TORNOS

An epic industrial story

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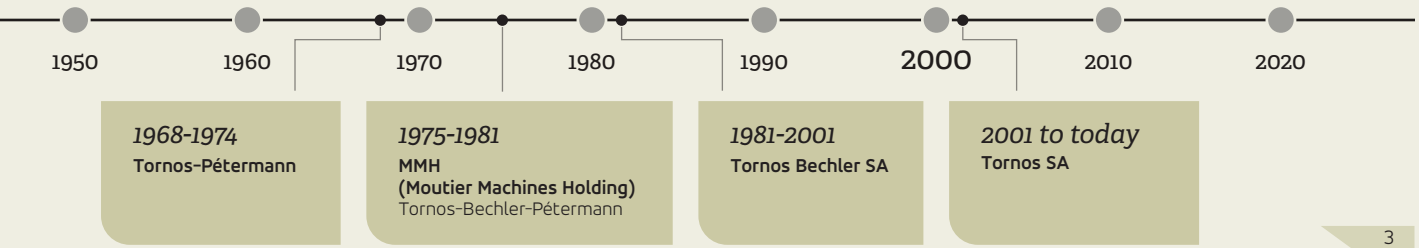
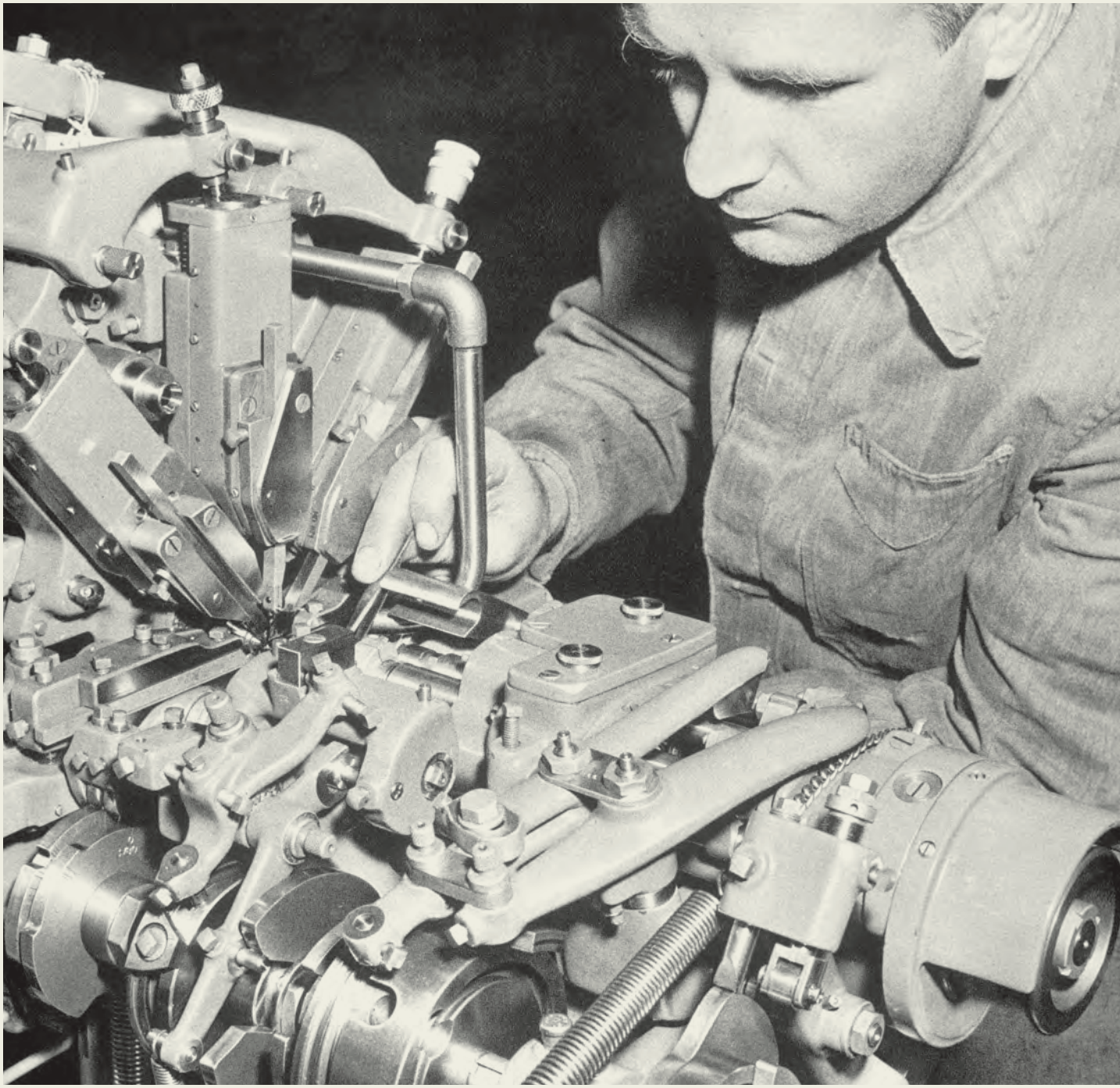
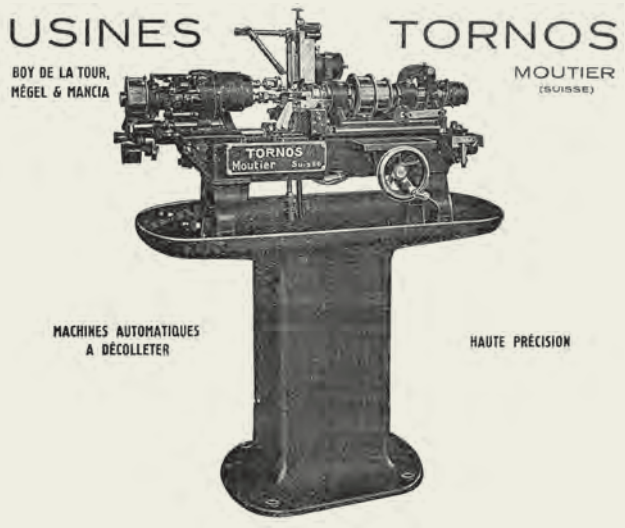




From the first automatic lathe to the most modern machining solutions

To look into the history of the automatic lathe is to immerse oneself in the heart of the past century and come up against the realities of an era. It is to discover that the cradle of machine tools, the town of Moutier, a veritable jewel at the heart of the Swiss Jura Mountains, has been profoundly marked and shaped by the arrival of the watchmaking industry and then of an entire industry linked to it.

Today, Tornos automatic lathes continue to build and perfect the excellent reputation of the city of Moutier, which has always distinguished itself as the capital of precision and meticulous work.



Summarizing more than a century in a few pages would be quite a challenge. We have therefore decided to present certain events and technological advances by choosing the evolution of the automatic lathe. We move from one innovation to another, from one decade to the next.

This modest work makes no claims to being exhaustive. It is a story within a story that provides a visual presentation and, where possible, highlights several key stages that marked the history of Tornos. The company with legendary know-how continues to radiate well beyond Moutier and throughout the world.

You will certainly get an idea of an area and the soul of a working people. Often rebellious, industrious and hard-working - this perfectly corresponds to the pioneering spirit of Tornos and its current values: agility, audacity, trust, openness, sharing and appreciation.

As a multinational company, Tornos keeps evolving and persists in being a key player and a trusted partner, daily, for manufacturers and entrepreneurs for whom high precision remains the essential topic. New stories will be written, but the history of Tornos will remain engraved in the very heart of this region where the company was born and where it has developed.

Moutier, fertile ground for the establishment of the watchmaking industry

> *" In a region like the Jura Mountains, which is in many places too poor to nourish a population, it was quite natural for the natives to gradually abandon the cultivation of the sparse fields and turn to activities that could provide them with their daily bread. "*
>
> *J. Jobé, 1979*

Around 1800, of all the districts in the Jura Mountains, Moutier had the smallest area of productive land with only 161 km^2 of fields, meadows or pastures. Once the watchmaking industry had been established in their valley, the farmers of the Moutier region were naturally encouraged to look to industry for further resources – and later for all the resources. The land could only offer difficulty. From the beginning of the 19th century, we have thus been witnessing the birth of the 'watchmaking farmer' in Moutier, of which the watch of Isaac Schaffter (1820) is the perfect symbol.

The concentration of the workforce in workshops began in 1849 with the establishment of a watchmaking factory called 'La Société Industrielle', which by 1880 employed up to 500 workers in a village of 2,000 people, producing no less than 40,000 watches per year.

The industrial site of the Société Industrielle, commonly known as 'La Grande', was an important location. The latter was bought in 1914 by André Bechler and was razed in the 1960s to make way for the 'Bechler Tower', the administrative center of the company of the same name.

Over time, other watchmaking factories were established in Moutier as well. The most important of them was the 'Léon Lévy et Frères' factory, which had been founded in 1883 and later became 'La Pierce', before being bought by Ebauches SA in 1968. The latter created the new Venus brand. While the industry became more and more important for Moutier, the importance of agriculture gradually decreased. Little by little, the town became industrialized.

At the beginning of the 20th century, many watches were made in Moutier. The above advertisement is taken from a watchmaking newspaper of the time. Today, no complete watch is made in Moutier. Only a few workshops and factories remain where spare parts and blanks are made.

1800

Demographics

1818	**566 population**
1850	**917 population**
1880	**2111 population,** almost quadruple compared to 1818! The industrialization is obviously not foreign to this phenomenon.
1888	**2320 population**

Moutier railway station (1875)

View of the construction site of the Moutier railway station around 1875.

‘La Glacerie’

Transforming the needs of the company Junker & Cie.

The beginnings of the machine tool industry in the Moutier region

1883 Nicolas Junker founded the company Junker & Cie in partnership with Anselme Marchal, owner of the Moutier glass and tile factory. The company's headquarters were located in the building known as 'La Glacerie', formerly the mirror production site of the Moutier glass factory.

1896 He filed a patent for an 'automatic machine for the manufacture of shaped parts, such as screws, barrel shafts, etc.'. In the same year, the company was deleted from the commercial register and Junker took over the company in his name.

1904 Junker tried to save the company by selling it to his son. André Bechler (a former apprentice of Nicolas Junker) joined forces with Joseph Pétermann and Jules Colomb to solely manufacture automatic lathes: The company A. Bechler & Cie was born.

1907 Nicolas Junker died by drowning in Lake Geneva, but the manufacture of machines in the Moutier region continued.

1911 The 'La Glacerie' premises were eventually bought by a new company, the 'Fabriques de Machines Moutier, Boy de la Tour et Cie, anciennement Junker'.

1915 Henri Mancia (also a former apprentice of Nicolas Junker) joined Henri Boy-de-la-Tour and Willy Mégel in the aforementioned company. In 1918, the latter became 'Usines Tornos. Fabrique de machines Moutier SA'.

The neighbourhood of "La Verrerie" with the catholic church on the right, was razed in 1964. Picture from the end of the 19th century.

1883

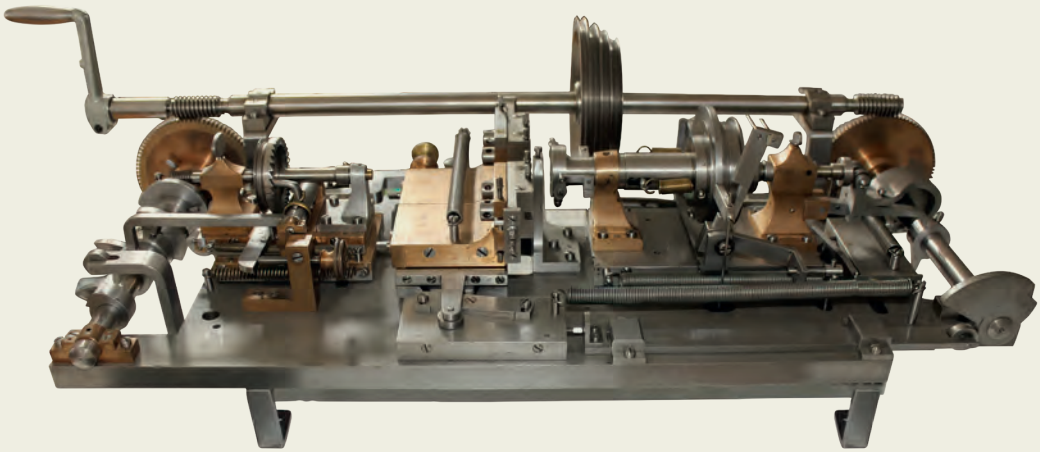
1872-1880
Bench-mounted Swiss-type lathes

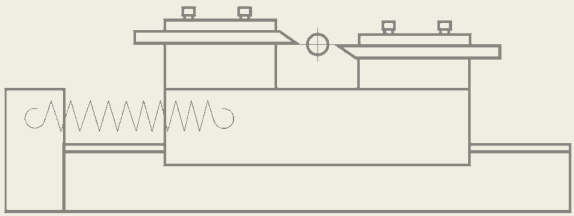
Jakob Schweizer ›
(1851-1907)

Although for Tornos, Nicolas Junker is undoubtedly the founding father of the machine tool in the Moutier region, the invention of the Swiss-type lathe dates back to 1872 and is commonly attributed to Jakob Schweizer, a watchmaker from the canton of Solothurn who had worked in Péry, Saint-Imier and Biel/Bienne. The operation of this Swiss-type lathe is contrary to the machines of Anglo-Saxon origin on which the raw material bar was fixed, and the tools were mobile.

The Swiss-type lathe developed by Jakob Schweizer is a machine tool similar to a traditional lathe, but it differs from the latter in two respects:

- It is a fully automatic mode of operation (including the supply of material in the form of metal bars)
- The parts produced on it: These parts essentially are mechanical high-precision parts of more or less complex shape and various sizes and are manufactured in large and very large series.



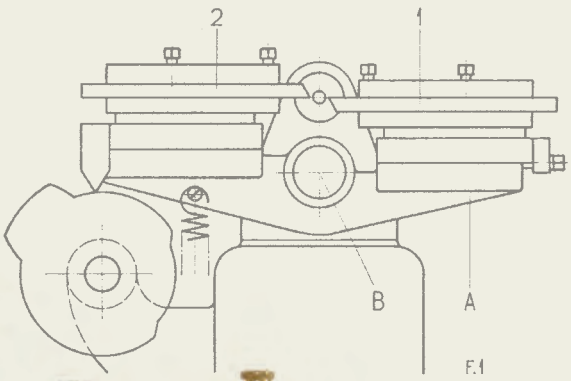


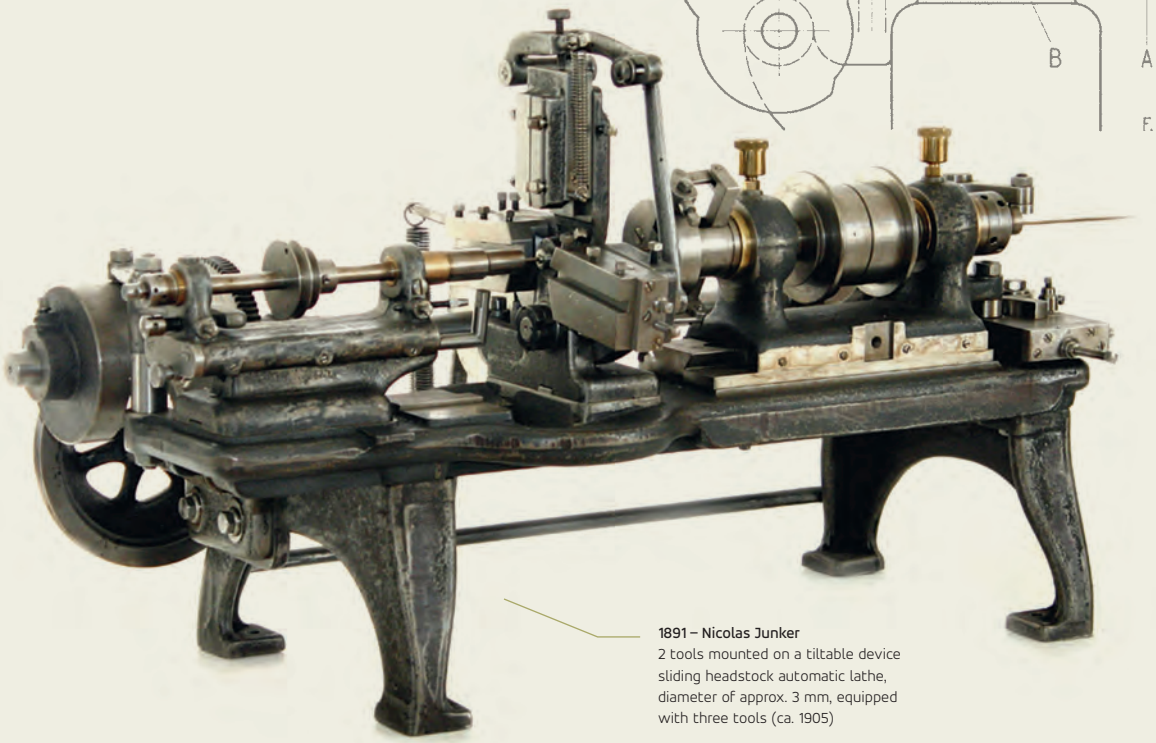
1872

Nicolas Junker ›
(1851-1907)

The tool movements were originally generated by cams on a camshaft that made a full turn to manufacture one part.

The first generation of Swiss-type lathes were mounted on a steel plate that was screwed directly down onto the workbench. Nicolas Junker was the first engineer who wished to manufacture such machines on an industrial scale, modernize and simplify them and to take care of their optimum design.





1891 – Nicolas Junker
2 tools mounted on a tiltable device sliding headstock automatic lathe, diameter of approx. 3 mm, equipped with three tools (ca. 1905)

Nicolas Junker (1851-1907)
The first manufacturer of automatic lathes entered the commercial register

Nicolas Junker's career, especially before he arrived in Moutier, is difficult to establish. Born on 18 March 1851 in Jegensdorf in the canton of Bern as the son of a farmer, he went to work as a mechanic in Schaffhausen in 1878. The exact date and circumstances of his arrival in Moutier some years later are unclear. All we know is that Nicolas Junker settled in Moutier, with plans to manufacture screws and pinions for the watchmaking industry. The earliest known date is the date of the foundation of Junker & Cie, a manufacturer of pinions and machines. He founded the company in partnership with Anselme Marchal, then owner of the Moutier glass and tile factory. In 1886, Nicolas Junker took it over in his name.

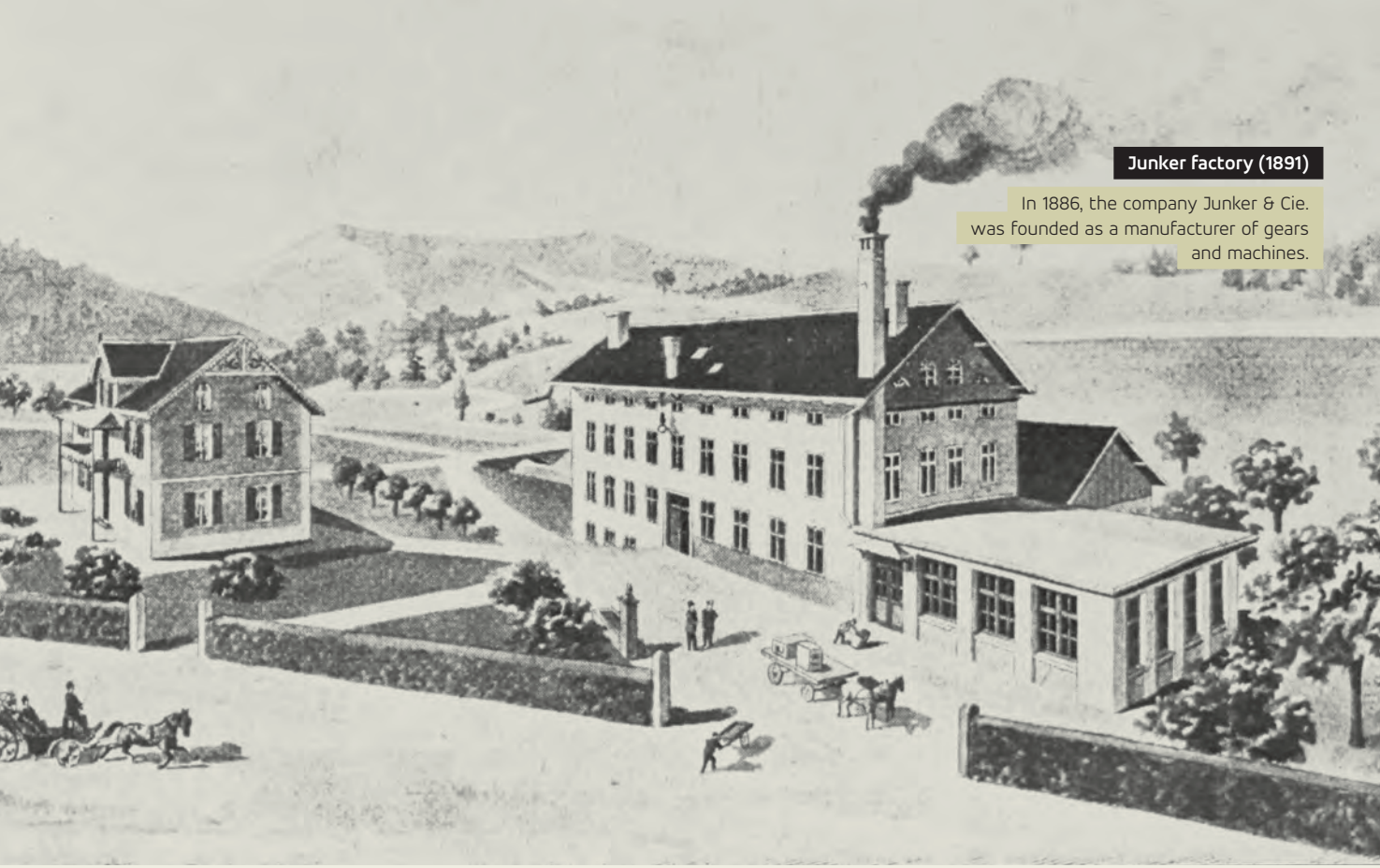
The actual invention of the sliding-headstock automatic lathe is certainly due to Jakob Schweizer from Solothurn, a watchmaker based in the Bernese Jura (Péry and Saint-Imier in particular), who initially earned his living there by making watches. As early as 1872-1873, this pioneer developed in Biel/Bienne the prototype of a cam-controlled sliding-headstock automatic lathe (the so-called Swiss Automatic Lathe), that had initially been intended for his use. However, Nicolas Junker was the first to market such automatic machines, which were then commonly referred to as bar turning machines.

In fact, in 1891, Nicolas Junker officially declared himself to be a machine manufacturer, even though he had previously presented himself as a watch manufacturer. He launched his first automatic lathe in the same year, and his company, therefore, appeared in the commercial register. Nicolas Junker was thus involved in the development of the Swiss-type lathe that had originally been developed by Jakob Schweizer and that, unlike the lathes of Anglo-Saxon origin, fed the workpiece to be machined to a stationary tool and not the other way round. The Swiss-type lathe developed by Jakob Schweizer is a machine tool similar to an automatic lathe, but it differs from the latter in two respects: It has a fully automatic mode of operation (including the supply of material in the form of metal bars) and the parts produced on it; these parts essentially are mechanical high-precision parts of more or less complex shape and various sizes and are manufactured in large and very large series.

Nicolas Junker was the first engineer who wished to manufacture such machines at an industrial rate, to modernize and simplify them and to optimise their design.

In 1904, when his company was experiencing financial difficulties, Nicolas Junker sold it to his son Emile, who filed for bankruptcy in 1905. This bankruptcy gave rise to Tornos, a factory of automatic lathes that competed with the factory of André Bechler, the former apprentice of Nicolas Junker and Joseph Pétermann. In 1914, Bechler founded his own company, which also manufactured automatic lathes from 1924.

1878



Junker factory (1891)

In 1886, the company Junker & Cie. was founded as a manufacturer of gears and machines.

Nicolas Junker's life was anything but smooth, as he was found drowned in Lake Geneva in 1907. But the manufacture of machines in the Moutier region continued even after his death. In fact, after a few years of uncertainty, his industrial legacy was taken over in 1911 by Henri Boy-de-la-Tour, who joined forces with Willy Mégel to found the 'Fabrique de Machines Moutier, Boy de la Tour et Cie, anciennement Junker', by purchasing the 'La Glacerie' premises. In 1915, Henri Mancia, a former apprentice of Nicolas Junker, joined Henri Boy-de-la-Tour and Willy Mégel in the aforementioned company. In 1918, the latter became 'Usines Tornos. Fabrique de machines Moutier SA'.

Undoubtedly, Nicolas Junker was at the origin of what would become, from the 1920s onwards, the main economic activity in Moutier: the manufacture of world-famous Swiss-type lathes, an unprecedented industrial epic, and the origin of Tornos.

Junker (1883-1905)

Junker & Cie (1883-1886)

Nicolas Junker (1886-1902)

Mettetal & Junker Fils (1902-1905)

Nicolas Junker is the seventh man from the left to stand in the second row.

1878

This is how it all started! Moutier is an important center for mechanical engineering. But one day the pioneers had to start! They may be seen here. This photo dating from the end of the 19th century shows the team from the Junker factory, the first factory in Moutier where bar turning machines were built. All this looks rather rudimentary, seen through the eyes of those who are used to modern equipment. It should be noted that the ladies were not allowed to appear in the photo next to the men. At least, they were allowed to peek through the windows!

Energized...
How Switzerland became electrified

In Switzerland, electrification started very early. As a pioneer, the country seems to be made for dams and railroads. But this development, which began over 140 years ago, has been far from being uniform. In Moutier, from 10 January 1885, electric lighting was installed in several industrial plants following the example of other factories in Tavannes, Reconvilier and Choindez.

On 3 July 1886, the local press in the Moutier region reported that the issue of electricity was one of the main concerns. Under the title 'An excellent deal for Moutier', it was stated that 'at the communal assembly of 29 June, the mayor has presented an interesting report on the issue of electricity. This major undertaking, which will cost no less than 40,000 Francs, will be an excellent deal for Moutier. However, everyone's support is needed, because the success of this business will have a great influence on the industrial development of Moutier. The speaker urged the entire population to help the municipality by taking out a subscription for motive power and especially for lighting. Subscription forms were distributed to the households in Moutier. Electric lighting will cost less than kerosene. Every householder is invited to take the trouble and sum up all the 15 or 20 Centimes he paid in a year for lighting, glasses, wicks, etc. and to ascertain that the total cost is often higher than the cost for electric lighting. The mayor was not able to submit a complete financial plan for the undertaking to the assembly; this will be done at the next assembly which will take place in a fortnight and at which the assembly will vote on the necessary credit.'

The pioneering spirit of the village of Moutier in terms of electricity also manifested itself on another occasion. On May 5, 1886, the municipality warned the population that the high-voltage line would soon be energized and that touching it was prohibited because of the mortal danger involved in doing so.

On November 8, 1904, 180 street lamps lit up the village of Moutier, which was further evidence of its progress.

Until about 1910, Switzerland was the country with the highest electricity production per capita in the world, and this had been increasing sharply every year. Moutier was no exception to the rule. One of the reasons for this is the topography of the country, which offers very good conditions for building hydroelectric power plants. But by 1910, Switzerland was surpassed in this regard by the United States and the Scandinavian countries.

Electric power triggered a second industrial revolution, after the first industrial revolution based on coal. For example, it now allowed smaller companies and craftsmen who had never before been able to afford a steam engine to mechanize their production. Until the 1930s, electricity was a symbol of progress and modernization.

1885

1889 **Invention** (April 3)
It seems that the engine with steam, water and air circulation which is sought by many technicians was then found. We are told that the Junker company in Moutier, has just taken out a patent for this new engine for all the States. It is Mr. Junker, a mechanical constructor and his son Emile, a qualified technician, who are the inventors of this new machine. With this new rotation engine, the steam is completely enclosed and therefore also acts by its current. As for the existing ones, the mechanism is very simple and can be adapted everywhere, even to the axles of locomotives. In the technical and scientific spheres, this discovery is of great importance. Indeed, the solution to this mechanical problem has long been a matter of concern to the trade. Therefore, we can only congratulate Mr. Junker sincerely. The new industry that they will introduce to the country will not fail to be prosperous. Let us add that M.N. Junker has already made a name for himself through the numerous clock-making machines he had invented.

1896 **Silver medal** (August 12)
We learn that Mr. Nicolas Junker obtained a silver medal at the National Exhibition in Geneva, in section IV for machines and tools. The Basketry of Moutier and the Glassworks of Moutier was also rewarded, at the same exhibition with a bronze medal.

1898 **The beginnings of cinema**
This session, as one can imagine, did not take place in Moutier. The Pagani cinema, located on the site of the current Rex cinema, did not have such a large room. But the atmosphere of the Belle Epoque was there.

1898

The Swiss Jura Mountains, *the cradle of bar turning*

Bar turning originated in the Swiss Jura Mountains and is linked to the advent of watchmaking. Watch components were manufactured manually, one by one, on small bench lathes. The evolution of the watch market quickly required a much faster and more precise series production of watch components. The answer came in 1872 when the first automatic lathe with a 'sliding headstock' was invented for the manufacture of watch screws. But the automatic lathe soon proved to be essential for the manufacture of other maximum-precision watch components as well, since a watch can comprise one hundred small turned parts or even more. Later, the performance of bar-turning companies attracted the interest of other business sectors. The markets then diversified: the medical engineering, aeronautics and automotive sectors, as well as the connector industry, were able to benefit from the skills of the bar turners in the Swiss Jura Mountains. To meet these new requirements, professionals in the region and elsewhere have demonstrated their innovative capacity by constantly developing new, ever more efficient means of production.

What is bar turning?

Bar turning may be defined as the series production of mechanical high-precision components of generally cylindrical shape and small dimensions. These components are machined from bar stock and cut to length on machine tools called automatic lathes or Swiss-type lathes. The processes involved are not limited to turning and threading operations, but can also include additional machining operations such as slotting, drilling, boring, milling, gear cutting, tapping, etc. Automatic lathes for bar turning, the so-called 'Swiss-type lathes', are controlled by cam systems or numerical control units.

ut what does bar turning mean? Bar turning is a manufacturing field which consists in producing more or less complex turned parts by removing material from metal bars by using cutting tools. The parts are produced in series on automatic lathes. They are produced one after the other from the bar, to achieve high productivity and precision.

Over the years, numerical control units have replaced cam control units, tooling has benefited from the development of new materials and numerous technical improvements have supported this necessary evolution. Professional training opportunities have multiplied and developed in the Swiss Jura Mountains. The Swiss Jura Mountains have thus been gradually transformed into a real center of excellence for the bar turning industry.

The bar turning industry must continually adapt to the changing requirements of the market. It was established in the Swiss Jura Mountains in the second half of the

Junker factory (before 1917)

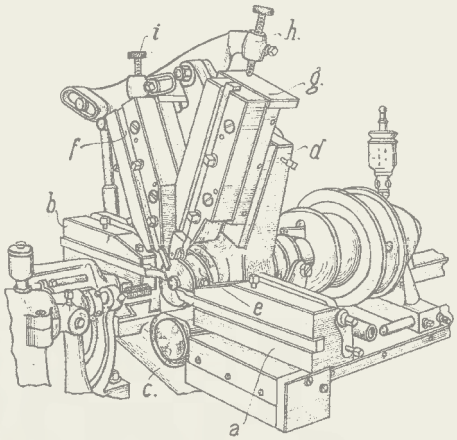
Picture of the Junker factory and the Tornos production hall.

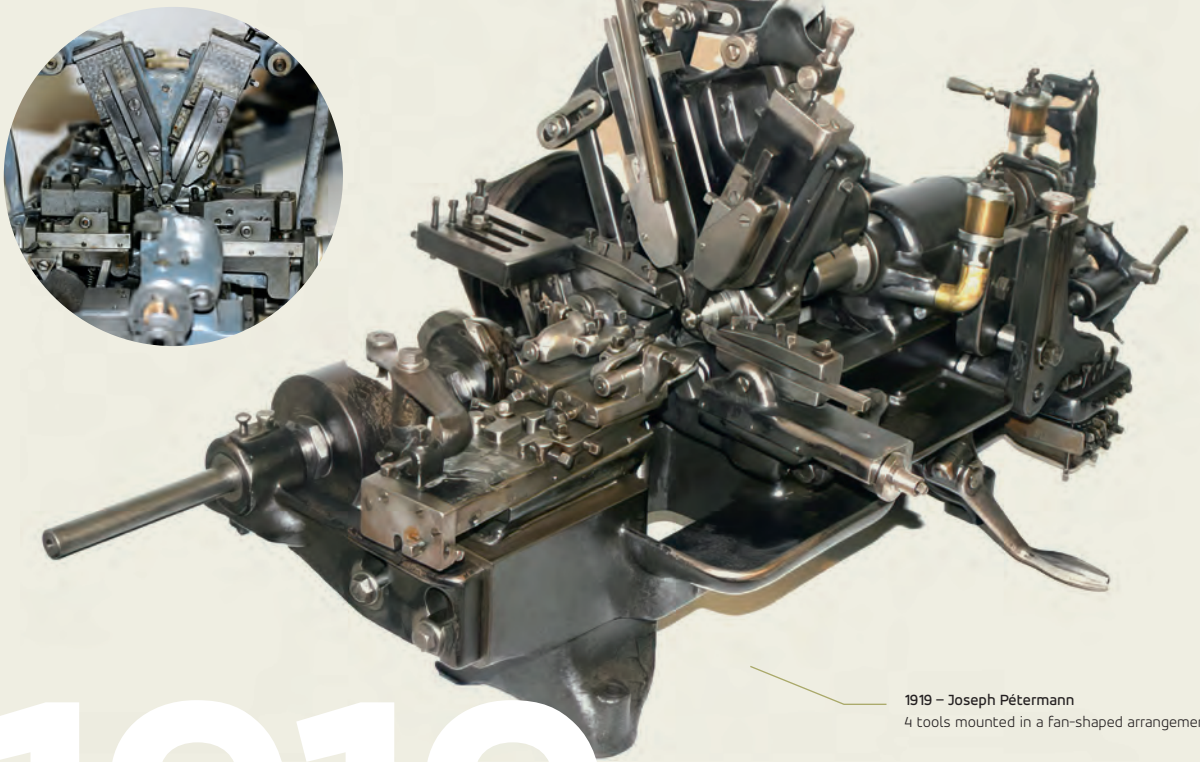
19th century and at the beginning of the 20th century, initially to meet the growing demand of a highly dynamic watchmaking industry in this region. Sliding-headstock automatic lathes, which are renowned throughout the world as 'Swiss-type automatic lathes' and whose production on an industrial scale had begun in Moutier around 1880, enabled the efficient manufacturing of watch components such as screws, shafts and pinions for watches and clocks. Up to that time, the manufacture of such components had been very laborious – and therefore expensive – since they had to be manufactured manually by traditional means.

Subsequently, other market opportunities were found. These areas included household appliances, precision equipment, instruments, counters, defense equipment, automotive and aerospace, microtechnology, medical equipment, electronic equipment, connectors, telecommunications, jukebox running gears, toys, etc. Today, almost all mass-produced technical and everyday items incorporate bar-turned components.

1904-1920

The universal Swiss-type lathe





1919 – Joseph Pétermann
4 tools mounted in a fan-shaped arrangement

1919

André Bechler (1883-1978)

From 1904 onwards, André Bechler, born in Moutier, the former apprentice of Nicolas Junker and mechanical technician with a diploma from the Technicum in Biel/Bienne, devoted himself to the manufacture of the automatic lathe and made many improvements to it. Together with Joseph Pétermann and Jules Colomb, he established the partnership company Bechler & Cie (from 1912, Bechler & Pétermann) which occupied the premises of Joseph Pétermann at Rue des Oeuches until 1910, and then the new factory at Rue de Soleure.

In 1914, Bechler left the company and set up his own business on the premises of the Société d'Horlogerie in La Condémine, to continue his research work. While trading in machines (he had given up the manufacture of lathes for ten years), he developed numerous projects (automobiles, side motors, etc.) and perfected the Bechler lathes, which were manufactured from 1924. A new factory was built in 1931. In 1947, the Usines Mécaniques de la Condémine became the Fabrique de Machines André Bechler SA, which operated under this name until the merger with Usines Tornos in 1974.

Bechler & Cie (1904-1912)
Bechler & Pétermann (1912-1914)
André Bechler (1914-1947)
Bechler SA (1947-1974)

Joseph Pétermann (1869-1935)

After having been head mechanic of the Fabrique d'Horlogerie Lévy & Frères in Moutier, Joseph Pétermann opened a stamp-making workshop at Rue des Oeuches in 1902. In 1904, seeing the needs of the watchmaking industry, he proposed to the young André Bechler, recently graduated from the Technicum, to join him and manufacture automatic lathes in his workshop, following the example of Junker. A company was then established under the name Bechler & Cie, with Joseph Pétermann as a partner. A new plant was built at Rue de Soleure in 1911. In 1914, the company (renamed Bechler & Pétermann in 1912) was dissolved and Joseph Pétermann became its sole proprietor. When he died prematurely in 1935, his three sons Albert, André and Walter succeeded him at the head of the public limited company founded in 1930. In 1967, the company merged with Usines Tornos.

In 1981, the three companies Tornos, Bechler and Pétermann, which had been competitors until 1968 and 1974 respectively, merged under the new name 'Tornos-Bechler, Fabrique de machines Moutier'. While the advent of electronics revolutionized the technologies and industrial structures, Tornos-Bechler Moutier became the main European manufacturer of Swiss-type automatic lathes.

Joseph Pétermann (1914-1931)
Joseph Pétermann SA (1931-1968)

From the first cars to the first aeroplane in Moutier, not forgetting the sinking of the Titanic and the drilling of the Grenchenberg tunnel

Mobility? Yes, of course! But at what cost? While the first cars seemed to move slowly, the faster means of transport still seemed to encounter some difficulties. Mobility, of course, but rather by land than by the air or sea...

In August 1878, a steam-powered tricycle, which frightened some and amazed others, was running in Geneva. It was the first horseless vehicle in Switzerland. And it was the origin of the automobile in the country. Unfortunately, this invention did not drive up to Moutier, but it undoubtedly had many imitators since. In 1909, there were first reports of dangerous racing cars that endangered the population in the area of Moutier by crossing the town at the lightning speed of... 25 km per hour! People born before the First World War still remember the signs at the entrance to every town and village that said: 'Walking pace, please!'. This meant that coachmen were prohibited to trot or gallop their horses in crowded areas and that motorists had to maintain the same speed... or slowness!

This year, André Bechler, who was always a kind of rebel and at the forefront of innovation – was already seeking to diversify his activities; manufactured a car that was exhibited at the famous Jura exhibition.

Shortly afterwards, on February 6, 1910, the Cobioni brothers had an aeroplane built in their workshop near the railway station. On May 7 of the same year, the aviator Henri Cobioni had a successful test flight in Thun. His plane flew without any difficulty for 200 meters and at 1.5 meters above the ground! Only to crash two days later. “Henri Cobioni, the likeable Jura aviator, came crashing to the ground together with a passenger. What caused the accident? We will probably never know exactly. The details are uncertain and distressing.”

1912 was a traumatic year in more ways than one, since it was the same year that the Titanic sank.

Without a doubt, this has been one of the most famous shipwrecks in the world and one of the greatest tragedies in modern maritime history. On April 10, 1912, the RMS Titanic, the brand new liner of the White Star Line, left Southampton in England for a trip that would take it to New York in the United States, after stopovers in Cherbourg and Ireland. But the transatlantic ship and its more than 2200 passengers never reached their destination. On the night of April 14-15, 1912, the Titanic hit an iceberg in the North Atlantic off the coast of Newfoundland and sank within a few hours, taking most of its passengers with it into the icy waters. The sinking of the supposedly unsinkable ship was an event that shocked the whole world. This was all the more so since the presentation of the ship and the first reports of its accident did not indicate the extent of the disaster. At the time of its departure, the press, including the French reporters, enthusiastically announced the Titanic’s maiden voyage.

Meanwhile...
The Grenchenberg tunnel between Moutier (BE) and Grenchen (SO) was commissioned in 1915 by the BLS company had a major impact on the railway traffic.

This tunnel, still considered today as ‘the most important link between the Jura and the Swiss Plateau’, was originally designed to connect France to Switzerland and Italy, since Paris had lost its direct connection to Basel during the Franco-Prussian war (1870). This benefited Switzerland since France made a substantial contribution to the financing of the project (estimated at 25 million).

On October 1, 1915, the 8565-meter-long tunnel shortened the distance between Moutier and Biel/Bienne by 16 kilometers and offered many other advantages. Most of the foreign workers, mainly Italian immigrants, then remained as workers in the factories in Moutier or Grenchen. The Italian accent persists and coexists peacefully with the languages of Voltaire and Goethe, as do the other nationalities that have been added over the decades and the various waves of migration.

Some facts reported by the local press between 1904 and 1920

1904–1920 In-depth transformations can be observed in the 'old Moutier' as well as in its outskirts.

04.12.1904 Municipal assembly
The citizens gathered in municipal assembly adopted the following resolutions:
a) The creation of a professional school, after a report by Mr. André Bechler, the industrialist
b) The introduction of manual labor
c) The reintroduction of the 9th school year

11.02.1905 Buildings
It is worrying to note that in the station area, there is a significant increase in building prices in anticipation of the certain extension that will result from the construction of the Moutier-Soleure line.

1905 André Bechler & Cie present its new automatic lathe No0. This machine, of new conception, is technically considered a real pivot in the history of this field. It offers many advantages over what was previously achieved by the major manufacturers.

30.01.1906 Mettetal, Junker Fils & Cie
The bankruptcy of this company is discussed, and its creditors are invited to convert their claims into shares.

09.05.1906 Telephone conversations
It is interesting to point out that the number of telephone conversations in Moutier for the year 1905 amounts to 33,777, a rather impressive figure for the time!

23.02.1909 Crisis
A certain crisis is currently raging in Moutier and the surrounding regions and one speaks about it frequently with a pessimism of circumstance.

07.09.1909 How are the businesses
One report says the Jura is rejoicing in the recovery of the business

11.06.1909 Moutier-Granges
The construction of the line is assured because the Franco-Swiss agreement was signed this very morning.

16.02.1911 Bechler and Pétermann
The foundation stone of the future factory, which later became Joseph Pétermann SA Moutier, was laid.

28.12.1913 "Société industrielle" of Moutier
In all likelihood, it must be bankrupt.

20.04.1914 People leave Grenchen for Moutier
Watchmakers leave Grenchen, where strikes have broken out, to settle in Moutier.

1914–1918 1st World War

25.04.1915 Large orders
Important orders of wristwatches, probably for the troops in the field, arrive from England to different factories in Moutier and the Bernese Jura. A good windfall in these times of crisis.

01.01.1916 Fortunately, the new year looks better than the previous one: our industries are in full activity and prosperity and no immediate danger seems to threaten the country. Alas! We are still fighting over there, in Alsace, and the rumbling of the cannon comes from time to time to remind us of the sad realities.

14.10.1916 "Verreries" of Moutier
Thanks to the almost zero competition from the Belgian and French glassworks, the Moutier glassworks are in

full prosperity and work without slackening, except during a short period during which the furnaces are repaired (about one month).

31.12.1916 Good business in the watchmaking industry
In spite of all kinds of difficulties, our Jura watchmaking factories are still in good standing, since they continue to produce more than half of the watches delivered in Switzerland.

05.01.1917 **"Verreries" of Moutier**
This company increases its share capital from 420.50 francs to 515.00 francs, proof that this factory is developing well. One of the few good effects of the war.

05.04.1917 **The House of Célestin Konrad in Moutier**
puts out to tender the works for the construction of its new factory (Azurea).

24.06.1917 **Ammunition industry**
The ammunition industry in the Bernese Jura is expanding and many new factories are mentioned. It is still expanding in the Bernese Jura and many manufacturers are quoted as making a fortune. The workers have a lot of work. Some localities especially have become production centers, such as are : Moutier, Tavannes, St-Imier, Porrentruy, etc.

04.07.1918 **Spanish flu**
An epidemic of infectious influenza, the Spanish flu or dengue, appeared in the Bernese Jura.

11.11.1918 **Armistice**

11.11.1918 **General strike**
The socialist committee in Olten proclaims a general strike of unlimited duration on the 11th at midnight because the Federal Council has not demobilized the troops raised in Zurich. Our executive authority responds to this measure by mobilizing almost the entire elite and convenes the Federal Assembly.

28.06.1919 **Signing of the peace treaty**

The founding fathers of Tornos
Henri Boy-de-la-Tour, Willy Mégel and Henri Mancia

Following the 'Fabrique de Machines Moutier' – a result of the takeover of the 'Mettetal-Junker fils & Cie' factories – Usines Tornos was created. Moutier now had three automatic lathe manufacturers.

Usines Tornos (1915-1968)
Tornos-Pétermann (1968-1974)
MMH (Moutier Machines Holding) (1975-1980)
Tornos Bechler (1981-2001)
Tornos SA (2001 to today)

*Henri Boy-de-la-Tour, **Willy Mégel** (1880-1972) and **Henri Mancia** (1888-1979)*

Willy Mégel ›
(1880-1972)

Henri Mancia ›
(1888-1979)

Willy Mégel started as a draughtsman at the Tavannes Watch Cie, then in a company in Malleray; around 1900, he worked with Nicolas Junker. In 1911, together with Henri Boy-de-la-Tour and Gustave Nussbaumer, he founded the partnership 'Fabrique de Machines Moutier, Boy de la Tour & Cie, anciennement Junker', which was established in the former workshops of Junker and 'Mettetal, Junker Fils & Cie'. In 1913, when Nussbaumer had retired, the company name was changed to 'Fabrique de Machines Moutier, Boy de la Tour, Mégel, anciennement Junker'.

At the beginning of 1915, Henri Mancia, a former Junker apprentice, mechanical technician with a diploma from the Technicum in Biel/Bienne and former employee of Bechler & Pétermann, became a partner. The company name now changed to 'Usines Tornos, Boy de la Tour, Mégel et Mancia'. After the withdrawal of Henri Boy-de-la-Tour in 1918, Usines Tornos became a public limited company, with Willy Mégel and Henri Mancia as sole shareholders and directors. Willy Mégel died in 1972, at the age of 92, and Henri Mancia in 1979, at the age of 90.

1915

Tornos was a pioneer at the first trade shows

Trade shows, and all their evolving forms, provide an opportunity to network with peers and showcase what a company offers to stand out from the competition. These networking events date back to the time when humans learned about the mutual benefits of trade. So, the world's first recognized trade fair, The Great Exhibition, made its debut in England. Tornos quickly got involved, as was the case at the Swiss Sample Fair (Foire Suisse d'Echantillons) in Basel in 1919. At its booth, Tornos not only presented its automatic lathes, and above all its brand-new TYPE B Swiss-type automatic lathe, but also workpiece samples in a showcase of the bar turner Hermann Konrad, who many years later founded the Azurea company.

The modern Swiss-type lathe

The modern cam-type Swiss-type lathe appeared in the early 1930s. The main feature of this machine is its electric motor used to drive the machine. This new kind of drive replaced the former counter drive. This Swiss-type lathe was replaced in the 1980s by numerically-controlled automatic lathes.

But the evolution of the Swiss-type lathe does not stop with the introduction of the electric motor. While the basic principle of the machine remained the same, considerable progress has been made in the development of high-performance equipment and attachments. The latter was intended to meet the demands of the markets as regards the production of ever more precise and complex components by machining more demanding materials at higher speeds.

The second half of the 20th century was characterized by the long life of the companies in the Moutier region that have been manufacturing Swiss-type lathes on an international scale. The three competitors Tornos, Bechler and Pétermann are at the top of the list in terms of their vast commitment to the town of Moutier and even to the daily life of its population. This has left a lasting mark on the region of Moutier and the mentality of its inhabitants.

The beginning of this fantastic period marked the start of conquering the markets and the positioning of each brand in the industrialized territories all over the world. Pétermann merged with Tornos in 1968 before Bechler did the same in 1975.

Tornos B1 (circa 1930)
Automatic lathe with the sliding headstock, equipped with five tools. It is equipped with a threading device and an additional chisel.

1930

A football team in Tornos colors

The FC Moutier

The Moutier Football Club was founded in 1921 by one of the directors of Tornos, Henri Mancia. This club brought together two local teams, that until then had been playing against each other and now were united under the same banner: the team of the 'locals' and the team of the 'Italians' who had come from the other side of the Alps to work in the Moutier region. From the very beginning, the footballers' jerseys displayed the Tornos colors: blue and white. The land on which the Chalière stadium is located has long belonged to Tornos and has only recently been acquired by the municipality of Moutier.

Some of the inhabitants of Moutier certainly remember the heroic times of soccer in Moutier. Photo of the FC Moutier taken during the 1925-26 season.
The players from left to right: Willy Balmer, Alleman dit "Binou", Mario Boretti, Alcide Balmer, Marcel Glatzfelder, Charles Semensato, Marcel Balmer, Rochat, Fritz Binggeli, Robert Mosimann, Eugène Muller, Charles Bon.

A succession of crises in Moutier between 1919 and 1938

Demographics

1930	4704 population
1950	5164 population

The inter-war period was a catastrophic one for the region of Moutier, whose industry greatly suffered. The population of Moutier was confronted with a difficult period of unemployment and unskilled workers. Many watchmakers and people from professions requiring precision and finesse were unable to return to their former jobs after the crisis, having lost their skill and dexterity by working hard in earthwork.

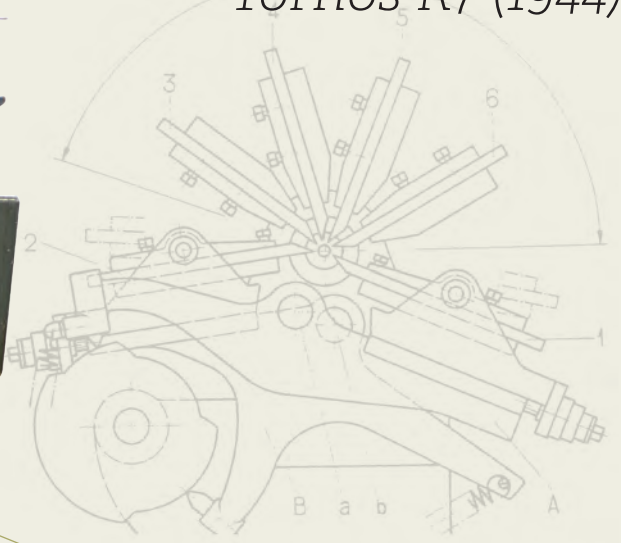
As an example, the crisis worsened from the beginning of 1921. Everywhere there were reports of workshops and factories that had closed or reduced their working hours. The government has been doing its best to alleviate the misery of the unemployed. In Moutier, 600 unemployed people were registered with the Unemployment Office.

This crisis in the 1920s took place in a disturbing sanitary context since the foot-and-mouth disease was spreading like wildfire. Although the foot-and-mouth disease had already been known to the ancient Greeks, the first epizootic disease was described in Italy in 1514. In 1919, the foot-and-mouth disease had devastating consequences in Switzerland, and it was feared that it might reach Moutier. As a preventive measure, livestock trade was prohibited, but this didn't help. In 1920, the disease broke out in two stables in Perrefitte and continued to spread.

In 1921, Moutier voted for a subsidy of 50,000 Francs for the execution of public works that would employ the unemployed, such as the correction of the river Birs or the construction of pavements in Moutier.

April 2, 1937 Giant rockslide of 2 million cubic meters during the Easter holidays: In the Gorges de Court, a hill collapsed over an area of more than 10 hectares, forming lobes extending over a length of 80 meters. The road between Moutier and Court was closed. The Swiss Confederation provided a loan of over CHF 700,000 to restore what had been destroyed. More than 20,000 people came to watch this chaotic spectacle.

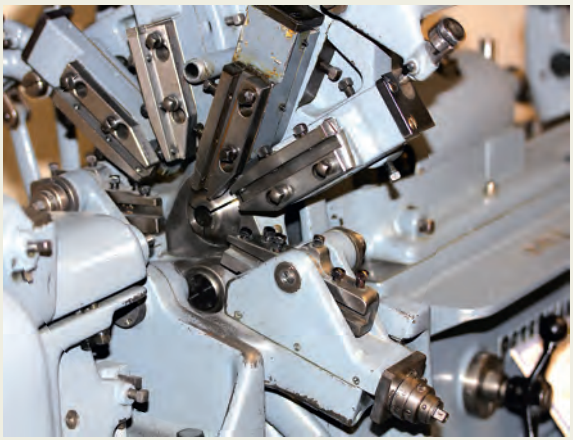
Tornos R7 (1944)



Tornos R7 (circa 1950)
Multi-cam-type sliding-headstock automatic lathe, equipped with six tool holders mounted on a slide. This machine was part of a limited manufacturing series.

September 5, 1944 A swimming pool was to be built in Moutier, but the location had not yet been determined. It was opened in 1949. Initially, it was a simple pool filled with water. Former military barracks were used as a changing room.

1950 The village of Moutier officially became a town!



1944

An indispensable place of worship for Catholic workers

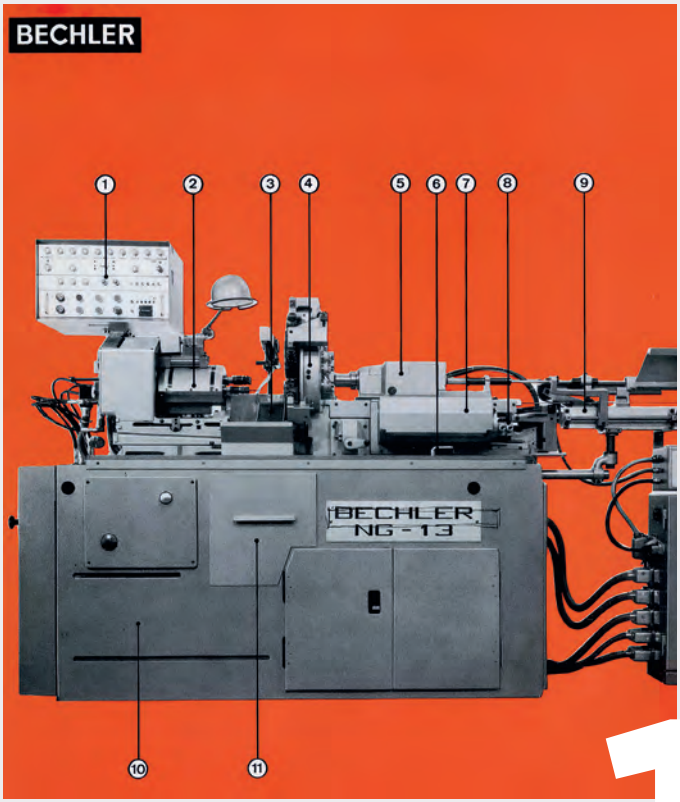
The neo-Gothic church of Saint Mary, which had been consecrated in 1871 with the arrival of Catholic workers from Italy, France and Belgium, was demolished on April 23, 1966. Before this demolition, the various parties involved had set up a major reconstruction project that lasted four years, from 1963 to 1967. This time, the new church, mainly funded by Tornos, was thus established in downtown Moutier. The machine tool manufacturer then took possession of its land to build on it its current plant.

1964

NG13 – First numerically controlled automatic lathe

In 1978, Tornos (then Tornos-Bechler) introduced its first NC sliding-headstock automatic lathe, called Elector 16, still boasting the characteristic 'fan-shaped' arrangement of the carriages that are typical of traditional cam-type automatic lathes. In the current models, the sliding-headstock principle has been retained whereas this fan-shaped design has been abandoned in favor of tool holders on slides (gang tool posts) that are arranged on both sides of the spindle. These machines are designed to perform the complete machining of high-precision parts, including drilling, milling, gear cutting, thread whirling and polygon cutting.

Since it was not possible to file the patent for the basic machine principle at that time, many machine manufacturers, particularly from Japan, became formidable competitors in the field of sliding-headstock automatic lathes, first by manufacturing cam-type machines and now NC models.



1 Control box with a plug-in panel
2 Universal combination unit with cam control
3 Workpiece puller
4 Tool holder with 6 independently controlled transverse tools
5 Headstock, with hydraulic opening and closing of the clamp
6 Speed controllers for headstock and camshaft revolutions of the camshaft
7 Programmer
8 Double roller device for headstock feed
9 Feeding device (MULTIBAR or silent tube)
10 Base plate
11 Chip collecting drawer

1970

Tornos, a reference in terms of employment in the Swiss Jura Mountains

From the very beginning, Tornos has been a flagship company of the machine tool industry since both emerged at the same time. In fact, Tornos is the result of the takeover of Pétermann SA by Tornos in 1968 (Tornos-Pétermann) and of the latter's merger with Bechler SA in 1974 (Moutier Machines Holding), which became Tornos-Bechler SA, Fabrique de Machines Moutier in 1981, and then Tornos SA in 2001. Tornos, Bechler and Pétermann contributed greatly to the development of Moutier (employment, construction of workers' houses, vocational training center), and these three companies employed up to 3,000 people (1974). The 1980-2000 period was marked by a decrease in the number of employees (1,300 in 2001) and the complete renewal of technologies and shareholding. The lathes manufactured in Moutier ('Swiss'-type lathes or 'sliding-headstock' lathes) differ from the lathes of Anglo-Saxon origin in that they feed the workpiece to a stationary tool and not the other way round.

1970

A long tradition continued by Tornos

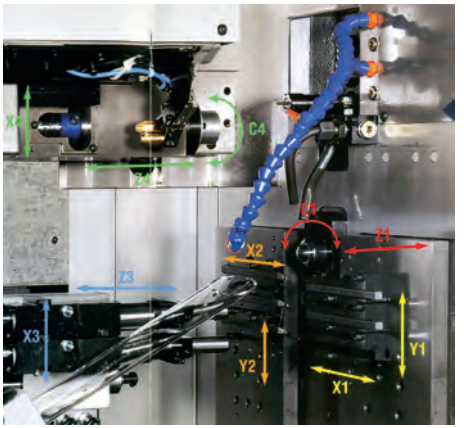
Tornos has always considered the vocational training of apprentices to be very important. As early as 1962, the Moutier-based company again proved to be a pioneer by opening the first Tornos Professional Center (Centre Professionnel Tornos CPT) in order to ensure the succession of its employees and to offer apprentices from the Swiss Jura Mountains the opportunity of vocational training in a reputable company. Tornos obtained all cantonal permits to open a private vocational training facility. The apprentices thus undergo theoretical and on-the-job training at Tornos. Shortly afterwards, the Canton of Bern recognized the CPT as a cantonal vocational school. Theoretical training is integrated into the company, with pooling of cantonal (BE) and private (Tornos) financial resources.

At the beginning of the 1990s, the CPT had more than 160 hired apprentices, while Tornos employed about 900 people in Switzerland at that time. Apprentices could train for and obtain a federal vocational qualification certificate (Certificat Fédéral de Capacité CFC) in five different professions: machine mechanic, bar turning mechanic, draughtsman, and electronic engineer and building fitter. At the end of the 1990s, however, the Canton of Bern stopped funding the theoretical training at the CPT for financial reasons and Tornos reverted to a Training Center, losing its status as a vocational school. Thus, from 130 apprentices for the five above-mentioned training courses, only 32 polymechanics apprentices and two instructors remained in 2002, while Tornos was experiencing a terrible economic upheaval.

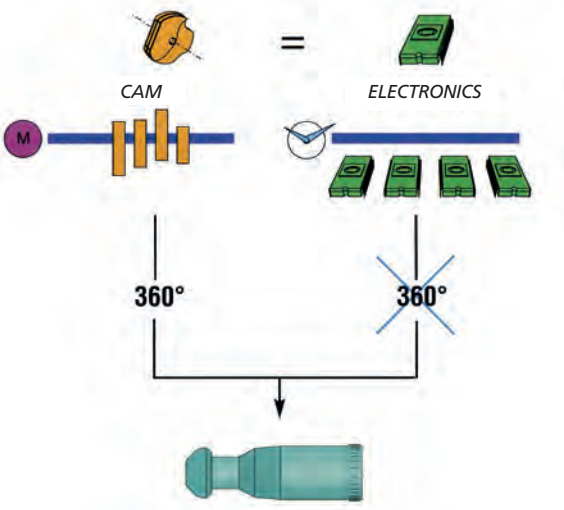
Multi-spindle automatic lathes

In 1931, 'TMCO' (as Tavannes Machines SA in Tavannes was usually known at that time) started the manufacture of a vertical multi-spindle automatic lathe with a six-station barrel, called Gyromatic, that was driven by cam systems. The machine had been designed for the machining of turned parts from metal bars with a maximum diameter of 25 mm at first, and then 40 and 60 mm. A version with a chucking capacity of a diameter of 140 mm for reworking was also developed. The latter was equipped with manual or automatic loading systems, and therefore suitable for the machining of parts not from bar stock, but from billets or from stamped, injected, or pressed blanks.

From 1969 onwards, Tornos has offered its first horizontal multi-spindle automatic lathes with six and then eight stations, following the example of other machine manufacturers, especially in Germany. In 1988, a numerically controlled version was introduced, the first in the world. Multi-spindle automatic lathes are mainly intended for the manufacture of components for equipment, clocks and above all the automotive industry, although in recent years the MultiSwiss by Tornos has also worked wonders in the medical and dental sectors.



Comparative CAM – DECO



1980

From 1980, the numerically-controlled Swiss-type lathe

With the advent of its DECO 2000, Tornos finally succeeded in combining the advantages of its various machines and paved the way for future developments. Tornos has never stopped innovating since its beginnings.

Around the 1980s, it was the simplified kinematics that distinguished the numerically-controlled automatic lathes from cam-operated automatic lathes: gears, transmission shafts, idlers, gearboxes and pulleys disappeared. However, it took a long time until the numerically-controlled automatic lathe was able to reach the productivity of cam-type machines. This is due to the fact that NC units were unable to control enough axes simultaneously.

In short, cam-type automatic lathes took a long time to set up, but boasted very fast manufacturing rates, whereas the first generations of numerically-controlled sliding-headstock automatic lathes could be set up quickly but had limited manufacturing rates.

Innovation, technological feats, modernity but also tradition: Moutier has also developed on the familiar foundations of its past, to which it owes much of its originality. Isn't it true that you need to know where you come from to know where you are going?

DECO 2000 (1996 – Tornos-Bechler)
From physical cams to virtual-cams

Demographics

2018	**7500 population** In 2018, the population in the Moutier region was fourteen times the population of two centuries ago!
2021	**7313 population**

Computer-aided design and manufacturing (CAD/CAM)

Today's CAD/CAM software is used to create ISO programs for turning components from bar stock on numerically-controlled automatic lathes. These programs are written to define and optimize machining cycles, the remaining material, and tool wear.

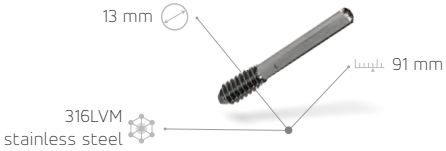
With tool files contained in a library of components and predefined and adaptable machining cycles, tool paths are quickly generated based on an arbitrary 2D or 3D solid or surface model and can be adapted to all the requirements of even the most complex Swiss-type lathes.

The simulation software and integrated post-processors form a complete package, not only for programming the workpieces to be turned but also for visualizing the entire machining process in dynamic mode and monitoring the progress of the workpiece during the manufacturing process in the same window and with a single interface.

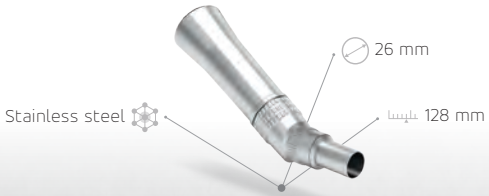
The program may be instantly converted into a tracking file, which is useful for estimating the work progress. This document provides all the information about the workpiece (material, geometry, etc.), details of operations and tools as well as the machine status.

SwissDECO (2018 – Tornos)
A range of machines to meet the needs of Tornos customers

SwissDECO and MultiSwiss at the service of the medical & dental sectors



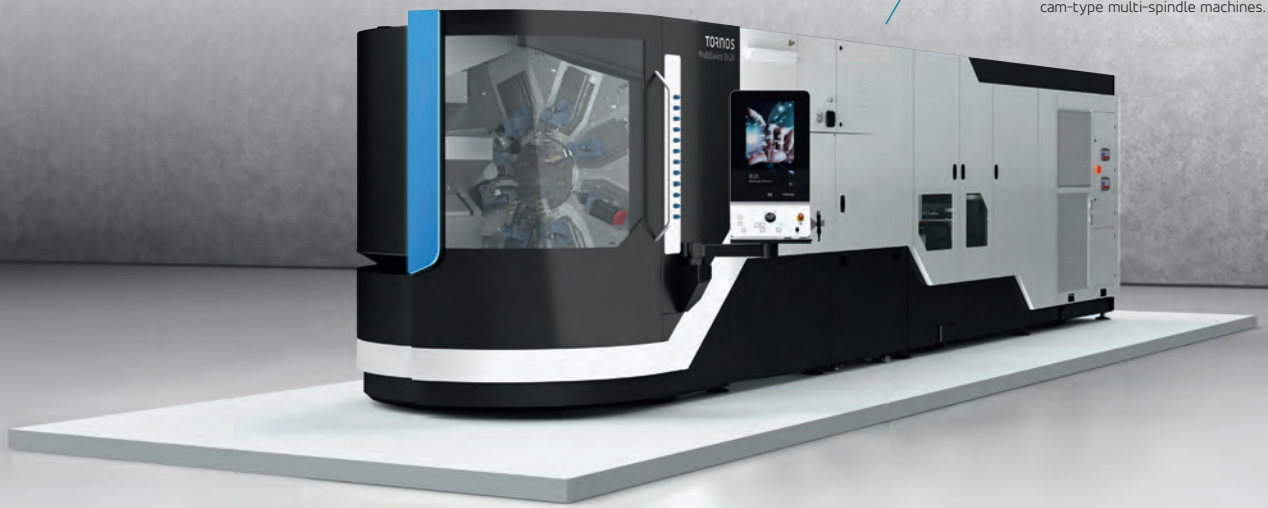
Medical & Dental



Medical & Dental

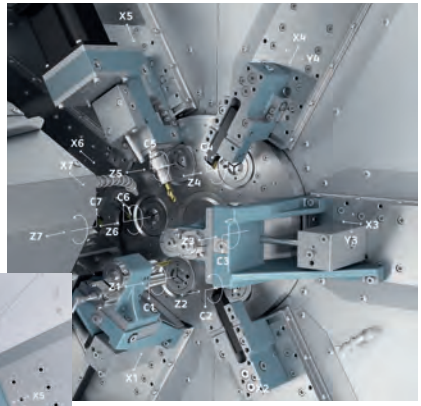
As regards implants, whether dental or orthopaedic, Tornos' SwissDECO and MultiSwiss machines offer unmatched productivity and quality. The multi-tasking SwissDECO range represents Tornos' vision of the future for the automatic lathe. Its enhanced machining and tooling solutions make it ideal for medical applications. The extremely compact SwissDECO enables unparalleled productivity for complex high-precision and high-quality parts, thanks to its optimized programming tools and ideal ergonomics that speed up part programming and shorten machine set-up times. It meets all challenges and thus enables tasks such as the manufacturing of a long, complex 700 mm orthopaedic component in record time.

MultiSwiss (2011 – Tornos)
The technology embedded in these machines allows them to approach the cycle times of cam-type multi-spindle machines.

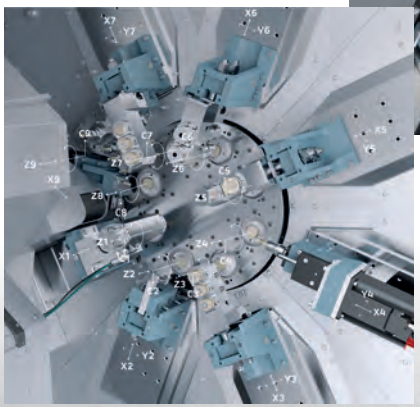


MultiSwiss:
A machine boasting a new level of power

The MultiSwiss is available in three different versions: 6x16, 8x26 and 6x32. For example, the MultiSwiss 8x26 is an ultra-productive machine that can machine several dozens of workpieces per minute depending on their complexity. These machines are capable of machining 24 hours a day. They can process several tons of material during production. To cool the machining area, the machines hold more than 2,000 litres of cutting oil.



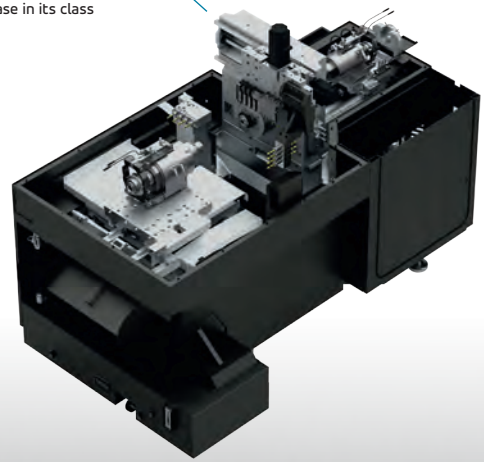
MultiSwiss 6x16



MultiSwiss 8x26

*Increasing flexibility tenfold with the new **Swiss DT** range*

The most rigid machine base in its class

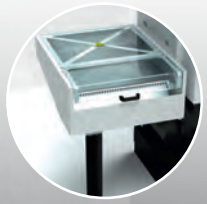


Maximize the productivity: The machine base of this new machine range has been specifically designed for this purpose. Their fully modular machining area can accommodate any type of tool holder. Drilling, milling, thread whirling or even gear cutting are just a few examples of the incredible flexibility of the Swiss DT. This single-spindle lathe is an affordable, high-performance solution that is available in 4 diameters: 13, 26, 32 and 38 mm.

Active Chip Breaker Plus (ACB Plus)

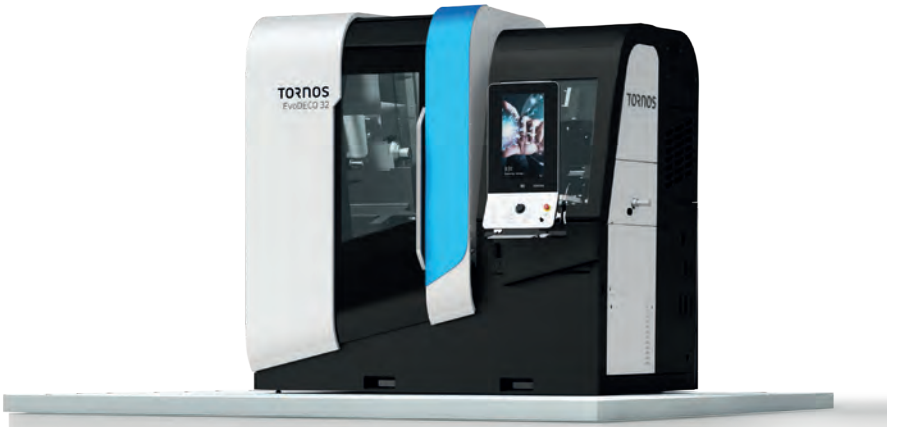
High-pressure pump

Built-in part extraction



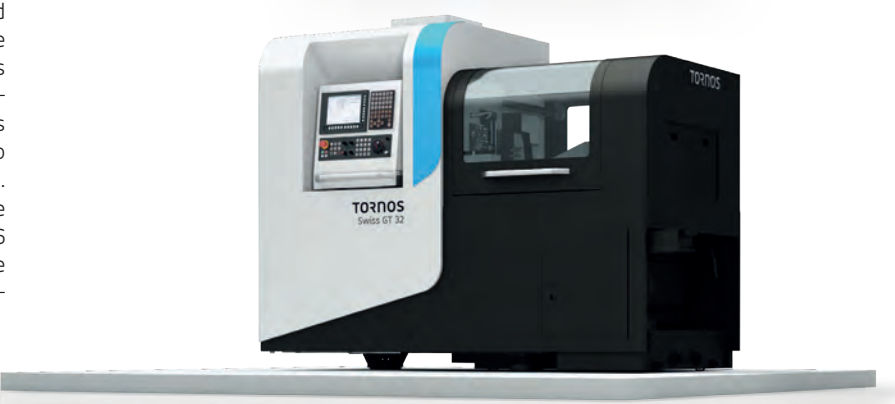
EvoDECO
The most productive and powerful machines on the market

The EvoDECO is at the top of the Tornos range. Dedicated to the most demanding machining operations and users, the EvoDECO machines are the most powerful and productive on the market. They are available in 4 diameters: 10, 16, 20 and 32 mm. Their unparalleled flexibility enables them to efficiently produce the most complex parts while guaranteeing rapid set-up changes.



Swiss GT
Versatility par excellence

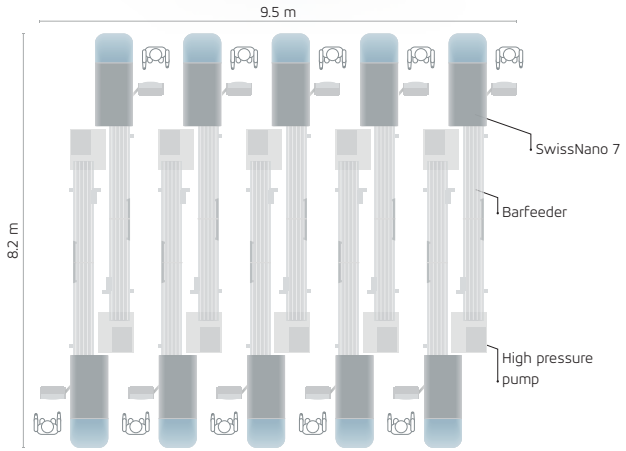
Automatic lathes with complete standard equipment at a competitive price. Simple and ergonomic, the Swiss GT range offers easy access to all tool stations. Its operation and maintenance are made easy thanks to the automatic lubrication unit, a chip tray and a large-volume, removable oil pan. Available in three diameters - 32 mm for the Swiss GT 32, 25.4 mm for the Swiss GT 26 and 13 mm for the Swiss GT 13 - the range has been specially designed for the production of long or short parts.



SwissNano
A specialist in micro and nano precision

SwissNano was designed for small workpieces requiring a high level of precision. With its kinematic system, this machine can manufacture e.g. 2/3 of the parts required for watch movements, from simple parts to complex components, and achieve an excellent surface finish. The machining process may include gear cutting cycles, etc. The suitability of the machine is not restricted to watchmaking but includes any type of workpiece that requires the highest quality and extreme precision. The kinematic structure has been conceived to achieve exemplary thermal balance and management and thus makes sure that the operating temperature is reached in no time.

Smallest footprint in the market



Thanks to its reduced size and intelligent design, the SwissNano range can maximize the manufacturing area of any workshop! SwissNano 4 has a footprint of 1.2 m^2, while SwissNano 7 is only slightly larger with a footprint of 1.4 m^2. In addition to its minimum footprint, the SwissNano range has been designed to use the resources intelligently and efficiently. So, the spindle has been conceived with adequate size. SwissNano 4 easily fits the place of a Tornos M7 cam-type machine in the workshop! Even better, it takes only 3.2 m to install three SwissNano machines, whereas, for the installation of equivalent competing machines with NC units, more than 5 m are required. This increases productivity and reduces costs. What is true for SwissNano 4 is also true for SwissNano 7 and SwissNano 10, so no less than 10 machines can be installed on an area of 10 m x 8 m!

The "Industry 4.0" concept

All events are recorded and available at any time.

The evolution towards full digitization of the company is inevitable. The purpose of digitization is to ensure permanent, realistic and constantly updated supervision of all activities, whether for management, relations with suppliers or those with customers. This is also known as the "Industry 4.0 concept".

The concept of "Industry 4.0" was introduced at the EMO in Hanover in the spring of 2011 to describe what was previously known as the 'Factory of the Future'. The concept has spread around the world, and the Swiss industry has embraced it wholeheartedly by launching the 'Industry 2025' initiative in the summer of 2015. The latter is supported by four major industry players, namely Swissmem, asut, Electrosuisse and SwissTnet.

The aim of 'Industry 4.0' is to achieve the integrated digitization of manufacturing at all levels of the company. Why the number 4? This is a (necessarily arbitrary) division of the history of technology. 'Industry 1.0' refers to mechanization, 'Industry 2.0' to mass production especially using electrical energy, 'Industry 3.0' to automation and, finally 'Industry 4.0' to the digitization of processes with a view to integrated manufacturing.

TISIS *- Program and communicate with your machine*

Programming
TISIS allows you to program Tornos machines that are not part of the TB-DECO system. The ISO editor can manage up to four channels and automatically synchronizes the code between the channels and uses syntax colouring to distinguish between codes and values very easily.

Select your tools
For each machine, TISIS has a database containing all the tool holders, from the simple chisel plate to the

whirling machine, including the polygon maker or milling machines. Each of these devices has its constraints, which are integrated into TISIS. Thus, if a device is selected, only the positions where it is possible to place the device on the machine will be activated. TISIS also manages the incompatibilities between the various devices; the user is guided intuitively in the use of his machine, each support having its image and thus facilitating the identification. It should also be noted that the default geometries are automatically displayed when a tool is selected.

Transfer

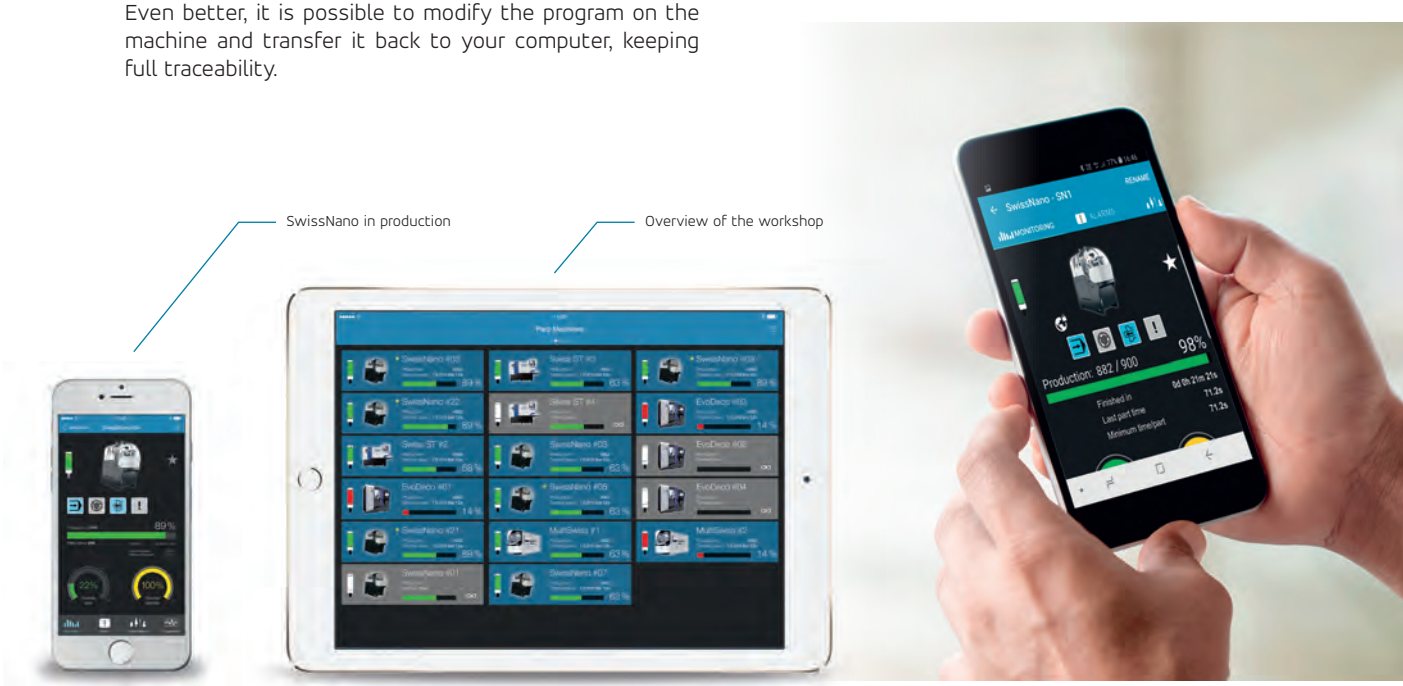
In addition to programming, it is possible to transfer programs in a dematerialized way on your machine park. Even better, it is possible to modify the program on the machine and transfer it back to your computer, keeping full traceability.

Monitor

TISIS allows for detailed monitoring of the machine park. The monitoring includes not only the status of the machines in the workshop but also the view of the current production, i.e., the part counter, the remaining production time or the part name and the part drawing are available at any time. An application for Android tablets TISIS Tab also allows you to monitor the status of your workshop.

SwissNano in production

Overview of the workshop



The Moutier Automatic Lathe and History Museum
A foundation to celebrate the service of a unique and little-known industrial heritage

Roger Hayoz: The founder of the Moutier Automatic Lathe and Historical Museum

Roger Hayoz was born in August 1921 in Cressier-sur-Morat in the canton of Fribourg.

After obtaining a commercial baccalaureate in 1939, he began a career in banking and completed his training at the University of Fribourg. With this background, he settled in Moutier and worked as deputy manager of the Banque Populaire from 1954 until his retirement in 1986.

His love for the region and its industrial productions led him to seek out everything related to the industrial world and the history of the Prévôté.

He rescued old screw-cutting machines, a typical product of Moutier, and a large number of industrial and historical documents, which still constitute the vast majority of our holdings and collections.

After many years of searching for a suitable exhibition space for his 'treasures', he founded the Moutier Automatic Lathe and History Museum in 1992. He succeeded in investing the Villa Junker, the home of the engineer Nicolas Junker, who brought the field of precision mechanics to Moutier, for this purpose.

He devoted all his spare time to enriching the collections and to making people discover 'his' museum, for which he did not hesitate to commit part of his own savings.

Roger Hayoz passed away in January 2009, leaving behind him our foundation and above all the memory of a man who, against all odds, allowed countless visitors, young and old, specialists and laymen alike, to discover the history of Moutier, its industrial past and its countless riches.

Thanks to this passionate man, our foundation is currently gathering a unique collection of automatic sliding headstock lathes, precious testimonies of the jewel of our local industry. These numerous and impressive complex machines, coming from our factories but also from other factories outside the region, tell the story of a field that has forged the face of our region as much as the prevailing mentality over nearly 140 years.

The impact and consequences of this 'mechanical prowess' is palpable in almost every district of our city, allowing its international influence to continue to this day. It is this history that we want to tell through our permanent exhibition and make known to as many people as possible.

The Villa Junker: the ideal location for a museum dedicated to industrial history

The house in which our foundation has existed since 1992 is none other than the Villa Junker, built in 1895 and located in the heart of the industrial zone of which Tornos SA is the epicenter. It was the residence of Nicolas Junker, the first engineer to come to Moutier around 1880 to develop the principle of the automatic lathe and produce it in series. It was with and after this passionate genius that the science of precision mechanics took root in Moutier in a permanent manner, offering a heritage that is now more than a century old to entire generations of professionals in the industry.

We can therefore say without hesitation that our museum has ideally found its 'setting' to present a local industrial history deeply marked by the advent of precision mechanics, represented by Nicolas Junker's favourite field.

Our villa and its surroundings are in themselves real historical testimonies, participating intrinsically in the explanation of our recent past. Like an 'open-air museum', the architectural achievements of the surrounding area follow one another before our eyes, attesting to the various periods of the industrial epic in the Prévôté. The successive developments inherent to the needs of a particular sector follow one another and offer visitors a rich and explicit context. Located in the very heart of a privileged area to illustrate its narrative, our museum could not be better off than within the walls - more than a century old - of the Villa Junker.

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ATELIERS
DE
CONSTRUCTIONS MÉCANIQUES POUR HORLOGERIE
Usine hydraulique. N. JUNKER
CONSTRUCTION
DE
Machines automatiques
pour arbres, vis, pieds,
canons & pignons.
Machines automatiques
à tailler les roues,
couronnes & barillets à la précision
Nouveau système.
Machines à fraiser les carrés.
Machines à faire les crochets.
Machines à sertir.
Nouvelle invention.
PANTOGRAPHE
pour réparer (côté & angle) & fraiser
les pièces en acier.
TOURS À NEYER
avec fraises à couteau.
Tours à tourner les platines,
à tambour & serrage au pied.
Tours à tourner les barillets,
arbrer & alibrer en même temps.
Nouvelle invention.
Tours à tourner les boites.
INSTALLATION COMPLÈTE
d'Ateliers d'horlogerie.
FABRICATION DE BOITES DE MONTRES
Fabrique de fraises, procédés automatiques.

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