmermann will be able to continue its innovative course in strongly growing economic regions, wherever jobs are created and secured.

Employees

Technical knowledge, continuous training-on-the-job and expertise gained from years of project experience: this is the foundation for the further development of our company.

Technical and commercial training

To ensure that Zimmermann remains at the cutting edge in the future, too, we place great value on technical education and training within the factory. This is how young employees develop to become the experts which customers and the market need. Zimmermann also regularly offers apprenticeships in sales administration. Operating in international markets, our company can provide young people with interesting opportunities and new challenges.
Consulting

Experience is what makes Zimmermann different. Irrespective of the challenge our customers are facing, our experts provide detailed advice on which portal milling machine is most suitable, the appropriate auxiliary equipment as well as the cost benefit of the investment.

Design and project management

Evolution is moved forward by the need to change. Thus the development and design department at Zimmermann is always keen to rise to new challenges. And our answers are always solutions. Innovation is our business. Reaching demanding goals jointly with our customer: that is our project management objective. Whether it is about sticking to time schedules or keeping to budgets. Zimmermann projects are methodically planned and agreed with the customer, executed on time and unbureaucratically.

Installation and training

Well qualified technical personnel will install your machine. Following this, our instructors will train the users at the customer’s site in all stages of the process chain – whether by choosing the right milling strategy by using different tools. Zimmermann will come up with the best possible solution.
Anyone who purchases a portal milling machine from Zimmermann can count on a long-term, dependable partnership. The expert support begins with comprehensive and well-founded consultation prior to the purchase and continues with a service partnership over the entire life cycle of the machine. Thus we help to ensure your long-term commercial success. This applies both nationally and internationally. Our highly qualified service team is ready to help you worldwide.

Zimmermann Global Service

- Detroit, USA
- Stuttgart, Germany
- Xian, China
Worldwide service hotline
Rapid response

Your machine has stopped operation and you urgently need professional support to start your production again as soon as possible? The Zimmermann service team also supports you outside normal work hours via the telephone hotline. Ready to solve production-related problems in an uncomplicated way. Whether by modern remote diagnostic techniques, online error correction or online guidance of your maintenance team during repairs via webcam; the main aim is to identify the fault as quickly as possible in order to minimize the downtime of your portal milling machine.

Worldwide service on site
Optimal machine availability

The Zimmermann service team is always there for you on site to ensure the availability and cost effectiveness of your machine over its entire life. Thus you benefit from a comprehensive service offer: Based on your service agreement, we will inspect your machine at regular intervals and will carry out training courses when requested. Besides this we will take care of the overhaul and repair of your machine. Do you need to increase the performance of your Zimmermann portal milling machine? Through refurbishment with the latest technology we can of course help you upgrade your manufacturing processes to meet the latest demands of your customers.

Worldwide spare parts service
Fast reaction times

If your machine stops operation due to a damaged part, one thing counts above all: immediate delivery of the spare part. When you contact the Zimmermann service team – whether by phone, e-mail or fax – we will help you within the shortest possible time. We will send you the spare parts – whether reconditioned exchange parts or new ones – fast and reliably, naturally if requested per express. Our global service network will ensure the professional installation on site, so that your machine is back in production as soon as possible.