

Imagine Design Create

WELCOME TO THE SECOND RENAISSANCE
BRING FANTASY TO REALITY FASTER AND EASIER



 Roland®

*A man who works with
his hands is a laborer;*



Designed by Ger de Bruijn, the Netherlands

*a man who works with his
hands and his brain
is a craftsman;
but a man who works with
his hands and his brain
and his heart is an artist.”*

Louis Nizer



A HERITAGE OF EXCELLENCE

A HISTORY OF INNOVATION

From ancient times jewelry makers have pounded, carved, melted, molded, and crafted precious metals into intricate shapes. Throughout the ages amongst most cultures, jewelry has held special significance. These artifacts have been coveted, adored, worshipped and loved. They have graced men and women,



young and old alike, across the social strata. These objects evoked every human emotion. They became symbols of power, life-long commitment, tokens of love, and signs of faith.

INNOVATION IN THE MAKING

The distance from imagination to reality has never been shorter or easier. Today, we are witnessing an unprecedented renaissance in jewelry making. CAD/CAM¹ technology is giving jewelry makers more time to focus on the artistic side of their business, rather than spending countless hours hunched over hand-carving wax models. Custom rings, pendants and earrings now have more

detail, imagination and symmetry than ever before. The most important thing we do at Roland is create new opportunities. More and more, world class jewelry masters like Finland's Kristian Saarikorpi are blending their creativity with Roland's design and manufacturing genius. As a result, they are taking their designs to a new level while boosting productivity and profits.



Kristian Saarikorpi, Finland, designed and produced many of the pieces shown in this brochure. www.saarikorpidesign.fi

TIME HONORED TRADITIONS HAVE GIVEN WAY TO A MORE PRODUCTIVE USE OF TIME

Today's CAD software has made jewelry design amazingly easy. Top programs like 3Design[®], JewelCAD and RhinoGold[®] let you create beautiful designs without spending countless hours learning computer operations. Best of all, customers can approve the design on the computer screen before any production begins. This saves considerable time in the design process and ensures that customers get exactly what they want.

1. CAD/CAM: The process of using CAD (Computer Aided Design) software and CAM, (Computer Aided Manufacturing) technologies.



WITH HONORS COME GREATER CHALLENGES

The most precious jewel one creates is a reputation and Kristian Saarikorpi is leading the way. This young Finnish designer has earned a coveted position as a rising star on the very competitive jewelry design landscape. Saarikorpi believes you have to work smarter not harder, and the time for change is now.

A 1996 goldsmith graduate from the Lahti Polytech, and former head designer at one of Finland's preeminent jewelry manufactures, Saarikorpi has earned a string of credentials that far outdistance his time in the business. Saarikorpi modestly suggests he owes his success in large part to his need to constantly do better and having the right tools.

Saarikorpi is a poster child for what it takes to be successful as a jewelry designer in today's world. First exposed to computers as a technology to play games on, he grew to recognize and tap into their design and business potential. The rest, as they say, is history.



Blossom Collection, designed by Kirsti Doukas Saarikorpi Design Oy.

- 2 0.00125mm/step resolution is the smallest movement of the cutting tool. Approximately the width of a human hair.
- 3. 3D CAD is the ability to design and view a project in three dimensions along X,Y and Z axes. The design has depth of field, like a photograph. You can rotate the design to view from all angles. Using 2D CAD you can only design and view along the X and Y axis, similar to mechanical drawings, for example.

MODERN WITHOUT NEGLECTING TRADITION

Even though hands have always been the primary artistic tool, more often than not they have also proven to be a barrier in the creative process. Until very recently, jewelry makers have been limited artistically by their level of manual dexterity. "Even with the precise hands of a surgeon, it is still often impossible to carve many of my designs," said Saarikorpi.

Traditionally the complexity and intricacy of the design has always limited what we could physically execute and produce. CAD/CAM technology has blown this barrier away. Jewelry makers are now free to design and produce anything they can imagine. "With a fine 0.00125mm/step resolution², my Roland desktop milling machines make it possible to create even the most complex designs," said Saarikorpi. "The sky is the limit!"

LONG-STANDING LIMITATIONS HAVE GIVEN WAY TO UNHEARD OF FREEDOM AND FAR MORE PRODUCTIVE USE OF TIME.

The original concept for every new custom piece begins in your customer's mind. Even though they might only have a general idea of what they want or just have trouble articulating it, your job is to spur collaboration and ultimately capture their vision. This all-important process typically involves penciling out a rough rendering of the design on paper. Today's 3D CAD³ software also lets you create virtual models right in front of your customers, who can usually approve the design right on the spot. Either way, once you see a customer's face light up, you've done it. You are ready to design a personalized masterpiece with confidence.



THE BEAUTY OF ROLAND

Custom jewelry design is truly an art. It's all about creating something that touches someone in a personal way. Customers want a signature piece that's unlike anything else in the world, and it's your job to give it to them. Whether it is a re-made wedding ring or a designer earring, they are looking for something special.

"This is what makes custom jewellers so different from large chain stores. Without the ability to design unique pieces, we would really get beat up in the market place. We just can't offer the same prices as a store that buys everything in huge bulk. Desktop CAD/CAM⁴ technology lets us offer something unique and special. Something that inspires people to pay a bit extra!

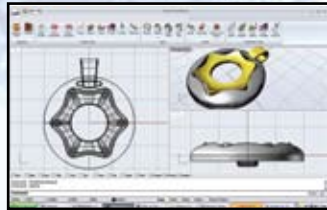


As a goldsmith, CAD/CAM is an absolute must," said Saarikorpi. "Today, 99 percent of my work goes through 3D modeling⁵ and Roland machines. It gives me a huge advantage over other goldsmiths working with traditional techniques.

I'm able to create designs that are totally different from anything else in the world."



The Roland desktop CAD/CAM solution provides everything you need, right at your desk - software, JWX-30 mill, fixtures & tools.



Roland JewelStudio™ provides multiple views while designing.

"I can also work in a much faster and more flexible manner. With CAD, all my former works and designs are still usable, and I have a huge library of different parts and elements that I can use in my new projects.

This speeds up the workflow dramatically."



INNOVATION IN ACTION

Compared to creating designs by hand, CAD software also increases productivity with a wide range of powerful tools. Re-size, re-shape and re-design existing designs to get a head start on a new concept. Mirror them to generate pieces with perfect symmetry. Your customers will love the results!



Using the power of CAD, virtual prototypes can be created for customer review and approval.

"My main program is Rhinoceros[®] 4.0 and RhinoGold plug-in, but I also use ArtCam JewelSmith," said Saarikorpi. "They are both great. Rhino is very easy to learn. It's such a logical and straight forward program. With Rhino the only limit is actually your imagination. I find that with ArtCam JewelSmith, some tasks like complicated relief type of work are extremely fast and easy. That's why I think that Rhino and JewelSmith works well together. This lets you create some complicated designs in Rhino and then bring them to JewelSmith to put some cool textures to it."

Once you have mastered 3D CAD, you will enjoy several powerful design features. You can import any saved or scanned files for additional modeling,

and build intricate jewelry pieces by simply adding elements to your designs. You can also access libraries of settings for gemstones, shanks and a wide range of industry standard cuts.

3D CAD software can generate intricate 3D pieces, like custom class rings or bracelets. 2D CAD software is ideal for planar or flat designs, including custom pendants, jewelry boxes, and name plates. Even some traditional 3D jewelry pieces, such as simple earrings and brooches, can be designed with 2D CAD software. As long as the jewelry is relatively flat, 2D CAD will work quite nicely. This vector-driven technology is the fastest and easiest way to design flat jewelry pieces. It's similar to drawing your design with a pencil. Flatbed scanners can be used to capture conceptual drawings into the CAD program.



- 4. Desktop CAD/CAM technology includes everything you need to design, proof and cut wax models, right on your desktop.
- 5. 3D Modeling is the process of creating and rendering finished like models in the software before creating a physical model.



**CREATIVITY REQUIRES THE COURAGE
TO LET GO OF CERTAINTIES**

“After spending ten years carving tiny details into a chunk of wax while hunched over my desk, I have a deep appreciation for my desktop milling machines,” said Saarikorpi. “They save me time, rest my aching back, produce better jewelry models, and give me more time to be creative. It’s actually fun to bring my designs to life!”

After positioning a small block of wax into the desktop mill, he converts his STL⁶ design file into machine code and begins production. The entire process is automatic and unattended, and takes a couple of hours. He then sends his finished wax models out for casting. Occasionally, Saarikorpi uses his larger MDX-540 milling machine to produce final gold and silver rings in a single step. This heavy-duty machine can also mill aluminum and brass plastic-injection molds for volume jewelry production with fine detail and consistent results.



PERFECT HARMONY

A 4-axis⁷ mill with a wide variety of compatible fixtures is an absolute must! Typically, it will cut one side of the ring first, and then the fourth axis rotates 180 degrees to cut the other side of the ring. Next, the ring is turned on end so the tool can cut the details around the face of the ring. The fixture needs to hold the wax and keep it perfectly aligned during production.

THE ADDITIVE OPTION

Saarikorpi’s CAD/CAM workflow might not be the best choice for everyone. Using an additive technology is another viable option. 3D printers, like desktop milling machines, output wax models for casting into jewelry.⁸



JWX-10
Jewelry Solution

New! JWX-30
Complete Jewelry Solution



MDX-540 Mill



3D printers can produce models with deep undercuts and intricate geometric features. This is often important for complex, hollowed-out pieces, like a cluster ring with a wire mounting. 3D printers build models layer by layer which requires them to use materials that are manufactured to simulate the material properties of a solid block of Jeweler’s modeling wax. And many of these tend to fall short in terms of castability. The layer-by-layer building method takes longer than a desktop mill, and it creates a stair-stepped effect that must be hand finished.

It is generally recognized that 3D mills excel when it comes to fine surface detail and castability of wax models, while 3D printers are better at handling complex geometry.

In the end, both technologies have strong attributes. It’s just a matter of deciding which one is a better fit for your business.

SERVICE BUREAUS

Service Bureaus are more than happy to take your penciled sketches and create your designs and wax models. This option makes plenty of sense for anyone who does only a few custom jewelry pieces here and there. Or anyone who just is not ready to learn CAD/CAM. Sending jobs out to service bureaus does cut into profits and slows down production while you wait for them to be completed.



Special fixtures provide holding for rings, pendants and odd shaped pieces.

Nevertheless, service bureaus are a great way for some jewelers to bridge the gap, until their business and CAD/CAM skills are strong enough.

6. STL is a file format that has become the Rapid Prototyping Industry’s defacto standard data transmission format.
7. 4-axis milling is similar to 3-axis (X, Y, & Z) however an additional axis is used. The 4th axis (A) is located parallel to the Y axis and rotates 360 degrees, acting like a lathe under the cutting tool.
8. 3D printers, or additive rapid prototyping machines, apply layers of material that harden after each pass. The model is slowly built using layers, like a book being made page by page to form a 3 dimensional shape.

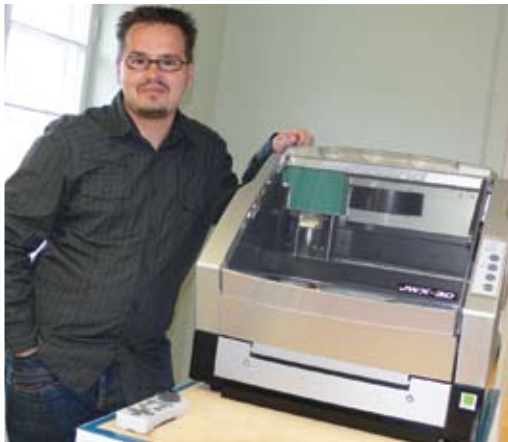
THE BUSINESS OF BEAUTY

Business is a battlefield. And in the jewelry industry, the combatants are custom jewelry designers and big chain stores across the globe. They are all fighting to meet needs of countless potential customers. Custom jewelry designers have always relied on the ability to create pieces that match the individual tastes of their customers. Those with CAD/CAM technology can produce those pieces with improved detail, imagination and symmetry. As a result they are leaving their less technologically savvy peers behind.

“CAD/CAM technology makes it possible for me to create jewelry that would not otherwise be possible or financially viable to make,” said Saarikorpi. “By combining modern technology with expert handcrafting, I am constantly finding new, unparalleled solutions for my jewelry.”

SAARIKORPI'S CAD/CAM WORKFLOW

- Imagine a new piece of jewelry and/or consult with the customer, then create a conceptual sketch.
- Design the piece using Roland JewelStudio™ and/or RhinoGold™.
- Add textures using ArtCam JewelSmith. The realistic virtual models make it easy to get customer approval.
- Create the wax model with a Roland desktop milling machine. Saarikorpi sometimes mills a model if his customer wants to see a 3D piece before making a final decision.
- Cast the wax model by taking it to an outsourced company.
- Hand finish the piece and set the stones.



Kristian Saarikorpi with the Roland JWX-30 jewelry solution.

9. NPD Fashion World is part of the NPD Group, Inc., Port Washington, NY, www.npd.com, and provides information on what is selling, where, to whom, and why.

10. Photo impact printing is a series of dots of varying sizes impacted into a metal surface. The result is a photographic image. No metal is removed during the process.

PERSONALIZATION = PROFITS

The demand for personalized products is extremely high. According to consumer estimated data from NPD Fashion World,⁹ U.S. consumers aged 18-34 spend about \$36.3 billion U.S. dollars on these items each year. Women, particularly those over 35, spend the lion's share of retail dollars and are the most desirable market for retailers.

It's not always about high-end pieces like wedding rings and brooches. All personalized jewelry offers a large profit margin. Simply engrave a special date or nickname into a five dollar pendant and it sells for more than \$20 U.S. dollars. Photo impact printers¹⁰ are the latest 2D desktop device to help jewelers maximize profits. Able to imprint photos into metal, this technology has given jewelry stores and kiosks unprecedented personalization capabilities. They add instant value to a wide range of jewelry and gifts by turning them into unique mementos.

Photo impact printed and engraved products tend to sell especially quickly for special gift-giving occasions, such as Mother's Day, Christmas, Valentine's Day, and weddings. They are popular with all demographic segments and have the potential to appeal to a broad customer base.

Producing these types of personalized jewelry and gift products is a fast and easy way to attract new customers.



MPX-80 Photo Impact Printer

EGX-350 Engraver



VALUABLE LESSONS

CAD/CAM has swept the jewelry industry by storm. The technology gives custom jewelry shops a legitimate niche, with the production speed and quality to compete with anyone. It's all about working smarter, not harder. Depending on your level of technical savvy, getting up to speed with CAD/CAM might take some effort. Learning to use today's design software and desktop mills is no different than any other jewelry making tool. You have already mastered everything from mandrels to polishing techniques. So you know you can do this!

"I'm one of the lucky ones," said Saarikorpi. "Computers, not to mention desktop milling machines, are still daunting for many jewellers. I've been interested in computers since I started playing video games on them back in 1980. As one of the first to begin using CAD/CAM technology for designing and producing jewelry, I have a bit of a head start. Jewelers are lucky today. There's no need to fear this technology, as milling machines and design software exist solely for making jewelry. They are easy to use and automate what used to be a complex process better suited for an engineer than a jewelry maker. And taking CAD/CAM classes can quickly turn a complete novice into a power user."

TRAINING OPTIONS

MANUFACTURERS: Most manufacturers offer training classes to help you get the most out of your CAD/CAM equipment.

JEWELRY ACADEMIES: Jewelry schools, while they require a significant time commitment, teach the very latest techniques in jewelry design and manufacturing.

UNIVERSITIES: Go online and check out the class schedule at your local university. Chances are they offer basic CAD/CAM classes for jewelry making. Night and weekend classes can be a great way to pick up new skills while maintaining your business at the same time.

INDEPENDENT TRAINERS: Nearly all of today's award-winning jewelry makers are masters of CAD/CAM technology. Many of them teach CAD/CAM on the side, offering a great one-on-one experience that really accelerates the learning process.

KEYS TO CAD/CAM SUCCESS

RESEARCH: When considering which CAD software is right for you, ask each vendor to design a typical piece you sell while you watch closely and ask questions. Most have a series of icons or menus that let you easily select recognizable shapes.

BASIC COMPUTER LITERACY: You must understand how to operate a Windows® - based computer and have some software experience to use CAD successfully.

JEWELRY DESIGN TALENT: If you're already a talented designer and sculptor, you increase your chances of being a talented CAD designer.

TRAINING: Good, uninterrupted training away from your place of work is priceless. Be aware that most software vendors will not train you over the phone. If you are asking basic questions over the phone, they will suggest attending a training class.

PRACTICE: Immediately after training get plenty of practice to burn the new processes, techniques, and methods into your brain.

USER GROUPS: Software user groups are extremely valuable, cost effective and fun. Talk to your software provider and other CAD users to see which groups they recommend.

BECOMING CAD/CAM PROFICIENT



WE FIND OURSELVES
IN SOME PRETTY
GOOD COMPANY

Some of the most respected jewelry designers from around the world have gone digital. They have embraced CAD/CAM technology with open arms and raised the level of their work to new heights, achieving more creative designs with greater precision and symmetry than ever before. Here are a few top designers and their CAD/CAM stories:



CHALONG ACHAWAKORN
THAILAND

Chalong Achawakorn has been designing fine jewelry in Thailand for over 20 years. He specializes in custom rings, earrings, brooches and small art pieces. In 2006, Achawakorn purchased a Roland MDX-40 and quickly discovered the powerful impact CAD/CAM can have on the art of jewelry making. His work is appreciated across Asia.



VASKEN TANIELIAN
UNITED STATES

Vasken Tanielian is a 10-year instructor at the Revere Academy of Jewelry Arts and the owner of Vasken Design. Vasken specializes in spectacular diamond ring, pendant and earring designs. After years of hand carving wax models, he now uses a Roland JWX-10. "I love this little machine," Vasken said. "It's so quiet and clean. And I hardly ever have to sit at my wax bench anymore."



ADELE AND JOHAN VAN TONDER
SOUTH AFRICA

Adele and Johan Van Tonder own a successful custom jewelry shop in South Africa. After hand carving wax models for more than 30 years, Johan finally set down his sculpting knife and bought a Roland desktop mill. The impact

on his business has been stunning. In less time and with fewer errors, the jewelry artist now creates beautiful pieces with a superior level of sophistication and detail.



GER DE BRUIJN
THE NETHERLANDS

Ger de Bruijn has more than 30 years of experience as a jewelry designer in The Netherlands. In 2006, he bought a Roland JWX-10 desktop mill and now produces about 15 to 30 new jewelry designs every month. The desktop mill has also boosted his creativity by saving him precious time to focus on his designs. He now takes the artistic liberty to add tremendous detail to stylish rings, necklaces, bracelets and watches.



GIUSEPPE MASSONI
ITALY

The artistry of Giuseppe Massoni of Rome has positioned him as a leading member of the second renaissance, where the ability to bring fantasy to reality has never been faster or easier. Discover why more and more world class jewelry masters like Massoni have partnered with the design and production genius of Roland. Imagine, Design, Create...that's the beauty of Roland.

DON'T GET LEFT BEHIND

Taking the CAD/CAM plunge is no longer a choice for jewelry designers. The technology has become an important tool, essential to the success of any custom jewelry business. Being more creative and producing models with superior quality and speed is not merely beneficial. It's expected. Customers today demand more than almost symmetrical and almost perfect. And if they don't get it they will go somewhere else.

Vasken Tanielian

Adele and Johan Van Tonder

Giuseppe Massoni

Chalong Achawakorn

Ger de Bruijn





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Certified ISO 9001:2000

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