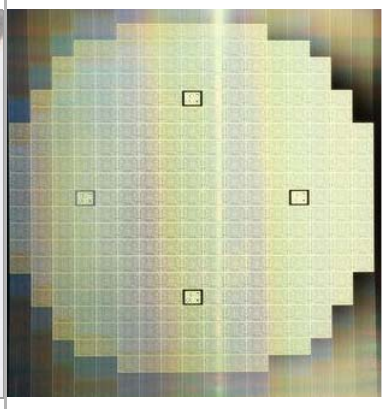
NEWSLETTER 11
A special solutions and innovations issue



Jicey : All precision adjustment solutions

Jicey's strength, which may explain how the company is solicited by every type of industry, including the aeronautical, public works, optical and micro-electronics industries, lies in the fact that we do not sell a simple product, we provide the perfect solution to each and every specific adjustment problem. Adjustment shims are an ingenious answer to any mechanical assembly problem. With its full range of adjustment shims (laminated peelable shims, solid shims, extra-thin shims, separable shims), Jicey has the know-how to be able to challenge any adjustment predicament. As described in the article dedicated to Recif Technologies, using Jicey adjustment shims enables customers to save precious time during assembly procedures and to economise in comparison with more classic solutions used to compensate the play resulting from added machining tolerances. Adjustment shims have become an inevitable accessory for every engineering and design department across the globe. As technology continues to develop, Jicey continues to innovate, optimising comfort of use with its Viewtek laminated peelable shims in composite materials, and using a process for marking the thickness of the individual layers.

IN A NUTSHELL

Jicey exhibited at the ILA 2006, the major International Aerospace event held in Berlin.

With our stand at the French pavilion of Gifas Hall 8.211A, we were able to boast our wide range of adjustment shims. For over 60 years, our most faithful Jicey customers have been attached to the aeronautical industry. There are always several hundred laminated peelable or extra-thin Jicey shims in cockpits, landing gear, doors, engine equipment support, exhausts and even on airbrake assemblies of the most prestigious civil and military planes in Europe.

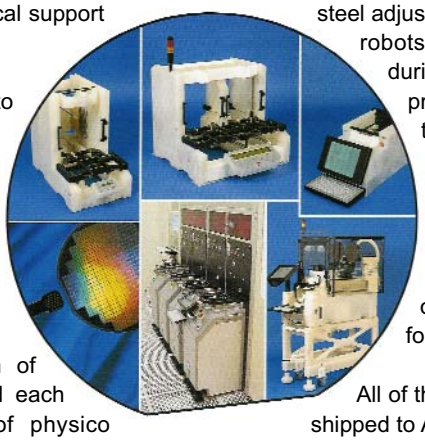
Quality: A longstanding commitment!

Jicey is the first French adjustment shim manufacturer to have been awarded both ISO 9001 and EN 9100 certification for its continuous commitment to a quality charter that becomes increasingly rigorous by the day. Owing to the ISO 9002 certification and the ISO 9001 certification that the company obtained in 2002, Jicey has been the pioneer of its sector since 1999. The EN 9100 reference goes beyond the ISO 9001 standard in that it stipulates additional requirements specific to the aeronautics, space and defence industry. With a view to satisfying customers, this quality system aims to ensure our adjustment shims comply with all points of the standard specifications. We are proud to have been rewarded for our efforts. Jicey makes every endeavour to optimize the performance of its products and to improve the quality of its services and quality charter, which is based on increasingly demanding criteria. For you, this is a guarantee of quality and satisfaction, attesting to our continuous effort to remain the reference precision adjustment specialist, and to win your trust.

Recif Technologies, the ineluctable international contender of the high-technology micro-electronics sector has opted for Jicey's adjustment shims for its silicon wafer handling equipment

Every day, millions of people use an array of information and communication networks all over the world. We are indirectly indebted to Recif Technologies for the daily exchange of images, sound and information of all kinds. Everyone has heard of semi-conductors and integrated circuits, and even more so, of the famous chip. But who has ever heard of silicon wafers that are the physical support for these chips?

Recif Technologies continues to develop in the micro-electronics sector, manufacturing equipment used to handle and identify silicon wafers during the integrated circuit production process, in particularly stringent conditions of cleanliness.



The wafers come in the form of single crystal silicon disks, and each undergoes a large number of physico chemical transformations (sometimes over 500) that require them to be handled frequently. Recif Technologies therefore offers a range of manual, automated and robotic products used to handle these wafers. Recif Technologies' development is focused on robots that integrate more and more functionalities. The environment in which Recif Technologies works is rather astonishing. It resembles a laboratory as the process environment requires so-called "class 1 white rooms" (no more than one particle of over 0.16 microns per cubic foot), to prevent any risk of contamination. Contamination could destroy the chips, and the consequences in terms of costs are extremely serious, given that just one finished wafer can cost up to 100 000 dollars.

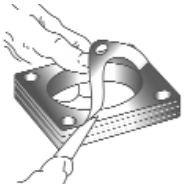
Jicey provides Recif Technologies with stainless steel adjustment rings used in all of their robots to compensate any play during assembly of the parts. The products that Jicey provides thus constitute a particularly advantageous solution in terms of time saving and cost efficiency, as Recif Technologies used to adjust and grind the parts directly on the robots to compensate for machining tolerances.

All of the adjustment rings had to be shipped to Asia or to the United States to after-sales services, or to the assembly subsidiaries in Byelorussia or Tunisia. In view of the drastic constraints mentioned above, the Jicey shims must thus be of absolutely irreproachable quality and cleanliness.

Perfect peelability: An asset that makes all the difference

From Viewtek laminated peelable shims to bi-composite laminated peelable shims, including separable shims, the excellent peelability of the Jicey products is an indisputable advantage for our customers. Increasingly innovative and with great concern for technical performance, Jicey attaches much importance to the high peelability of its products. For high precision and time-saving during assembly, the Jicey peelable shims must be able to be peeled quickly using a scalpel (for metal shims) or bare hand (for composite shims). As opposed to classic shims that need to be altered, (which is a long and costly process), Jicey enables technicians to save a considerable amount of time during assembly and to avoid deadtime during production, whilst procuring optimum precision.

The stratified materials used for the composition of the peelable shims are the focus of our technology. Our R&D has engineered a special glue and a particularly developed continuous foil gluing system to ensure the peelability of our parts earns us a leading position on the market.



IN A NUTSHELL

Taking up a real challenge !
The biggest Jicey shim: 20 metres in diameter

A few years ago, at the request of a multinational oil company, Jicey manufactured a truly incredible shim. Determined to satisfy its customers in every way, Jicey did not hesitate to rally each and every member of the team to manufacture a shim of 20 metres in diameter comprising over 10 segments. Now located on a pumping platform, this shim marks the outcome of the performance process to which Jicey was, and continues to be devoted to.

The figure **-70°C**

This is the minimum temperature to which the Viewtek laminated peelable shims, made of composite materials, may be subjected. This is why they are so in demand in countries that suffer extreme climatic conditions, such as Russia.

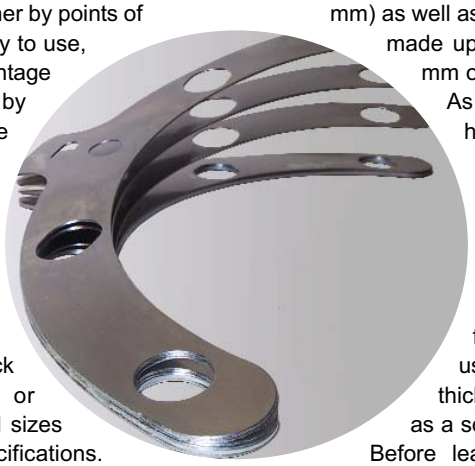
Purpose of shims in composite materials: To outperform metal shims

Whether you work in the car, aeronautics, space or public works industry, you already use, or will at some point be using Jicey laminated peelable shims made of composite materials. As Jicey continues to innovate these new shims, the demand for classic metal shims is becoming lesser.

Whether in terms of peelability, lightness, safety of use, high temperature or chemical, they often surpass the metal shims used up until now. Moreover, our laminated peelable shims in composite materials boast dual functionality, and can thus be used for their sealing capacities at the very least, like a flat gasket.

The Shimpack: A solution to assembling problems in the most difficult environments

Very solicited by numerous national and international companies such as Caterpillar, Alstom and Giat, the Shimpack separable shim is an alternative to the laminated peelable shim and offers our customers a solution that can be adapted to assembly problems to an even greater extent. The Shimpack separable shims are made up of a stack of individual layers stuck together by points of glue on the edges. Very easy to use, the Shimpack has the advantage of being able to be cleaved by hand, making the separable shim particularly appropriate in harsh climatic conditions or environments (public works, major mechanics, agricultural machines, etc).

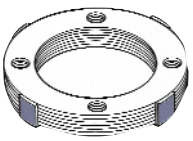


Whether in stainless steel, steel or brass, the Shimpack shims can easily be cut or machined to all shapes and sizes to match your exact specifications. They can either be made of individual layers of identical thickness, with or without a solid portion, or of individual layers of different thicknesses to match the correction requirements more accurately and obtain a better adjustment finish. In this last case, it is not uncommon to find a solid portion between layers of different thicknesses.

Ingeniously designed, the Shimpack has many advantages. It is both economical and efficient. As opposed to the laminated peelable shim, any layer removed may be used as a single shim for a different assembly purpose, regardless of the initial size and thickness of the part. The Shimpack is perfectly suitable for parts of average or big dimensions (diameter of over 100 mm) as well as for the adjustment of parts made up of individual layers of 0.1 mm or more.

As they can be peeled by hand until the precise dimension required is obtained, any deadtime during assembly can be avoided. The Shimpacks also have the advantage of being of extremely flexible use as they can be used to form sets of different thicknesses or to be integrated as a solid part of your shim.

Before leaving our workshops, the Shimpack separable shims are packaged in blister pack film, air-bubble packaging material, or in accordance with any specific customer requests, as Jicey always makes sure its products are carried from the workshops to their final place of use with the maximum protection.



BI-COMPOSITION: AN EXCLUSIVE JICEY INNOVATION

Efficiency, Rapidity, Flexibility and Economy

What our customers expect… What bi-composition offers!

Our customers wanted it. They got it. Having become the only reference to manufacture bi-composition laminated peelable shims, Jicey invested in R&D to make the use of shims easier, quicker and more economical. In great demand, the bi-composition technique means we can obtain laminated peelable shims comprising layers of different thicknesses on each side that can be distinguished either by colour (metal shims) or by a mark on the middle section of the part (Viewtek composite shims). The correction is first made by peeling the thickest of the individual layers, and then is accurately matched by peeling the thinnest individual layers.

This procedure is extremely economical as it enables customers to reduce assembly time and to reduce purchase costs by using a maximum number of thick layers. The bi-composition laminated peelable shims have met with great success in all industrial sectors.

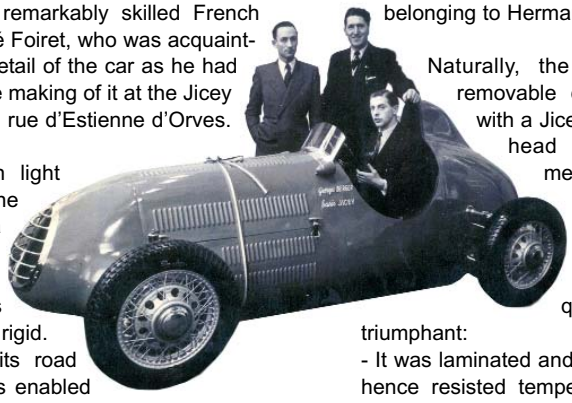


JICEY'S RACING CAR

The Jicey racing car becomes the standard-bearer of the company. Integrating the company's innovations, it promotes the company image and know-how on the circuits.

The first Jicey F1 chassis, conceived and manufactured by the engineer and inventor Jean Caillas, father of the current company President), was sold on the very day it was first exhibited at the Grand Palais car show in Paris: The purchaser was a young and brilliant Belgian driver, Georges Berger, who came from an industrial family.

He took on a remarkably skilled French mechanic, René Foiret, who was acquainted with every detail of the car as he had taken part in the making of it at the Jicey plant in Viroflay, rue d'Estienne d'Orves.



The chassis in light alloy AG5 in the form of a ventilated box, very ahead of its time, was both light and rigid. Consequently, its road holding qualities enabled the 2-litre, 6-cylinder BMW 328 engine with its 3 carburettors to attain its maximum performance. All in all, it made a brilliant sports car capable of competing, often successfully, with the Gordini and Ferrari single-seaters.

In 1948, during his first competition season, the Jicey driven by Georges Berger wowed the crowds at the Roussillon Grand Prix in Perpignan, at the 'Circuit des Remparts' in Angoulême and at the 'Coupe d'Argent' in Monthéry. The competition season of 1950 was a particularly busy time as the Jicey raced on the biggest circuits in Europe such as the Grand Prix of Mons in Belgium, the Grand Prix of Rome in Italy, the Grand Prix of Nurburgring in Germany and at the Grand Trophée between Sambre and Meuse in Belgium. In the same year and with the same Georges Berger at the wheel, the swift Jicey came third at the Grand Prix des Frontières in Chimay after an exemplary struggle, beating the Veritas, the Maserati and the Ferrari 166 MM belonging to Hermann Roosdorp.

Naturally, the BMW engine with its removable cylinder head, was fitted with a Jicey gasket, a real "cylinder-head block" consisting of 18 metal foils.

This cylinder head gasket, invented by the engineer Jean Caillas had three qualities that made it so triumphant:

- It was laminated and purely made of metal and hence resisted temperatures and compression far higher than one would have found in common car engines,
- Its essentially metal texture provided equal distribution of heat, enabling the cylinder head to cool down efficiently,
- The gasket came in the shape of a flexible plate, which meant replacements could be made in record time. It was hardly surprising that Jicey, since it had been founded in 1946, continued to develop its activity at a speed to which the superb single-seater attested on all of the European circuits.

To be continued.

Pierre Fouquet-Hatevilain
Journalist from 'La Vie de l'Auto', Drivers' column

Wearing his helmet, Georges Berger carefully observes the adjustment work carried out by his talented mechanic, René Foiret. The lightweight bonnet could be lifted with ease to gain access to the engine for any adjustments required before and sometimes during the race. We notice the impressive battery of the 3 vertical carburettors mounted in series at the top of the cylinder head, very characteristic of the 2-litre 6-cylinder BMW 328. We can also see the striking shape of the exhaust manifold that brings the 6 cylinder outlets into one tube such that they may demonstrate their synchronized power as one, sometimes accompanied by flames!

Photo centrale
The first Jicey car is characterized by a profiled head-rest that was not only aesthetic, but extremely functional. When Georges Berger happened to be the victim of an off roadway accident during his first race at the Rousillon Grand Prix in Perpignan on the 25th April 1948, the head-rest saved his life. The car somersaulted several times and the driver's head was protected by the head-rest that struck the ground. Berger escaped unscathed and bravely took to the wheel once again. Note the name of the Drivers and the mention of the young "Ecurie Jicey" on the left-hand side of the single-seater.