

Kinzi Factory Profile



Stainless Steel Precision Casting Factory

www.kinzi.co.th www.kinzi.com

Prepared by

Matanee

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12/10/2016

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RDM 1/29

Kinzi Factory Profile





Company History

With a humble beginning, Kinzi was founded in 1971 as Sanyu metals Co., Ltd. in Taiwan. In those days, production concentrated on aluminum and steel printing frames for the textile industry. With an innovative spirit the company expanded to include a stainless steel department in the early 1980s and quickly became one of the first Asian companies to work extensively with stainless steel component fabrication.

During the late 1980s, Sanyu quickly grew and realized it's need to expand again and started to relocated it's different departments throughout Asia. The stainless steel department was then it's third overseas venture and was successfully set up in Thailand in 1990 and named KINZI (THAILAND) CO., LTD".

With 500 employees at present, ISO certification since 1998 and it's 50 plus personnel solely in research and development, KINZI has proven to be a continuous leader in it's core market of stainless steel component design and manufacturing.



Combining precision casting, machining, drop forging techniques and a dedicated group of spirited team members, Kinzi has always had an unprecedented advantage over competition in design, delivery time, quality and value.

With domestic and export markets continually growing to over 32 countries world wide and its relentless pursuit for a challenge, Kinzi is well poised for future demands in the 21st century.



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Kinzi Factory Profile





Customized Project with Stainless Steel

Environmental, Aesthetic, Confidence



About us

Kinzi "KOT" is our OEM (Original Engineering Manufacturing) service-based company dedicated solely to Stainless Steel component fabrication in Thailand from client's original designs

We deal directly with our customers to better assist them with their technical requirements and in many cases assist in design input for better production value or product tensile strength needs.

Our syndicate production facility is located in Ratchaburi, Thailand, (60km south of Bangkok) where the majority of our production staff and engineers (over 500 personnel) are situated.

With all the many different techniques of working with Stainless Steel available to us and with our unique in-house department of mold designers and makers, our engineers have unprecedented advantages in production design and value management.

Sample production and batch delivery can be ascertained with a high level of control by having all sections of the production under one roof.

Our production facility maintains an active 24hr production cycle with 3 shifts and current production level as of Dec 2006 is at 80 tons of fittings per month.



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The Language of Stainless Steel

Environmental, Aesthetic, Confidence



At "Kinzi" KOT", We speaks the Language of Stainless Steel.



" Stainless steel is essential in the language of contemporary design "

From a safety cable link for forest utility to designer kitchen door handles, Stainless Steel speaks with unsurpassed confidence to its surroundings through its amazing structural resistance and its unique aesthetic beauty.

By having concentrated in providing a "Stainless Steel only" service, we've perfected a complex syndicate working platform of stainless steel processing under one single roof. These procedures include: a variety of precision (lost wax) castings of materials from S302, S304, S316 , S316 A4-80, PH17-4, to Duplex 2205; drop forging of the same materials for high tensile industrial utility and a variety of after casting/forging processes such as heat treatment, annealing, passivation, TIG./MIG welding, machining, turning, tapping, gun drilling, grinding, punching, riveting, pressing, thread rolling/ cutting to a variety of surface finishes from rough 400 grade sand blasting to superfine mirror polish finishes.

In having spirited ourselves to solving new complex production limits, we have been very fortunate to share our client's successes in their respective industries over the years. The main industries include: automotive high pressure pipe joints, industrial pressure pump components, exclusive designer airline utensils, designer furniture fittings, harnesses, medical equipment parts, architectural building envelope technology, and marine deck components just to name a few.

Combining over 36 years of experience in stainless steel production design, dedication to detail workings of fine components and a passion in streamline production management, we have achieved an outstanding value performance formula with our trusted clients and along the way have become one of the highest standards of Stainless component manufacturers in Asia.

* All manufacturing locations are certified to ISO 9001:2008.



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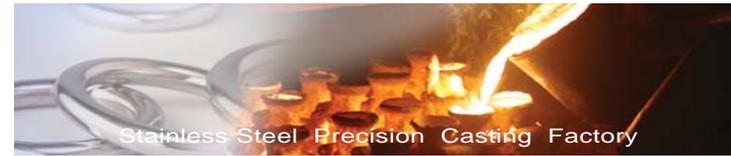
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Strengths & Capacities.

Kinzi "KOT" team's strength lies in its ability to draw from its three decades of experience of stainless steel manufacturing and sales team's dedication to the stainless steel OEM industry. By joining these factors, KOT team can produce; design and engineer in one single package to avoid miscommunications especially when proposed items are of high engineering detail.

Manufacture of Stainless steel :	Grade AISI 316, AISI 304 and A4-80 Duplex.
Production Includes :	Drop forging, Precision casting, Stamping, Thread rolling, Argon welding, CNC machining,....etc. Stainless steel engineering for architecture.
Product range :	Marine range, Architectural range, Special OEM/ODM product.
Self contained Molding department :	more than 30 technicians manufacturing our own range of Mouldings
Facility and Area :	Ratchaburi Thailand with 50,000 square meters
Staff :	Over 600 employees operating in 3 shifts, 24 hours/day
Capacity :	900 tons of high quality stainless steel production/year
Testing facilities :	Hardness testing, tensile strength testing, chemical composition testing, etc.

*All manufacturing locations are certified to ISO 9001 : 2000.



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" Production "

Quality & Production Kinzi factory



Our stainless steel production focuses on four principal processes. Although a variety of additional finishing processes may be used on the end product, the main forming methods of stainless steel remain: Casting, Forging, Press forming, and Machining.

Principal Stainless Steel Forming Methods:

- Casting
- Forging
- Press forming
- Machining

Finish Details:

Once a stainless steel product goes through the above main forming methods, a variety of finishing details will follow. In this section we will cover the most common methods of stainless steel finishing processes.

- Threading
- Welding
- Surface Finish
- Passivation



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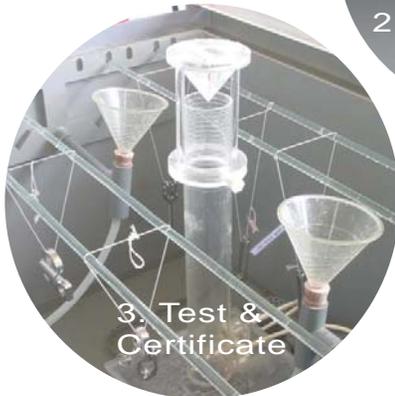
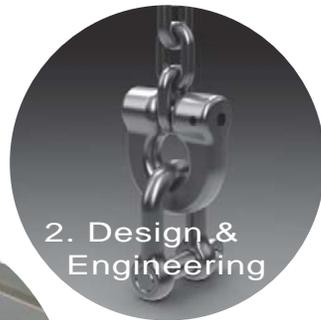
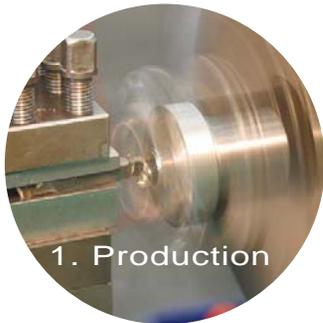
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Our services are classified in three main parts:



" Service & Support "

1) Production :

Requesting a quotation is simple: send us a physical sample or electronic drawing in .dwg / pdf file of the product you are after together with the following information:



- i. Quantity
- ii. Name of material
- iii. Method of manufacturing
- iv. Grade or UNS number
- v. Tolerancesvi. Heat treatment
- vii. End finish required
- viii. Surface conditions
- ix. Test report required
- x. Specification designation and year of issue
- xi. Special requirements or any supplementary requirements or both
- xii. Packaging methodsxiii. Shipment methods

Should you not have the above information, we will work with you to determine a best value format to suit your needs. The more detailed information we receive in regard to the use of the item will allow us to better suggest production methods to maximize value and reduce production time.

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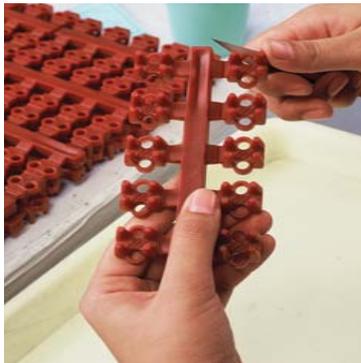
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“ Production ”

Casting

Casting (or lost wax casting) as its name implies, utilizes the free shape forming of wax followed by 5 layers of ceramic shell made of silicon mallet sand. Each layer of ceramic shell applied is of a different grade; they must cover thoroughly and be dry before the next layer is added on the top of the previous layer. When all five layers of ceramic are formed securely, the wax inside the ceramic is removed using steam, heat and pressure. Molten stainless steel is then poured into the ceramic moldings for the product to take shape.

The advantage of lost wax casting over their machined or forged counterparts is that the items can be formed to any desired shape. Also, the cost savings of this free form process is due to the fact that each piece is not machined from a single block of steel or rod bar. However, due to the nature of the lost wax casting process, lost wax products provide less strength compared to their forged or machined counterparts

Lost wax limitation.

Please be kindly noted that our lost wax limitation is the following: -

- Max. width is 390 MM
- Max. length is 840 MM
- Max. height is 190 MM
- Max. weight is 55 KGS

Material available :

- CF-8
- CF-8M
- CF-3
- CF-3M
- SCW410
- BS 3146 CLA 2
- DUPLEX 1A
- DUPLEX 4A
- AMS 5355H
- 17-4PH
- SC4140
- SC1045



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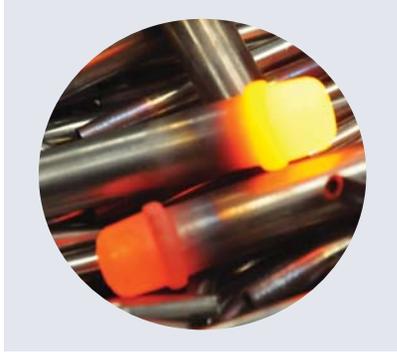
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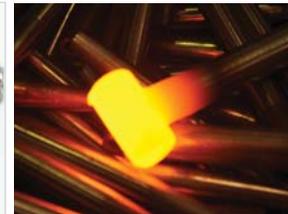


Stainless Steel Precision Casting Factory

“ Production ”

Forging

Forging utilizes mainly round bar sections, heated to 1020C forging temperature. At this temperature, the stainless is soft enough for press forming, but does not melt. Using high compression and dies, the required form of the product can be produced. The Advantages of Forging components is its strength. The molecules are highly compacted to form very high-strength components. The disadvantages of Forging components are the limited forms and shapes as well as high molding costs.



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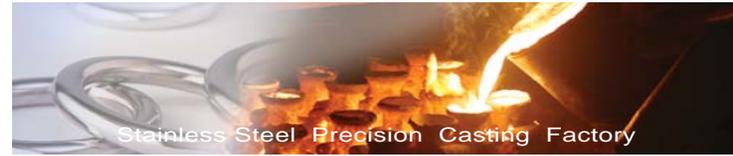
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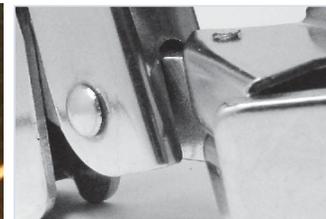


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" Production "

Press forming

Press forming refers to using processed sheets to compression "cut" by means of a Press. This form of manufacturing can be very economical as form sheets can be bent into any desired shape. However the disadvantages are the limited thickness as well as high molding cost. A variety of after-forming processes, including welding and assembly, can be added to Press forming products to achieve the desired end product.



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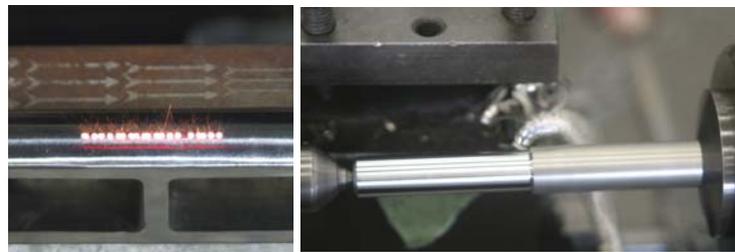
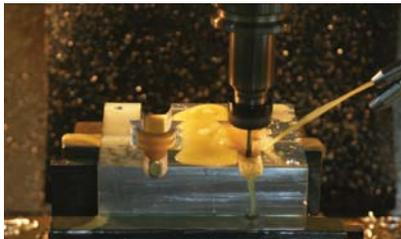
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“ Production ”

Machining

Machining consist of taking a solid block of Stainless steel, or a round bar section, and by means of cutting/ carving, called **Turning and Milling**, the desired object is achieved. Just about any shape or form can be achieved by the combination of these two processes. Never-the-less these are not ideal manufacturing procedures and depending on the form required, it may take several hours just to achieve one single item. However, in some cases and depending on the shape of the required product, machining may be the most economical and fastest production method. Also, due to the fact that machining is always done from a wrought-worked block of stainless steel or a solid round bar, the strength on the final product may be as high as that of forged products.

To overcome the constraints of one single forming method, a production design with a combination of production methods is the best solution. Please notify us in advance whenever possible when you need assistance in designing your desired product. This will reduce tool costs as well as time in production.



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" Production "

Threading

Threading can be classified in general as

- Internal threading
- External threading

In **internal threading**, threads are on the inside of a circular tube and this process is referred to as **Tapping**. **Tapping is usually preceded by drilling** to achieve the specified dimensions before the internal threads are tapped.

External threads may be produced by Rolling or Cutting. In rolling, the bar is pre-finished to specified dimensions, and using compression of two roller dies the thread is pressed into form. These threads are easy to press and are on average 25% stronger than a Cut thread. However, Roller threads require more expensive equipment and more product. Cut threads are on the other hand produced by a simple turning machine. The cost of production per unit may be high, but it is the most economical method when quantities of required pieces are small or very odd-thread specifications are required.





" Production "

Welding

Welding stainless steel is more critical than normal steel welding. In order to protect contaminating the exposed surface of heated stainless steel, a protective layer of Argon is applied. Further Fillers may be added to extend the strength of the desired products.

The two most common welding processes are TIG and MIG welding. MIG uses a higher temperature and thus results in a stronger and more expensive weld.



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" Production "

Surface Finish

Surface finish is one of the most critical areas of product design; it will determine how end users perceive the value of the product as well as product resistance to the environment and tea stain. Stainless steel being a very efficient material with its combination of resistance and strength, is used in a variety of functions and locations. This can range from high pressure chemical tanks to restaurant table spoons.

Deciding on a product's finished surface is best achieved by considering the environment where the item will be used. As a general rule of thumb, the finer the surface, the more the cost of manufacturing as well as better Corrosion resistance. Aesthetically it is hard to determine since 'beauty is in the eye of the beholder'. However looking through sample pictures will show a cross section of expected finishes most commonly used in Stainless steel components.

The most finishes on stainless steel popular surface are:

- >>> Mirror polished finish
- >>> Machine finish
- >>> Matt finish



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" Production "

The most finishes on stainless steel popular surface are:

Surface Finish



>>> **Mirror polished finish**

Mirror polished finish is the most expensive of all finishes. It involves several layers of fine grinding and waxing to arrive at a mirror exterior. Due to the fine finish it is least susceptible to tea stain forming. For this reason marine fittings, which are exposed to sea water, are finished this way.

>>> **Machine finish**

Machine finish is turned (cut) on a Lathe. This results in a very uniform, lined finish and thus has a very mechanical look to it. Most Architectural projects choose it for aesthetic effects.



>>> **Matt finish**

Matt finish is the cheap cousin of machined finish. It uses a satin grade of 800 rollers to polish; it provides a non-reflective surface similar to Machined finish, but is much cheaper to do.



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The most finishes on stainless steel popular surface are:

>>> Sand blasting finish

Sand blasting finish uses a combination of blast elements; most popular are glass beads to uniformly destroy the surface; light is then reflected from within the spherically dented surface created by the blasting. This surface is very popular for interior designers for its aesthetic affect as well as its finger-print-resistant feature.



>>> Machine polished

Machine polished finish is the cheapest finish in terms of production. It uses metal beads to continuously beat the surface of the product. Cleaning agents are usually added to this procedure to reach a smooth exterior. However, for best results, Electro polish finish may be combined with machine polish to create a homogenous shiny and cost-efficient finish.



" Production "

Surface Finish



>>> Electro polished

Electro polished finish uses electricity in a tank of chemicals. Similar to a wet battery setup, the outer layer of molecules of the stainless steel product is peeled away exposing the Chromium molecules resulting in a shining and corrosion-resistance finish.



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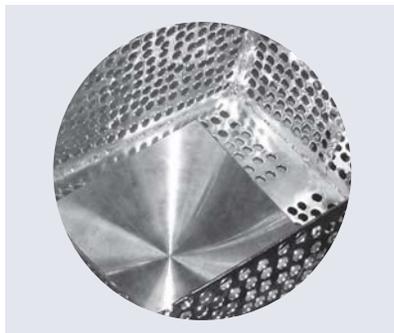
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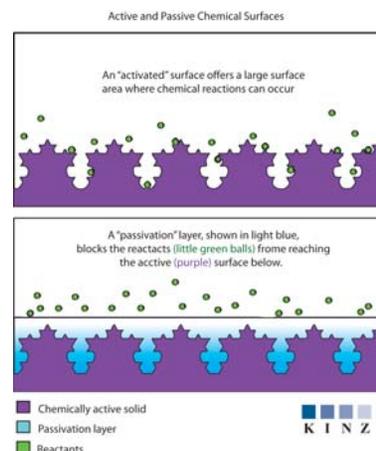
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“ Production ”



Passivation

Passivation is the process of making a material "passive" in to other contaminants. In stainless steel this is achieved by rinsing the items with a dilute solution of nitric acid and peroxide alternating with deionized water. The nitric acid and peroxide oxidizes and dissolves any impurities on the exposed surface of the stainless fitting, and the deionized water rinses away the acid and oxidized impurities. This process adds an extra layer of protection to Stainless steels surfaces.



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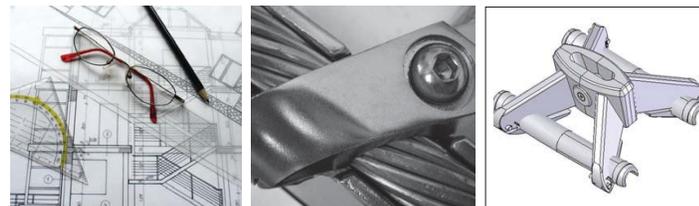
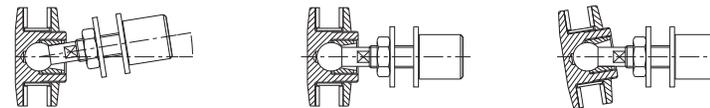
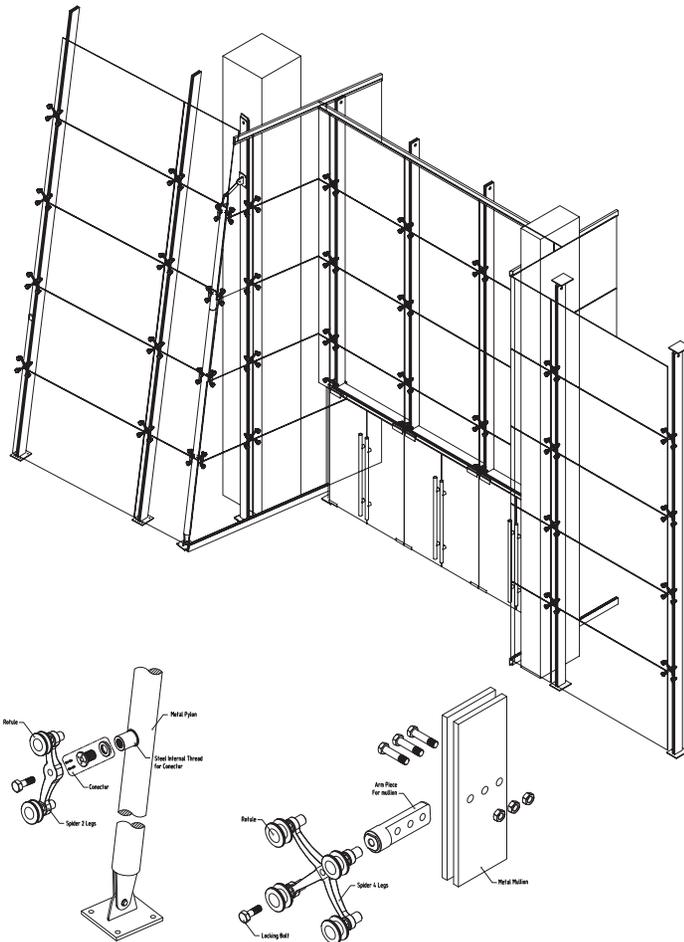
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2) Design / Engineering :

To request design or engineering help, please specify from the following list with an explanation of the industry in which your product will be used. We will work with you.



- a. Load design
- b. Material design
- c. Product marking design
- d. Production design. Modular design
- f. Aesthetic design. Packaging design



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Desire to Design

The desire to design has always been in Kinzi's blood. For every single product, a careful study of its procedure, sampling, testing and modification are in place even before any action is taken. This meticulous in-detail discussion and having an in-house molding R&D department allows the Kinzi engineers total freedom and full control for production scheduling as well as quality control for each step of the design. Such emphasis to detail is a testament to our belief that Kinzi products are affecting countless aspects of many people's lives on a daily basis.



With over 10 product designers and 30 technicians solely engaged in molding design, we believe Kinzi are among the best and fastest product developers in the world for all three (Casting, Machining, Forging) aspects of stainless steel production. With this in mind Kinzi is breeding a new generation of engineers who are highly trained in cross-trait manufacturing that will enable more efficient product design as well as manufacturing value.



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Component Design

In this section, we examine some previous design forms and data from which various project were completed. Selections of sample testing parameters are also listed under each sample exhibit.

BUTTERFLY

Technical Data

Casting material : AISI316 - DIN 1.4408
 Forging materia : AISI316 - DIN 1.4401
 Surface treatment : "E.P." (Electro polished)

Quality Assurance systems: ISO 9001 certified manufacturing factory.

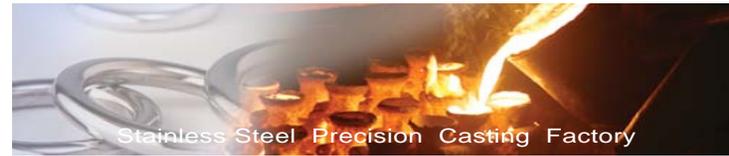
Testing procedure for butterfly 20 mm.

Test	Cable Type	Values	Parameters
Clamping Friction	19 mm. SS dyform wire rope	1 clamp (individually) F = 3 kN, per clamp Proof = 4.5 kN.	2 clamps (together) F = 6 kN. Proof = 9 kN.
	20 mm. Galvanized wire rope	F = 3 kN, per clamp Proof = 2.25 kN.	F = 3 kN. Proof = 4.5 kN.
Bending Capacity	19/20 mm.	P = 80 kN. Proof = 120 kN.	<ol style="list-style-type: none"> 1. Service load F 30 sec. 2. Proof 1.5 X F 30 sec. 3. Test to 1st slip ramp load @2 kN/min. 4. Test to sudden slip <ol style="list-style-type: none"> 1. Test to target load;hold 30 sec., release and check for any deformation 2. Test to proof, hold 30 sec., release and check for any deformation

Torque Values		
Type	Values	Remark
Dia. 19/20 mm. wire rope	Target = 25 Nm.	Test with target value, if unsuccessful increase torque to achieve successful result, but not exceeding max value
M 10 bolts	Max = 47 Nm.	

Stainless Steel "BUTTERFLY" assemblies with 19 mm. stainless steel form wire rope for compression truss.





Kinzi Factory Profile

Facade Design

Glass point fixture facade is one of the most popular modern expressions of new generation architectural art. It encompasses a discipline of structural engineering, an eye for artistic space and light representation as well as a deep understanding for logistical functionalities for the inhabitants of the building. In this section we examine in simple generic terms the most common practices of glass facade systems practiced to date.

Metal Frame Facade

Metal frame facades are fixtures of glass spider fittings fitted directly onto Metal frame trusses. These trusses may be vertical or horizontal but are consistent throughout the span of the glass facade design. These trusses again may or may not support the structural roof, but are always strong enough to carry, by themselves, the dead load exerted by the glass as well as the expected wind loads.

The metal frame system is one of the cheapest and easiest to design due to it's simple geometry and mass use of concrete or steel frame. However, the design drawback is in its visual transparency interrupted by the existing metal frame profiles and often creates a heavy visual effect for the inhabitants.

Rod System

A rod system facade uses a space frame structure principle to dissipate the loads throughout the glass facade. Its construction and design can vary from using light rods with multiple support layers, to simple, single layer with large rod. This gives architects a multitude of visual effects from very transparent to very heavy and a strong feeling to match with interior design themes. The facade span can be continuous with no metal truss interruptions and in some cases the metal frame can be avoided completely by attaching the rod frame support directly to adjacent walls or roof and ceiling. The biggest disadvantage for this design are its costly construction and preparation of individual rods and rod joiners

Cable Truss Facade

Cable truss systems cleverly utilize the unique cable properties of being flexible and its exceptional tensile strength to mass ratio. This is especially ideal when the facade design is very tall. Cables are tensioned to create sub-trusses with minimal visual obstruction. The result is a cost effective, easy-to-maintain facade construction that retains minimal vertical trusses. The disadvantage of a cable system is primarily its engineering complexity relative to the other systems. It needs to work solely on a tension design whereas rod and metal frame systems may use both tension and compression. Thus small facade design would tend to avoid this higher cost of engineering.



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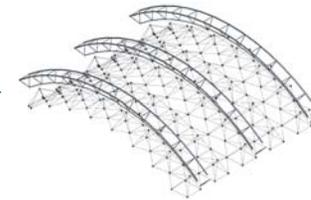




Axil System Facade

Tri-axils systems are the newest breed of glass facade design facing the new millennium. It changes the traditional vertical or horizontal flat wall-like structure to a new, multi-formed, free shape design.

The facade is free to perform a concave or spherical articulation by a clever system of multi-layered, tensioned cables. The result is a visually stunning, structurally strong masterpiece of modern art. As with all complex cable form facade designs, the disadvantages are in its engineering cost, but to many the rewards are spectacular.



Cable Net Facade

Cable net facades are a true magical display of facade engineering. It uses cables in a net form and in many cases the cable can be hidden directly onto the glass panel connecting line. Cable net systems are considered by many as the most visual free construction concept in the industry. The disadvantages are again its multiple engineering challenges.

The cable's modular elasticity factor means cables will sag and tighten greatly with different temperatures of the day. Furthermore, the massive load of the whole facade must be designed very carefully in conjunction with the structure.

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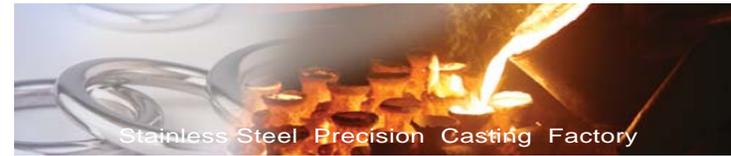
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Project Design

- NBIA (Suvarnabhumi Airport)
- Renovation of Central World Plaza
- Extension of Zen
- Suntec Singapore
- Renovation of BFM Building
- Ratchada Tower



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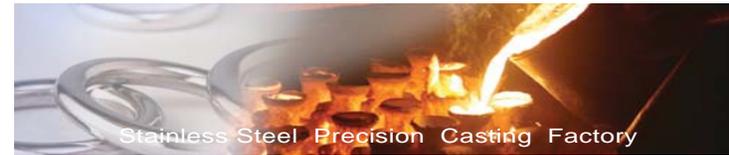
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“ Service & Support ”

3) Testing and Certificates :

Stainless steel application covers a wide range of industries. To minimize our response time to you, select from the following list of special testing procedures to best suit your needs



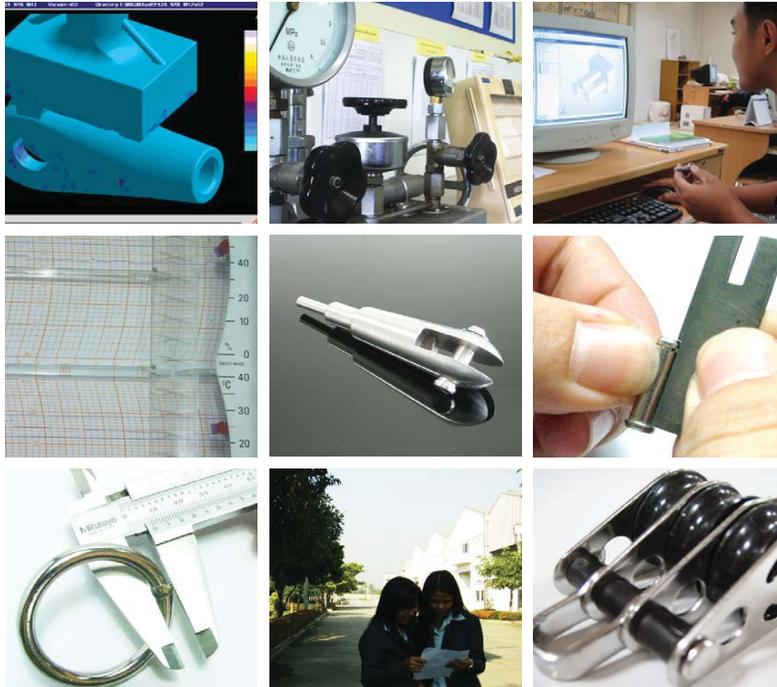
A. Destructive testing

- i. Tensile strength test
- ii. Compression test
- iii. Hydrostatic test
- iv. Impact test
- v. Flattening test
- vi. Reverse flattening test
- vii. Bend test
- viii. Salt spray test

B. Non destructive testing

- i. Electrical test pressure
- ii. Ultrasonic examination
- iii. Gage test
- iv. Hardness test
- v. Flaring test
- vi. Magnetism test
- vii. X ray test

Indicating which industry and for what purpose your certificate is required will again maximize our efficiency to best prepare your required certificate.



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Certificates that the Company has Received

ISO 9001:2008: "An international family of specifications and standards for quality assurance management systems involving a third party for inspection and registration"

The requirement standard includes the following main sections:

- Quality Management System
- Management Responsibility
- Resource Management, Product
- Realization, Measurement Analysis and Improvement.

This international standard specifies requirements for a quality management system where an organization needs to demonstrate its ability to consistently provide product that meets customer and applicable regulatory requirements and aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable regulatory requirements.

Our company formally qualified for the international ISO 9001:2008 which was accredited by United Registrar of Systems Ltd. And certified the time since 1998.

It recognizes our manufacture of stainless steel parts by lost wax casting, machining and assembly.

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ISO/IEC 17025:

“A general requirement for the competency of testing and calibration laboratories” It contains all of the requirements that testing and calibration laboratories need to meet the customers and regulators. Accreditation to ISO/IEC 17025 requires:

-The laboratory has a quality system meeting requirements of ISO 9001.

-The lab facility has adequate equipment to perform its testing or calibration tasks.

-The lab facility has adequate laboratory personnel with the competence to perform the calibration and testing.

We also qualified for ISO/IEC 17025 which was accredited by Thai Industrial Standards Institute April 21, 2006. It recognizes our testing and calibration laboratories; mechanical properties testing and chemical composition testing.

Kinzi Factory Profile

Prepared by

Matanee

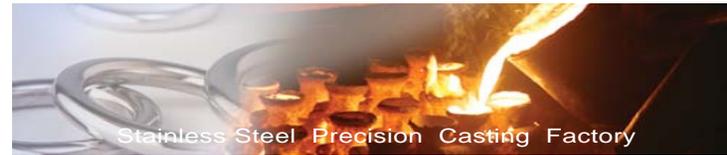
Date

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Kinzi Factory Profile

“ Service & Support ”

Green Industry

We also qualified for Green Industry which was accredited by Thai Industrial Standards Institute Aug 4, 2014. by the development of the establishment. Green industry to the environment and society.



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Date

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Document number

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Certificates that we can provide to the customers

Hereunder are the certificates that we can provide to the customers. We normally send by PDF file so that the customers can print out and use as the original document.



" Service & Support "

- 1. Breaking Load and Material Certificate (Class 1):**
 This certificate certifies the breaking load and standard material composition of products. We issue one certificate for every size of each item. The casting sections are examined with spectra-analysis for their chemical composition and tested under our company lab settings by a qualified person, at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $45\% \pm 10\%$. The non-casting sections are certified by their respective suppliers. * This type of certificate is free of charge.
- 2. Breaking Load and Material Certificate (Class 2):**
 This certificate is similar to the Class 1 Certificate but includes the issue date and invoice no. *We will charge US\$15 per item.
- 3. Chemical Analysis Certificate (Class 3):**
 This certificate certifies the actual chemical analysis result. It also includes the issue date and invoice no. The products are examined with spectra-analysis for their chemical composition and tested under our company lab settings by a qualified person, at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $45\% \pm 10\%$. * We will charge US\$35 per item tested.
- 4. Breaking Load Certificate (Class 4):**
 This certificate certifies the actual breaking load testing. It also includes the issue date and invoice no. We will charge US\$35 per item Specific gravity of solution range from 1.0255 to 1.0400 at 25°C (77°F) The certificate also includes the issue date and invoice no. * We will charge US\$35 per item tested.
- 5. Salt Spray Report (Class 5):**
 This report shows the salt spray testing for over 500 hours with the following standard testing (ASTM B117-03):

 - Concentration of $5 \pm 1\%$ salt solution
 - The pH of solution range from 6.5 to 7.2
 - Temperature $35 \pm 1.1-1.7^{\circ}\text{C}$ ($95 \pm 2-3^{\circ}\text{F}$) salt spray chamber
 - Specific gravity of solution range from 1.0255 to 1.0400 at 25°C (77°F)

* We will charge US\$35 per item tested.



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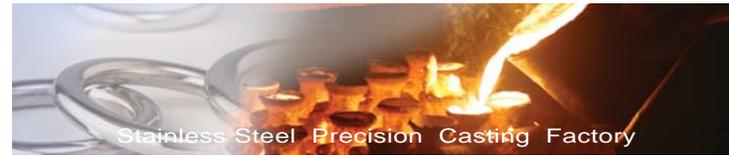
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