

Time Co., Ltd



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| President | Mr. Hideaki Yamauchi |
| Established | 1964 |
| Capital | 30,000,000JPY |
| Employees | 45 |
| Address | 73-48 Nutanishi-Cho Obara Mihara-City, Hiroshima-Pref. 729-0473 Japan |
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Quality Management Certifications

○ISO9001

Office / Plant

Hiroshima head office and Factory

Core Technologies and Capabilities

Semiconductor and liquid crystalline production device parts processing and other precision machine assembling. Trust development of the scientific research apparatus mainly on an accelerator.

Materials

Aluminum, Copper

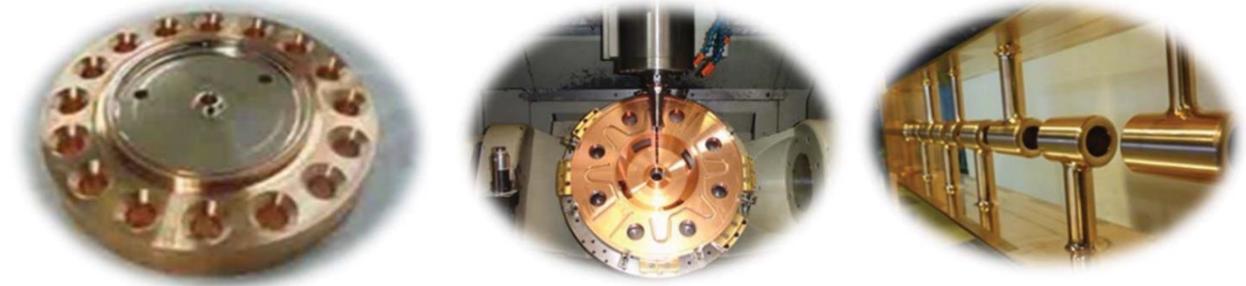
Strengths and Competitive Advantage

Since TIME was founded, we have offered high precision machinery techniques to fabricate specially designed products on demand. Around fifteen years ago, we started industrial-academic alliance with Tokyo Institute of Technology (TITech), who is promoting researches on innovative accelerators. To achieve efficient acceleration of charged particles, accurate machining is indispensable. Our high precision machinery technique has been developed to realize micron level cutting accuracy for the fabrication of various types of accelerators, since the collaboration was initiated. Under the collaboration with TITech, the first radio frequency quadrupole (RFQ) was built in 2005. In 2008, we developed the low cost drift tube linear accelerator (DTL).

We have begun providing machining of related small parts and our business in the accelerator field is successfully expanding. Recently we are focusing on developing compact electron beam sterilization accelerators with patented technologies as our own products



Strengths and Competitive Advantage



○TVFS (Time Various Function System)

【Technology】

TVFS is the enhanced technology based on friction stir welding (FSW). To form cooling channels, a mother plate is pre-machined and a top plate is welded on it by FSW. Another plate can be stacked on the top plate as well by FSW. The TVFS helps to reinforce mechanical strength of the product. As a result, the formed cooling channels can accommodate high pressure medium flows with stringently tight condition. Three dimensional cooling passage can be realized by stacking multiple layer plates.

【Advantages】

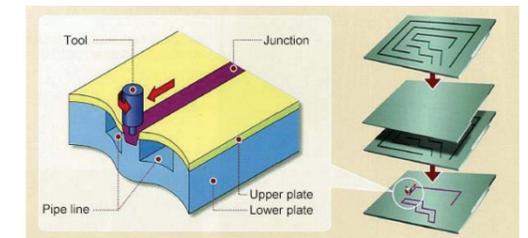
1. Excellent reliability: Welded portion has a strength equivalent to mother material and medium leakage can be eliminated.
2. Good heat exchange efficiency: TVFS can be applied to copper and aluminum alloy and is suitable to fabricate heat exchange plates with flexible channel patterns.
3. Space saving: TVFS can eliminate complex conventional three dimensional plumbing which may sacrifice the space. The cooling channel is shaped and connected by only stacked plates. Also the channel can be built in the product's surface.
4. Reduction of total cost: Required assembling time of the external fixtures can be reduced since plumbing work is unnecessary. Thus, it is suitable for a mass production instrument.
5. Recycling: Adhesive is not used, thus it is 100% recyclable



Heat exchange plate for semiconductor plants



Thermal control plate for liquid crystal display production



TVFS Time Various Functions System

Main Equipment

| Equipment (Maker) | Capability | Number |
|--|---|--------|
| 5-Axis Vertical Multitasking Machine (Okuma) | dia.2000×1600 | 1 |
| Machining Center | MAX:3050×865×695 | 14 |
| 5-face milling machine | MAX:5200×2500×1200 | 3 |
| CNC Vertical Lathe | MAX:1000×840 | 5 |
| Surface Grinding Machine | MAX:1900×920×390 | 4 |
| CNC Coordinate Measuring Machine | MAX:1005×905×605 | 2 |
| Robocut (wire cut) (FANUC) | 600×400×300 | 1 |
| Super Precision Mirror Polishing Machine | dia.210 | 1 |
| 3D CAD-CAM (Graphic Products) | 1set | 1 |
| CAD (AutoCAD) | | 1 |
| 3D CAD (solidWorks2013) | | 1 |
| 3D CAM (Mastercam X7(16.0.7.3)) | | 1 |
| Aluminum Annealing Furnace (Nihon Denro) | W3090×L5680×H1185 MAX400 degrees Celsius | 2 |