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November 2008  
Issue No. 25

# Xpert: the universal milling machine concept



■ The brand new Xpert 1000

***The Xpert family has grown since the introduction of the first Xpert-3D milling machine last December. We now offer you the right Xpert family member for all your required applications.***

The Xpert 1000 and 1600 models provide a great start in the top league of the Step-Four milling machines. The machines are based on the new Xpert integral guide system, which has been especially de-

veloped by Step-Four. Space saving operation with optimal user-friendliness, technical perfection and an unbeatable price. High-level precision provided by precision profile rollers on ground and hardened steel shafts and backlash-free ball thread drive and fast processing in three dimensions are the main features of this milling machine. The combination of this mechanical system with hybrid motors and the high resolution Microstep activation, which is provided by the Xpert CNC controller, ensures ex-

Information for  
customers and  
prospective  
customers

## Editorial



### Autumn period

With the current 25<sup>th</sup> issue of Step-Four News, we want to accompany you into the exciting Step-Four autumn of 2008. The great autumn fairs in Germany, such as Viscom, Faszination Modellbau and Euromold, the market positioning of the new Xpert machine line, the expansion of the WING designer and the new rotary table for the PC-CUT Standard are just a few of the tasks that will keep us intensely occupied over the next few weeks. And, of course, we will also ensure that you, as a customer working with Step-Four products, are provided with the necessary support service. There's lots to do. Therefore, I wish our Step-Four team lots of energy and I hope that you enjoy reading up on the latest Step-Four news.

■ Ernst Ramberger

tremely quiet running, even during heavy-duty processes with almost all materials. Whether 2 ½ or 3D, clean milling results and first-class edge quality combined with high processing speed and low maintenance requirements make the Xpert 1000 an excellent choice for operation in the field of commercial industry, where high-level precision

and fast processing at low running costs are essential.

### Main features

- backlash-free ball thread drive
- large processing area
- precise and reliable
- high milling and feed speeds
- extremely quiet running
- long-lifetime, low maintenance

## Xpert sheet milling machines

The new Xpert sheet milling machine has been designed for the processing of sheet material. We will present this system at this year's VISCOM, the trade fair for advertising technology in Frankfurt for the very first time.

### Guide system

The innovative guide system of the new machines, on which the machine frame and the drives are located completely below the work piece reception level, enables a simple feeding of the sheets from all sides without unnecessary exer-

tion. There is no more need for tedious lifting and positioning of the material, which is often very heavy work with this kind of processing size.

### 3D processing

The machine bed is principally open downward, thus, providing ideal preconditions for a receiving system comprising of supporting rails and clamping rails. Of course, a T-slot plate or just an MDF plate can also serve as a receiving system. Even high precision 3D processing at top speeds can still be performed

■ The Xpert 1000 and 1600, Xpert sheet milling machine and the Xpert 3D are available for the following applications:

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Machine type	X application area in mm	Y application area in mm	Z application area in mm
<b>Xpert 1000/1600</b>	1000/1600	600/1000	180
<b>Xpert sheet milling machine</b>	1000	1500	180
	1800	1500	180
	2600	1500	180
<b>Xpert 3D</b>	1000	1250	300 or 500
	1800	1250	300 or 500
	2600	1250	300 or 500

without limitations. The machines are on offer with positioning ranges of 1500 x 1000 x 180 mm, 1500 x 1800 x 180 mm and 1500 x 2600 x 180 mm. The core of this new system is a specially developed integral feed system made of precision extruding press profiles, which are characterised by their high level of rigidity and low level of weight. Thus, both a considerable reduction of the mass to be moved is achieved and the highest possible acceleration values for short processing times are also enabled.

The efficient and uncompromisingly user friendly Step-Four Xpert-MILL milling software is also available for controlling machines and systems. In addition to hardware and software, appropriate instruction and training courses are provided for users, which nicely rounds off the offer.

### Design features

Precision is essential. Therefore, the Step-Four milling machines are always built in accordance with the same design features in order to ensure the highest possible level of flexibility:

- modular design for universal applicability
- portal design with downward open working area
- space-saving construction
- maintenance-friendly design
- order: power track chains for all feed lines
- limit switch or reference switch
- precise linear guides made of steel
- robust, high-precision, reliable
- stable, low vibration construction
- high resolution activation



■ Xpert sheet milling machine 2500



■ Xpert sheet milling machine 1800

- extensive connection possibilities for accessory parts

Detailed information on the new Xpert milling machines can be obtained directly from us. It would

be our pleasure to answer your queries or provide you with information material. Phone: +43 (0) 662/45 93 78-0 or e-mail: [office@step-four.at](mailto:office@step-four.at).

## HWC

### A technology with a future

Hot wire cutting (HWC) grew up hand-in-hand with CAD. CAD data is a precondition for HWC applications. Due to the fact that all designers now use CAD applications in all industrial fields, the path is open for a more intense utilisation of the HWC technology for processing EPS. In the following issues of our newsletter, we would like to provide you with a succession of details on HWC technology and their diverse range of application. In the first edition of this series, you can find out about the basics on the subject of hot wire cutting. In addition to this and in view of the upcoming trade fair for advertising technology, VISCOM (Frankfurt, 30th of October till the 1st of November), we will present you with several types of possible application in this field.

## Rotary plate for standard cutting machines

With the newly developed rotary plate for the PC-Cut standard cutting machine, it is possible to manufacture turned parts for modeling. Thus, engine cowlings can, for example, be manufactured in all possible variations. Our example deals with a cowling for a Suchoi or similar models. These components can be described as 3D objects, because the rotation angle can be individually adjusted for every contour. In addition to this, one can assign a custom contour for each rotation angle. This enables the manufacturing of very complex components. A further possible alternative is that the rotary plate can be turned during the cutting process. This enables the manufacturing of rotational solid objects with

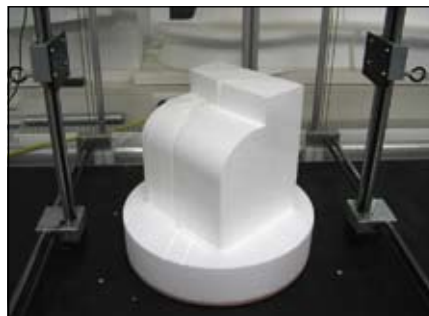
curved facets, such as the famous Viennese sugar sprinkler. A second LPT interface is required on the PC in order to operate the rotary plate. Due to the limited functional range of the light version, the rotary plate can only be operated with the professional version of the Step-Four S4CUT V4 cutting software.

### Introductory offer

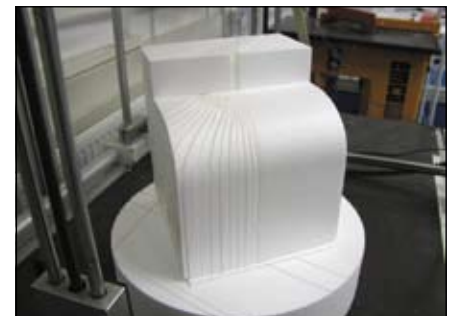
Take advantage of this offer now provided at an introductory price. Rotary plate complete set incl. S4CUT V4 software expansion module now, for just a short period, only EUR 799.00 incl. VAT (list € 1194.00 incl. VAT). You can order via [www.step-four.at](http://www.step-four.at) or by phone: +43 (0)662/45 93 78-0.



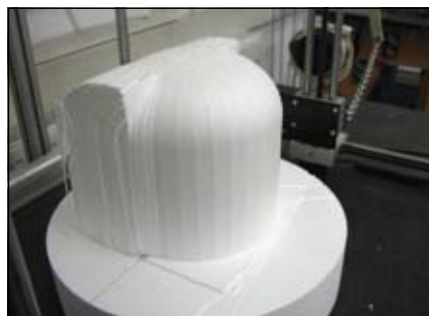
■ The "Viennese sugar sprinkler"



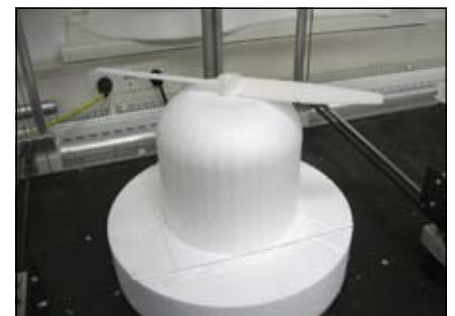
■ Engine cowling production



■ Utilisation of the rotary plate



■ Assignment of custom contours



■ Finished engine cowling

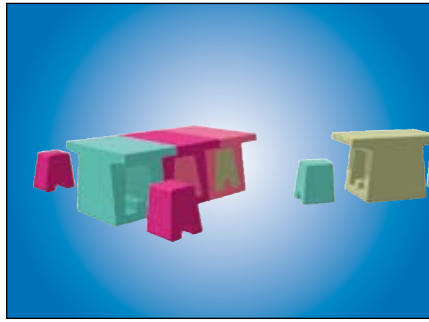


# Advertising technology utilises HWC technology



Bild: Adidas

■ Logo manufactured for the "Braun Flatground Festival" in Amsterdam



■ Furniture made of EPS for the "Dutch Design Contests"



Bild: 3EL Company, Enschede

■ Approx. 4.5 m high rocket from "The Adventures of Tintin".

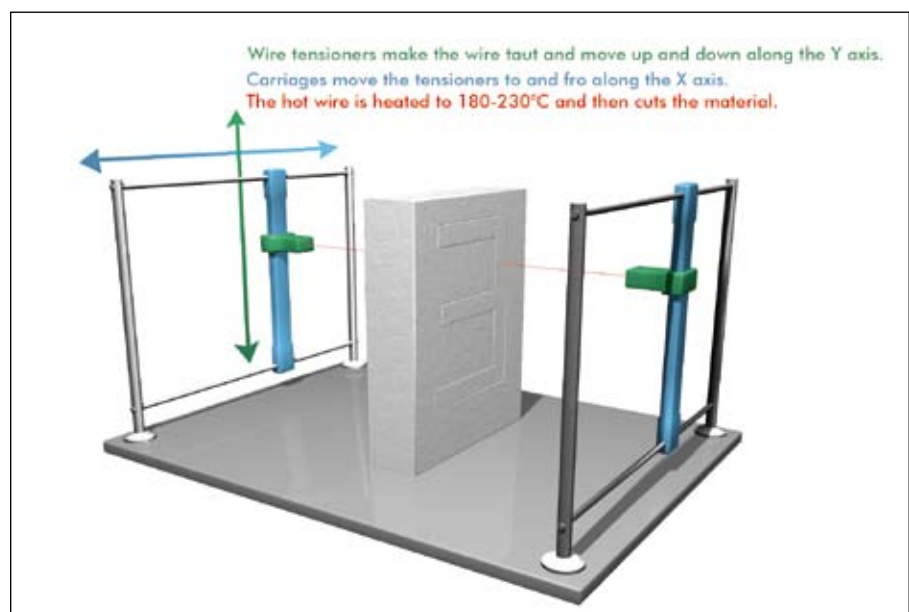
HWC is also traditionally applied for advertising technology for the manufacturing of alphabet letters and logos. The size and precision of the latest Step-Four PC-CUT 5000 now enables the realisation of extremely voluminous objects.

A remarkable initiative in Holland is the design of an exhibition area, for which only HWC technology and EPS material was used. Even the stools for visitors and the bar area were cut with the aid of HWC technology.

There seems to be no limits to size. If the object is larger than the working area, it is simply dissected into several parts and cut. These parts can then be assembled, reinforced and refined at any desired location.

## The operating mode of a HWC machine

Hot wire cutting machines are PC-controlled systems for the processing of expanded (EPS) and extruded (XPS) polystyrene foam and polypropylene particle foam (EPP). Contours or bodies are cut out of a material block with the aid of a heated wire. Step-Four machines are controlled by a stepper motor controller, which is connected to the PC. The cutting data is processed in the control software and then given to the machine. PLT or DXF files, from all common CAD and drawing programmes, serve as a basis.



■ Operating mode of hot wire cutting machines

# What's new at WING designer?



**Free update  
coming soon**

We were quite busy during the last few months and have, once more upgraded and improved the number 1 wing construction programme of Step-Four's WING designer. The following functions and upgrades for WING designer V2 are now available. Here is a brief summary:

## ➤ Rib set

The construction jig is also shown on the rib set. Thus, the construction jig can also be printed out.

## ➤ Rudder flaps

The flap position in relationship to the nose or trailing edge can now also be specified in %, because many profile designers specify the flap depth of their profiles in %.

## ➤ Plug-in mount

The length of the plug-in mount can be specified in % with regard to the semi-wingspan. This allows one to approximate the methods of calculation, which stipulate 8 to 12 % for the length of the main plug-in mount and 5 to 8 % for the torsion pin of the semi-wingspan. With

regard to the angle specification for the V form or the sweep of the wing, the cut-outs are designed so that the wing joiner can be glued in without requiring post-processing of the milled-out sections.

## ➤ Sheeting

Rib cap strips, which can be created between the front and rear partial sheeting, can now be adapted to width. These can be changed in length from -1.0 to 1.0 mm. If, for example, one sets the value in the input window GAP at 0.5 mm, this is exported to the milling software with the result that all planking objects overlap, thus, they can merge perfectly.

## ➤ Weight reductions

For the weight reductions, a tool has been applied with which the values of the root for the end rib of each segment can be taken over. In the case of several segments, the starting position and the width of the previous segment is automatically used. This makes the alignment of the weight reductions much easier.

## ➤ Cut processing

In the case of multiple tapered sections, the block thickness defined in the "block parameter" window is also applied for the following segments. The profiles can be expanded around the sheeting deduction from the large curvature to the end of the profile. The return height can now be individually adapted. Thus, the return height has to be manually processed in the cutting software.

## ➤ SCF export

The SCF export filter has been upgraded to export the weight reductions. This allows the possibility of cutting the Styrofoam wing cores hollow.

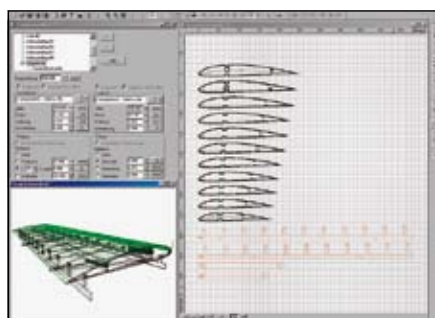
## ➤ Milling export filter

In the case of partial sheeting, the rib cap strips can also be exported.

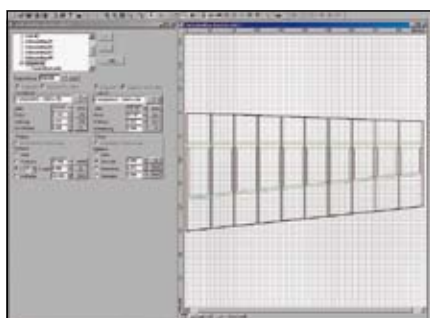
## ➤ Basic setting

The default settings for the rudder flap depth and the length of the plug-in mounts were upgraded by the input in % in the new version.

**You will soon find the free update on our website [www.step-four.at](http://www.step-four.at). You will also find much more on the subject of WING Designer.**



■ Print construction jig



■ Sheeting with rib cap strips

## Successful in-house exhibition

This year, the already traditional Step-Four in-house exhibition was held for the first time over two days, on the 10th and the 11th of October. This allowed us to make it much more convenient for our customers and interested parties from industry and commercial trade to visit us in the province of Salzburg,

so that they can obtain an overview of the Step-Four products. As in the previous years, there was a great amount of interest, which provided a further reason for us to celebrate the excellent relationship with our customers, interested parties and friends.



■ Quite a bustle! An interested crowd at the in-house exhibition.



■ Trade issues were discussed



■ Product presentation



■ Software presentation



■ Our friends from Bavaria

## games convention

The Salzburg Spielemesse was held from the 25th to the 27th of September. Almost 16 000 visitors filled the halls of the Salzburg Exhibition Centre. We at Step-Four are very satisfied with the second edition of the exhibition and we really look forward to being there again next year.



■ On the model flight simulator

### Trade Fair Schedule

30<sup>th</sup> of Oct till the 1<sup>st</sup> of Nov 2008

**VISCOM**  
Frankfurt  
hall 3.0, stand A40



31<sup>st</sup> of Oct till the 2<sup>nd</sup> of Nov 2008

**FASZINATION  
MODELLBAU**  
Friedrichshafen  
Hall A3



16<sup>th</sup> till the 20<sup>th</sup> of November 2008

**EUROMOLD**  
Frankfurt  
Hall 9.0, stand F06





# The Rhoensperber – a construction story

**Johann Archan, from Buermoos near Salzburg, gives a report on the construction of his model of the legendary Rhoensperber glider.**

Whether you're young or old, every model aircraft enthusiast has a dream. My dream was to build a glider out of wood with a wing-span of around 5 m. As every year, I drove to the exhibition in Sinsheim to check out the innovations and gather new, inspiring ideas. As I reached the vintage aircraft section, I saw some really amazing replicas. As I passed through a second time, I felt a rising desire to own such an aircraft. The only question was, which original aircraft would be my ideal to build a replica from. After taking a look at a variety of construction plans, I decided upon the Rhoensper-



■ The proud constructor with his model aircraft

ber. The construction plan that I first used as a basis was from an old FMT magazine. I used a HQ profile for vintage aircraft, the coordinates of which could be found on the internet. I copied the pro-

file data into the WING designer and then got down to the designing and drawing tasks. First of all, the external wing measurements were entered into the programme and the root and end rib specified. In order to be able to use the complete diversity of the programme, it is important to define a segment after each change in the wing (plug-in mount/spoilers/ailerons).

## Defining segments

A total of 4 segments were defined for the wing. It is certainly an advantage that one can individually define the weight reduction in each segment. Most of the settings can be used for the other segments. In accordance with the applied plug-in mount, the root profile was thickened in this section. One only needs to change the thickness in %, and then one has the desired measurement. I used strips of spruce as



■ The fuselage of the glider



spars. A construction plan isn't necessary for this construction, because the distances are already provided and the wing is constructed as a plug-in system (nose strip/end strip).

### Simple operation

In order to be able to ensure the distance, not only in the area of the nose or end strip, it is advisable to mill (end strip) several times, so that the intermediate range of the measurement is adhered to the intermediate ribs were added later. Constructive elements, such as the nose section or end strip section, were already specified here. Just a couple of mouse clicks, and the desired construction is created. At this point, one must consider which milling diameters should be used for the production of the entire model. I currently use a diameter of 1 mm for 3 mm poplar plywood. Finally, the weight recesses are entered. I used to use a CAD programme for this. This can now easily be done with version 2 and saves an enormous amount of time. All in all, this is a great application.

### Mounting

Finally, the mounting feet have to be applied. One can choose whether to mount them to the top or bottom side. The first three segments were mounted normally, i.e. the mounting feet were fixed to the bottom side of the profiles. The fourth segment was mounted on the top side of the profile, thus, the other way around. The advantage of the well-developed software, such as that of the WING designer, made it considerably easier for me to construct the wings. An important element of the software is the 3D display. Mistakes are presented optically

and can then be quickly remedied. The documentation is also of great importance. The used settings can easily be printed and filed. The decision to buy both the milling software and WING designer was ultimately the right solution and I can recommend the package to anyone. And the result is quite impressive ...

### Write to us!

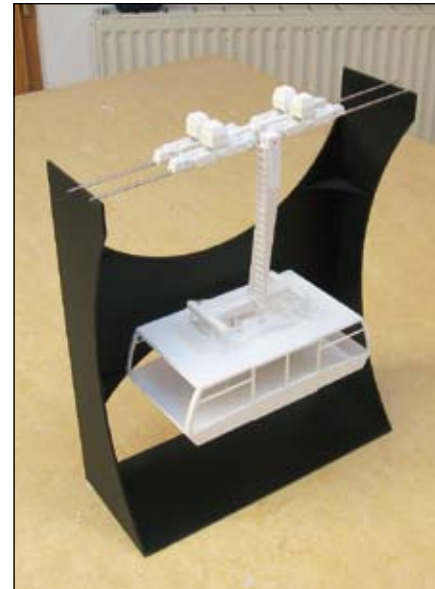
You can also send us your success story! [office@step-four.at](mailto:office@step-four.at)!



■ The finished model of the Rhoensperber with 5 m wingspan!

## A kernel cablecar

Kern, the modelling company from Tyrol, presents its replica of an aerial tramway at a scale of 1:50. The archetype, the Mayrhofen Ahornbahn in the Zillertal Valley, is the largest of its kind in Austria and has a transport capacity for around 180 persons. In summer, when the skiers take a break, the panorama platform at 1965 metres above sea level presents the entry gates to the winter paradise of the high mountain nature park of the Zillertal Alps. Hiking trails, challenging peak trails and comfortable mountain lodges stretch out over a range of over 372 km<sup>2</sup>. The valley and mountain stations are future projects in the sights of Kern.



■ Replica of the Tyrolean Ahornbahn at a scale of 1:50

## Workbenches from Switzerland

The Aero-Tisch company from Switzerland ([www.areotisch.com](http://www.areotisch.com)) manufactures workbenches with integrated dust extraction with the aid of a new Xpert 1800 sheet milling machine. The equipment is suitable for working with solvent-containing steam, dust, odours and liquids.

### Design is essential

A large part of the Swiss company's customer's work in the fields of nail design/nail cosmetics, dental orthodontics laboratories, airbrush, goldsmiths and modelling, i.e. in practically all fields in which processing can produce particles that could be harmful to health. Within the field of cosmetics, significant demands are placed on the

design, the colours and the originality. "Industrial" criteria are more important for laboratories. The director, Mr. Jenny, explains: "We decided upon a CNC milling machine from Step-Four. In addition to the excellent price-performance ratio, we value the high level of flexibility and operating comfort of the machine."

We can use it to process everything from MDF for shelf board, core layer boards for the working surfaces, Plexiglas for keyboard housings, aluminium for circuit board holders, foamed supporting material/cushioning and composite material for cladding. We are already planning to get a second machine with a plasma torch for the processing of metal sheeting.



■ Modern design ...



■ ... encounters functionality.



# 25 times top information

This issue of the Step-Four customer newsletter is already the 25th. We have applied this medium since February 2001 to inform our customers about news and innovations at Step-Four. We publish issues of the newsletter around three or four times a year, so that we inform and can keep contact with you, our customer.

In our Step-Four newsletter, we provide you with an overview of the new developments within our company, illustrate product applications and provide special sales offers. A particularly interesting customer dialogue is created by the publishing of customer experience reports. In the "The things they make ..." column, enthusiastic model makers are able to show the things that they make with the aid

of Step-Four systems. In order to provide information on Step-Four innovations to interested parties outside German speaking countries, we also produce an English online issue of every newsletter that we publish.

## Production

A lot of time and energy goes into producing a customer newsletter. In the editorial meetings, the editing team discusses the important topics that should be published in the customer newsletter. Then the work really gets started: Articles have to be written and the respective photos have to be selected. Once this phase is over, we pass the data on to our agency, where the layout of our customer newsletter is developed. After the cor-



■ The first Step-Four issue

rection run, the newsletter can then be printed. We distribute 10 500 newsletters per issue. Then the text can be sent to a translation office, so that the English version can be produced. Are you curious to know about the changes and developments performed at Step-Four over the past years? Check out our internet archive. There you can find all 25 issues of our customer newsletter, which is provided as a PDF and can be downloaded. Click yourself in: [www.step-four.at](http://www.step-four.at)

## The Step-Four editing team



**Ernst Ramberger, Director:** „We have now been publishing the Step-Four customer newsletter for seven years. It pleases me to be able to reach so many readers with our news, which also allows us to intensify the contact to our customers even more.“



**Reinhard Leithner (Master), Head of Marketing:** „10 500 editions of the newsletter are produced with each issue. An English version is produced in PDF format for international customers. Thus, Step-Four news from Salzburg is also read in Mexico, India and Dubai.“

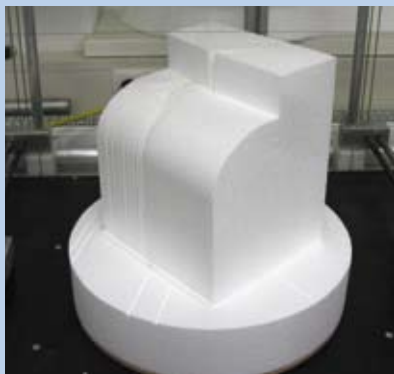


**Dieter Koenig, Head of Construction:** „I enjoy being able to present and explain new products and ideas to our readers. I also find it particularly interesting to see what enthusiastic model makers can produce with the aid of our machines. There are a very large number of impressive examples.“

## Masthead

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