

Double Belt Press Line



IPCO

Heating area	Cooling area	Reserve area
<ul style="list-style-type: none"> Length 2000mm Operating temperature range ~380°C linear pressure ~30kN/m 	<ul style="list-style-type: none"> Length 750mm Coolant temperature 35~50°C Pressure ~5MPa 	<ul style="list-style-type: none"> Length 1000mm Belt velocity 0.1~5m/min

Autoclave



ASHIDA MFG.CO.,LTD. ACS-5903

<ul style="list-style-type: none"> Inner volume φ1000×L1500mm Maximum temperature ~400°C 	<ul style="list-style-type: none"> Maximum pressure 2.0MPa Air or nitrogen
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Resin Transfer Molding Unit



Krauss Maffei SFT-MX

<ul style="list-style-type: none"> Maximum force 6000kN (600tf) Minimum force 60kN (6tf) Maximum stroke 1500mm 	<ul style="list-style-type: none"> Maximum upper mold weight 10t Maximum lower mold weight 20t Table size W3000×D2000mm
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Metric Oven



<p>Asahi Kagaku Co., Ltd. MT-3045/3</p> <ul style="list-style-type: none"> Operating temperature range 23~250°C 	<ul style="list-style-type: none"> Inside dimensions W3000×D4500×H2000mm Heater 36kw×3 Interior SUS304 Steel plate
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Thermoplastic Composite Molding Cell



200t Hydraulic Press Sanki Seiko Co., Ltd. SFT-MX	Material Handling Robot KUKA KR60HA	
<ul style="list-style-type: none"> Maximum force 2000kN (200tf) Maximum stroke 800mm Table size W1200×D1000mm 	<ul style="list-style-type: none"> Maximum upper mold weight 3.0t Maximum lower mold weight 1.5t Ascending speed 270mm/min Descending speed 500mm/min 	<ul style="list-style-type: none"> Maximum reach 2033mm Maximum payload 60kgf Pose repeatability ±0.05mm

Ultrasonic opening and impregnation machine



adwelds corporation

- Recommend resin PA6
- Carbon Fiber Yarn 6K~24K
- Feedrate range 3~12m/min
- Ultrasonic opening unit output 1250W (Rated) 1500W (Continuous)
- Frequency 19.15KHz

Infrared Heater



Asano laboratories Co., Ltd.
M140116

- Working area 375×375mm
- Heater power 19.2Kw
- Number of heater 4×4
- Operating temperature range 600°C

Thermoplastic prepreg Press Molding Machine



SATOH GROUP
VP10

- Max Mold clamping force 980kN
- Max Mold opening force 283kN
- Mold opening/clamping speed 150mm/s
- Max Opening distance 80mm
- Mold Dimensions 300×300mm

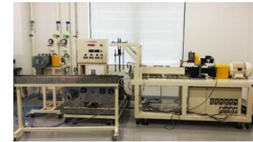
Vacuum Chamber Press



Meiki Co., Ltd.
MHPC-VF-450

- Maximum force 784kN (78.4t)
- Stroke 450mm
- Heating platen dimensions 450×450×55mm
- Ascending speed 400mm/min
- Descending speed 800mm/min

Extrusion Machine



TECHNOVEL CORPORATION
KZW20TW-45MG-NH(-600)-HKU

- Temperature control 11points
- Operating temperature range ~400°C
- Diameter of screw φ20mm
- Rotational speed max 600rpm
- Material of screw SKD11
- Number of port 5

CF Chip Tape Lay-up Machine



Shibuya Corporation

- Lay-up range 400×300mm
- Laser Air cooling fiber laser 300W
- Available tape width 6, 12, 24mm
- Control axes 4axes (X, Y, Z, θ)

Hot press machine



SHINTO Metal Industries, Ltd.
NSF-37HHC

- Inner diameter 150mm
- Pressure ~20.6MPa
- Operating temperature range ~400°C
- Clamping force 370kN
- Stroke ~200mm
- Size of mold 350×300mm

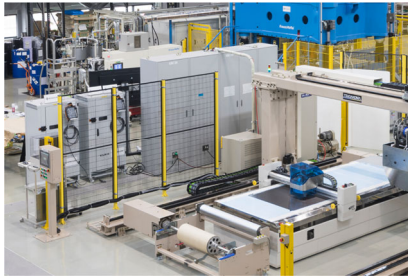
Desktop Manual Injection Molder



Toyo Seiki Seisaku-sho, Ltd.
PM-1

- Operating temperature range 20~400°C
- Extrusion speed 8~80mm/min
- Sample capacity 40cc

Automated Tape Laying system



TSUDAKOMA Corp.
TAL-2K(MUD)

- Lay-up range
1000×3000mm
- Lamination speed
40m/min
- Supply material roll diameter
maximum φ17inch

High speed Auto cutting system



Takatori Corporation
TAC-C Series

- Option
Ultrasonic Vibration Mechanism
- Cut material width
1200mm

Freezer



HOSHIZAKI ELECTRIC Co.,LTD.
PF-27CC-3.00

- Operating temperature range
-20°C

- Floor space
10 m²
- Door
W845×H1845mm

Ultrasonic welder



adwelds corporation

- Pressure force
10~1000[N]
- Output
3000W (Rating)
1500W (Continuous)
- Frequency
19.15KHz
- Effective stroke (Y-axis)
150mm (Heater not in use)
100mm (Heater in use)
- Horn movement speed
Max 200mm/s

Ultrasonic welding machine



N-futre
W3040-20

- Clamp capacity
1000N
- Power
1200W
- Oscillating frequency
20KHz

Ultrasonic welding machine



Seidensha Electronics Co., Ltd.
SONOPET DΣ2210SL/DΣ80SL

- Clamp capacity
500~3400N
- Power
2000W
- Oscillating frequency
19.15KHz

Electromagnetic induction welder



Seidensha Electronics Co., Ltd.
UHT-5000

- Output
5000W
- Generation frequency
30KHz
- Cooling method
Water cooling

Dryer and Oven

SPRAY DRYER

Yamato Scientific Co., Ltd.
ADL311



- Moisture evaporation amount
Maximum 1300mL/h
- Temperature control range
40~220°C (inlet temperature),
0~60°C (outlet temperature)
- Temperature control precision
Inlet temperature ±1°C
- Drying air amount adjustment range
0~0.7m³/min
- Spray air pressure adjustment range
0~0.3MPa
- Liquid pump flow range
0~26mL/min

Vacuum drying oven

Yamato Scientific Co., Ltd.
DP610



- Operating temperature range
40~200°C
- Capacity
216ℓ
- Size of inside
W600×D600×H600mm

Test and Inspection

Universal testing machine

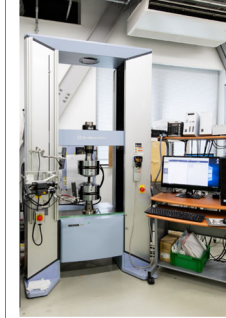
SHIMADZU CORPORATION
AG-300kN Xplus



- Load capacity
300kN
- Stroke
1100mm

Universal testing machine

SHIMADZU CORPORATION
AG-100kN Xplus



- Load capacity
100kN
- Stroke
600mm
- Thermostatic chamber
TCE-N300
- Operating temperature range
-70~200°C

High Temperature Oven

AS ONE
HTO-450S



- Operating temperature range
50~650°C
- Capacity
91ℓ
- Size of inside
W450×D450×H450mm

Hot air circulating furnace

Yamato Scientific Co., Ltd.
DKG610



- Operating temperature range
30~260°C
- Capacity
150ℓ
- Size of inside
W600×D500×H500mm

Universal testing machine

SHIMADZU CORPORATION
AG-5kN Xplus



- Load capacity
5kN
- Stroke
420mm

Hydraulic universal testing machine

SHIMADZU CORPORATION
UH-1000kNX



- Load capacity
1000kN
- Effective width of the table
750×750mm
- Jig for bending test
- Maximum span
3m
- Maximum width
400mm

Hot air circulating furnace



ESPEC CORP.
PHH-102

- Operating temperature range
~300°C

- Capacity
91ℓ
- Inside dimensions
W450×H450×D450mm

Electric muffle furnace

Yamato Scientific Co., Ltd.
FO200



- Operating temperature range
100~1150°C
- Capacity
216ℓ
- Size of inside
W600×D600×H600mm

Universal testing machine

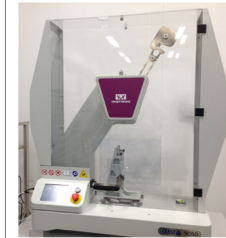
Zwick Roell
Alround Line Floor Z250SE



- Load capacity
250kN
- Weight limit of sample
- Operating temperature range
-80~250°C

Charpy impact machine

INSTRON
CEAST 9050/DAS 64S



- Hammer energy
0.5~10J
- Swing-down angle
150°
- Load capacity
2kN

Test and Inspection

3D scanner type three-dimensional measuring machine



KEYENCE
VL-500

- Measurement resolution
16 million points
- Measuring range
W580×D300×H20mm
- Repeatability
2μm
- Stage load capacity
50kg
- Object to be measured
metal, plastic, etc.

Laser Scan Arm



FARO
Edge 2.7m

- Number of controlled axis
7
- Repeat accuracy
0.029mm
- Contact / Contactless

Optical microscope



KEYENCE
VHX-2000

- Camera frame rate
28F/s
- Image sensor
1/1.8-inch, 2.11 million-pixel CCD

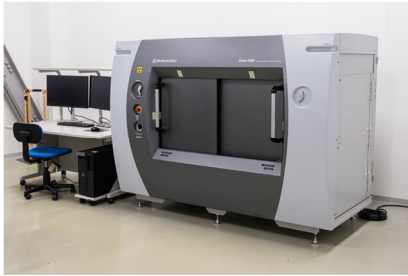
Optical microscope



KEYENCE
VHX-8000

- Camera frame rate
50F/s
- Image sensor
1/1.8 type 3.19 million pixels CMOS

Phase-Contrast X-ray CT System



SHIMADZU CORPORATION
Xctal 5000

Max. Scanning Range

- Fluoroscopy
100×100mm
- Fiber Orientation Fluoroscopy
Φ100mm
- CT Scan
Φ100×H100mm
- Fiber Orientation CT Scan
Φ85×H85mm

Invert microscope



ZEISS
Axiovert A1 Mat/ICc5

- Eyepiece
x10, φ30mm
- Objective
x2.5, x5, x10, x20, x50

Laser Confocal Microscopes



OLYMPUS
OLS4100

- Optical zoom
x1~8

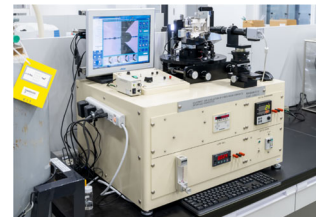
3D X-ray microscopy



ZEISS
Xradia XRM-410 Versa

- Resolution
0.9μm
- Maximum size of sample
φ300mm
- Weight limit of sample
15kg

Microdroplet test machine



Tohei-sangyo Co. Ltd.
HM410

- Temperature
~400°C
- Air or Nitrogen
- Load capacity
500gf
- Optical scope / CCD sensor

Scanning Electron Microscope



KEYENCE
VE-9800

- Magnification
x15~x100000
- Reflected electron detector
- Low-vacuum system
260Pa

Test and Inspection

Heat distortion tester



Imoto machinery Co., LTD.
IMC-15E0-A

- Minimum distortion
0.01mm
- Temperature
~400°C
- Bending stress
A 1.8MPa
B 0.45MPa
C 8MPa

Microhardness tester



ELIONIX INC.
ENT-1100b/a

- Load capacity
0.098~980mN
- Resolution capability
40nN
- Depth
0~20µm
- Berkovich indenter
115 deg
- Magnification
x420

Test and Inspection

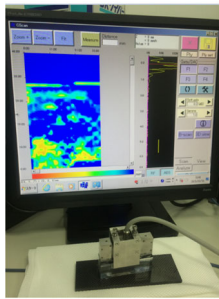
Linear torsion type dynamic fatigue testing machine



INSTRON
E3000

- Dynamic load capacity (linear)
±3000N
- Static load capacity (linear)
±2100N
- Dynamic load capacity (torsion)
±25Nm
- Static load capacity (torsion)
±18Nm
- Drive range
60mm (±30mm)
- Thermostatic chamber
• Operating temperature range
-40~250°C

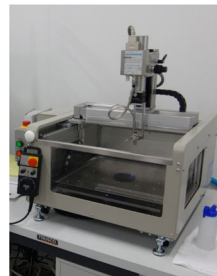
3D Ultrasonic inspection



TOSHIBA
Matrixeye NX

- Element number
64ch
- Frequency
5MHz

Desktop Ultrasonic Detector & Imaging System



KJTD Co., Ltd.
SDSIII-2300

- Scanning mode
Plane scanning (X-Y mode)
- Scanning range
X,Y 300mm (automatic scanning)
Z 100mm (hand-operated Z)
- Probe
3.5MHz, 5MHz, 10MHz,
25MHz, 50MHz
- Data Collection Points
Max 40,000,000points
(per one scanning)

Linear torsion type dynamic fatigue testing machine



INSTRON
E20000

- Dynamic load capacity (linear)
20kN (tension or compression)
- Static load capacity (linear)
±14kN
- Torsion load capacity
±130Nm
- Drive range
75mm

Contact Angle Meter



NiCK Corporation
LSE-B100

- CMOS camera
Digital output (60fps)
640×480pixel
- Sample Stage Size
100×100mm
- Stage Stroke
X-axis 70mm, Z-axis 20mm
- Available Solid Sample Size
100×100×t15mm
- Measuring Range
0~180°

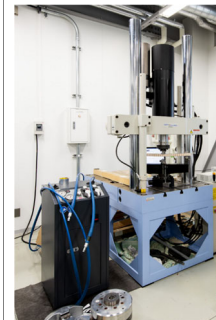
Temperature and humidity testing chamber



ESPEC
LHU-113

- Operating temperature range
-20~+85°C
- Capacity
91ℓ
- Size of inside
W500×H600×D390mm

Hydraulic fatigue testing machine



SHIMADZU CORPORATION

- Load capacity
dynamic ±200kN, static ±200kN
- Stroke in fatigue test
±50mm
- Distance between columns
560mm
- Stroke
170~1110mm

Hydraulic type fatigue testing machine



INSTRON
8804

- Load capacity
500kN
- Stroke
±75mm
- Table size
3000×870mm

Large scale Dynamic mechanical analyzer



Metravib
DMA+2000

- Load range
0.005~2000N
- Resolution
< 0.0003N
- Strain decomposition
2µm
- Frequency range
0.00001~1,000Hz
- Measurement temperature range
-150~500°C
- Measurement mode
tension, compression, shear, 3-point bending, bending at both ends

Permeability measuring device



Composite Integrity
EASYPEARM

- Sample dimensions
In plane (Kx, Ky) □300×300mm
Thickness (Kz) Φ200mm
- Thickness
1~30mm
- Measurement range
Kx, Ky 1.10⁻¹²㎡~1.10⁻⁹㎡
Kz ~10⁻¹⁴㎡

Abrasive waterjet cutting system



Flow
Mach3 1007b

- Working area
X 1000mm, Y 700mm
- Z axis stroke
200mm
- Processing speed
maximum 7.6m/min
- Nozzle moving speed
maximum 12.7m/min

Laser Cutting Machine



Shibuya Corporation
SPF4320

- Laser power
1kW
- Working area
2030×1030mm
- Speed
~50m/min
- Number of controlled axis
3

Industrial Robots



KUKA
KR 240 R3330

- Maximum reach
3326mm
- Maximum payload
240kgf
- Pose repeatability
±0.08mm

Others

- Diamond cutter
- Polishing machine
- Milling machine
- Lathe
- Drilling machine
- Bandsaw

Nuclear magnetic resonance



JEOL RESONANCE
FT-NMR 500MHz

- SCM
11.74T
- Inner diameter
54/89mm

Ultraviolet -visible-near infrared spectrophotometer



jasco
V-670DS

- Double beam type
- Wavelength
190~2700nm
- Repeat accuracy
±0.05nm

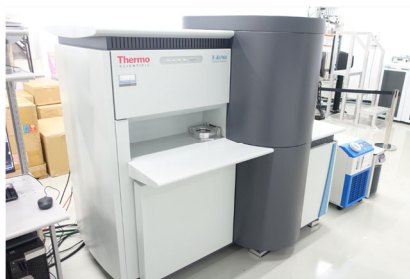
Near-infrared fluorescence spectrophotometer



jasco
FP-860ST

- Wavelength
190~320nm
- Accuracy
±0.3nm (ultraviolet-visible)
±0.1 (near infrared)

X-ray photoelectron spectrometer



thermo fisher SCIENTIFIC
K-Alpha

- Selectable area spectroscopy
- Sputter depth profiling
- Micro-focused monochromator
- Snapshot acquisition
- High-resolution chemical state spectroscopy/Insulator analysis
- Quantitative chemical imaging

Micro FT-IR



thermo fisher SCIENTIFIC
FT-IR Nicolet iN10 MX

- S/N
25000 : 1
- Scan method
Transmission, Reflection, ATR
- Size of table
70×127mm

Macro FT-IR



thermo fisher SCIENTIFIC
FT-IR Nicolet iS50

- S/N
55000 : 1
- Resolution
0.09cm-1cm
- Accuracy
0.01cm-1cm
- High-speed scanning (at 32cm-1)
95spectrum/sec

Field Emission Scanning Electron Microscope



JEOL RESONANCE
JSM-7100F (TTL, EDS)

- Resolution
1.2nm (30kV) 3.0nm (1kV)
- Magnification
x10~x1,000,000

X-ray diffractometer



Malvern Panalytical Ltd. Areis

- Tube setting
40 kV
- Goniometer Radius
145 mm
- Maximum 2θ range
-4° < 2θ ≤ 142°
- Goniometer Configuration
Vertical goniometer, coupled and decoupled θ-θ, samples always horizontal
- Achievable resolution
< 0.04° 2θ on LaB6 (with 0.01 rad Soller slits)

Laser Raman spectrophotometer



Nanophoton
RAMANtouch

- Laser wavelength
785nm 500mW
- Insonification
Point / Line

Differential scanning calorimeter

Hitachi High-Tech Corporation
DSC600



- Heat Flux
- Auto sampler
Max. 48samples
- Operating temperature range
-80~500°C
- Accuracy
±0.05°C
- temperature modulated DSC method
- Analysis of reaction kinetics

Capillary Rheometer Flowtester

SHIMADZU CORPORATION
CFT-500D



- Operating temperature range
+20~400°C
- Pressure
0.4903~49.03Mp
- Accuracy
+1%

Compact Rheometer

Anton Paar
MCR302



- Rotational speed
3000rpm
- Food type Peltier temperature control
-40~200°C
- Convection oven type temperature control
-130~620°C
- Extension meter system

Thermogravimeter



TA Instruments
Discovery TGA

- Auto sampler
Max. 25samples

- Heating rate
0.1~500°C/min
- Accuracy
±1.0°C
- Operating temperature range
Ambient ~1200°C
- Temperature modulation

Thermalmechanical analyzer



TA Instruments
TMA Q400

- Accuracy
±1.0°C

- Operating temperature range
-150~1000°C
- Maximum Sample Size
L26.0×T1.0×W4.7mm

Dynamicmechanical analyzer



TA Instruments
DMA Q800

- Frequency range
0.001~200Hz

- Operating temperature range
-160~600°C
- Output Values
Strage Modulud, Loss Modulus, Tan Delta, Creep Compliance, etc

Gas Displacement pycnometry system



Micromeritics
ACCUPYC II

- Max Volume
1 cm³

- Atmospheric condition
N₂
- Sample
Fiber, Powder, Bulk

Microtome



YAMATO KOHKI INDUSTRIAL CO., LTD.
RX-860

- Rotary type
- Thin section
0.1~500µm
- Possible to spray liquid nitrogen

High performance liquid chromatography

SHIMADZU CORPORATION

Prominence



- Flow rate
0.0001~10ml
- Pressure limit
40MPa
- Plunger volume
10µl×2

Gas Chromatograph Mass Spectrometer

SHIMADZU CORPORATION

GCMS-QP2010 Ultra



- Scan speed
20,000µ/sec
- Resolution
R_z≥2M (FWHM)
- Mass range
m/z 1.5~1090
- Stability
±0.1µ/48hr