ACCESSR

Product catalog

Automated Research System & Platform

www.accessr-energy.eu

Located in France, ACCESSR is the official distributor of MTI Corporation.

This catalog is not exhaustive, it highlights examples of automated systems and autonomous platforms that can be tailored to your research needs.

Customization available, please contact us to discuss your specific requirements in detail.

Table of CONTENT

ACCESSR

MTI KJ GROUP

Email: contact@accessr-energy.eu
Telephone: +33 (0)5 63 76 08 67
Website: www.accessr-energy.eu
Address: 8 Av. Pierre-Gilles de Gennes 81000, Albi, France

Ball Milling

High Throughput Planetary Ball Mill - MSK SFM 13S

- Function : Multi-jar planetary milling
- Grinding Stations : 4 stations (4 jars per station)
- Jar Capacity: 10 mL
- Throughput :up to 16 samples
- Revolution : 30 – 324 RPM
- Self-rotation : 60 – 648 RPM
- Speed Ratio (Revolution To Self-rotation) : 1:2

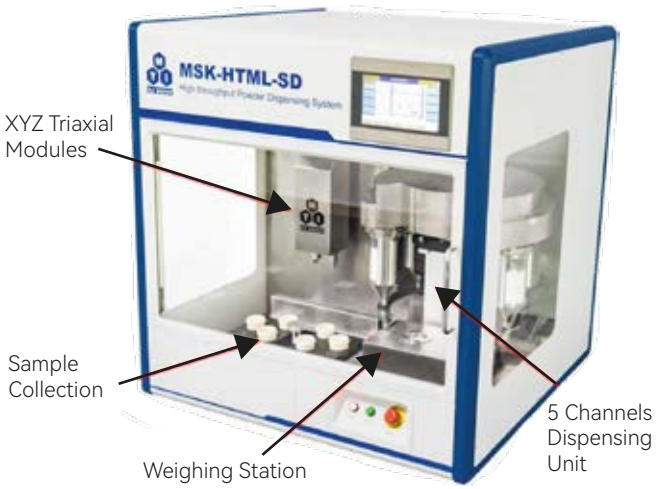
Advanced Planetary Ball Mill with Independent Speed Control and Optional Milling Jars - MSK-SFM-15

Disc Revolution and Jar Rotation Controlled Independently

- Function : Multi-jar planetary milling with independent speed control
- Grinding Stations : 4 stations (up to 8 jars per station)
- Jar Capacity : 500 mL (1 jars/station); 25 mL (8 jars/station)
- Throughput : up to 32 samples
- Revolution : 10 - 400 RPM
- Self-rotation : 50 – 1600 RPM
- Speed Ratio : 1 – 3 (adjustable)

Powder Dispensing

5 Channel Solid Powder Dispenser - MSK HTML SD



- Dispensing Containers : 5 tanks
- Tank volume : 425 ml each
- Batch capacity : 6 samples
- Sample container volume : 30 ml
- Dispensing weight : 20 mg – 13 g
- Weight Precision : ± 2 mg resolution
- Control : Touchscreen interface with programmable ratio settings
- Automation : powder dispensing, sample movement from and to loading station

16 Channel Powder Dispensing System - AM PD16

- Dispensing Containers : 16 glass material feeders
- Glass Feeder Volume : 500 mL
- Feeding Capacity : 10 mg - 100 g
- Feeding Accuracy : ± 1 mg
- Sample Collection Tray : up to 48 different sample compositions (30 mL per sample)
- Control : Touchscreen programmable
- Automation : Fully automated sequential dispensing with liquid injection and ultrasonic mixing at the end
- Glovebox Compatible

Pellet Pressing

Automatically Pellet Pressing System - AM-24T-12

- Batch Capacity : 12 samples
- Die Size : Φ 10 mm
- Die Material : Steel (HRC 60 - 62)
- Pressure : max. 3000 MPa
- Loading : max. 24 T
- Throughput : 12 samples in 120 – 130 min
- Built-in Robotic Arm
- Automation : powder feeding, liquid injection, pressing die assembly, pressing die transporting, pressing, demolding, pellet ejection,transfer to crucible, automatic suction cup cleaning and drying
- Control : Remote PC interface with programmable pressure, dwell time, and die cleaning cycles

Compact Automated Pellet Press (6-sample, 8 T) - AM YLJ 8T

- Batch Capacity : up to 6 samples
- Die Size : Φ 10 mm
- Max Pressure : 1000 MPa
- Throughput : 6 samples in 60 min
- Automation : Rod tapping ensures mold feeding, liquid injection, pressing die assembly, pressing die transporting, pressing, demolding, pellet ejection and transfer to crucible
- Control : PC or LCD touchscreen programmable control of pressing pressure and dwell time
- Glovebox Compatible

Furnace

6” Automated Tube Furnace - GSL-1200XS6-ASD

- Quartz Tube : 152 mm OD x 143 mm ID x 700 mm L
- Working Temperature : max. 1200 ℃ < 1 h ; Continuous : 1100 ℃
- Heating Rate : ≤ 10 ℃/min
- Temperature Control Accuracy : ± 1 ℃
- Heating Zones: Dual (175 mm each)
- Gas Flow Rate : 1 – 1000 sccm
- Quartz Sample stage : 8 cavities for 8 crucibles
- Rotary Vane Vacuum Pump : 240 L/min
- Vacuum Level : 3 • 10^{-3} torr by rotary vane pump
- Water chiller (not included) : 10 L/min with 5 – 25 ℃ chilled water
- Automation : Full process automation including purge, gas flow, vacuum, heating and cooling (sample stage loading optional with robotic arm)
- Robotic Arm (Optional) : max. load 5 kg; Movement Accuracy : ± 0.02 mm
- Control : Integrated touchscreen and PC control

1200℃ 8 Channel Tube Furnace for Hi-Throughput Annealing - GSL-1200X-MGI-8

- Channels : 8 tubes
- Tube Material : Quartz
- Tube Dimensions : 20 mm OD x 17 mm ID x 192 mm L
- Woking Temperature : max. 1200 ℃ < 1 h ; Continuous : max. 1100 ℃
- Heating Rate : 10 ℃/min
- Temperature Control Accuracy : ± 1 ℃
- Control : PC
- Vacuum pump is included
- Gas flow controller at extra cost

1500 °C Compact Bottom Loading Box Furnace - KSL 1500X BSA

- Working Temperature : max 1500 °C < 0.5 h; Continous : max. 1400 °C
- Heating Rate : 10 °C/min
- Chamber Size : 150mm × 150mm × 150 mm
- Design : Bottom-loading for uniform heating
- Insulation: Alumina fiber insulation with double-layer steel housing
- Temperature Accuracy : ± 1 °C
- Cooling : Built-in air cooling fans
- Cooling rate : ≤ 20 °C/s
- Automation : sample loading and unloading

1700 °C Max Automated 80 mm Tube Furnace for AI Material Research - GSL-1700X-ASD-80

- Al2O3 tube : 80 mm OD x 74 mm ID x 1000 mm L
- Working Temperature : max. 1700 °C < 1 h ; Continuous : 1600 °C
- Temperature Control Accuracy : ± 1 °C
- Heating Zones : Single (170 mm)
- Gas Flow Rate : 1 – 2000 sccm
- Sample Stage : 1 cavity
- Sample Stage Material : alumina or graphite
- Crucible Material : alumina or graphite
- Crucible Volume : 36 mL
- Rotary Vane Vacuum Pump : 156 L/min
- Vacuum Level : ≤ $1 \cdot 10^{-4}$ torr (vacuum level depends on the vacuum pump)
- Water chiller : 16 L/min with 5 – 30 °C chilled water
- Automation : Full process automation including purge, gas flow, vacuum, heating and cooling (sample stage loading optional with robotic arm)
- Control : Integrated touchscreen and PC control

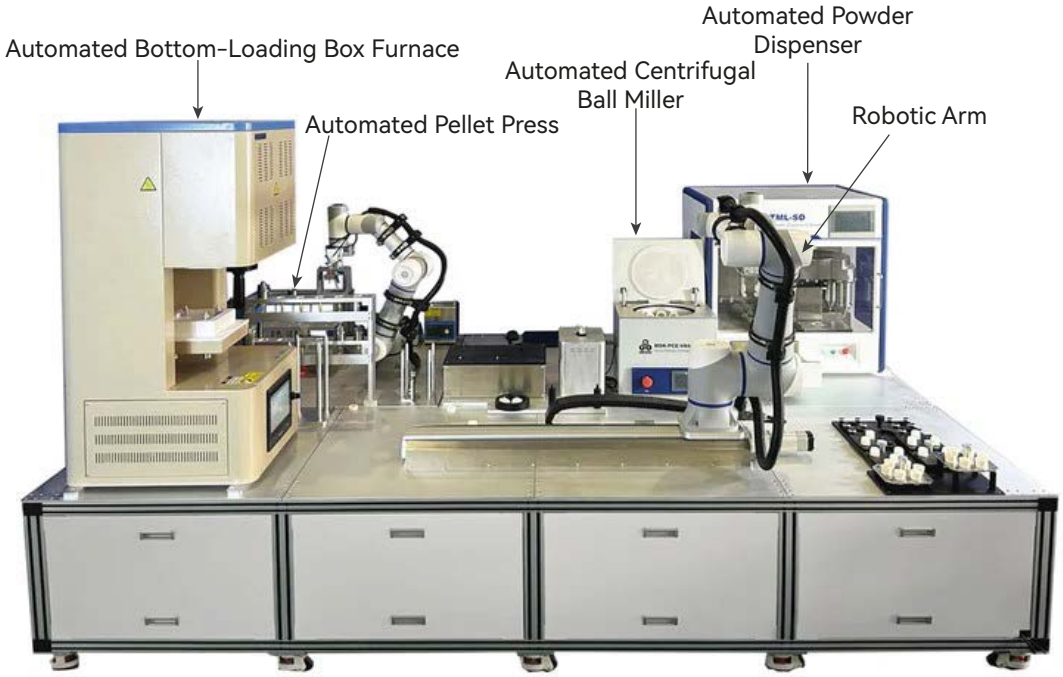
Sample Polishing

Automated Lapping and Polishing Station with Hot Sample Mounting - UNIPOL-1210M

- Mounting Press Capacity : 6 samples per cycle
- Mounting Press Diameter : ≤ 25 mm
- Mounting Temperature : ≤ 180 °C
- Mounting Compressed Force : 220 kg for each station
- Polish Plate Diameter : Φ 300 mm
- Polish Plate Speed : 50 – 500 RPM
- Sample Holder : Φ 30 mm x 6
- Sample Holder Speed : 10 – 60 RPM
- Polishing Unit Loading Force : 1 – 5 kg
- Fluid Supply : 4 suspensions, 1 water , grinding paste
- Automation : mounting, samples transfer to grinding/polishing plates after mounting, grinding, switching between coarse and fine abrasive papers during grinding, polishing, adjustment polishing pads for different materials, water or polishing liquid dispensing, sample transfer to the cleaning unit, ultrasonic cleaning, real – time processes monitoring

Solid-State Material Synthesis

Autonomous Platform for Solid-State Material Synthesis - AMSP02



This station consists of 4 automated units:

Automated Powder Dispenser:
Up to 15 powder materials can be dispensed into 6 containers in custom ratios
Balance Range : 20 mg to 13 000 mg
Dispersing Accuracy : ± 2 mg
Material Container Volume : 450 mL (each)

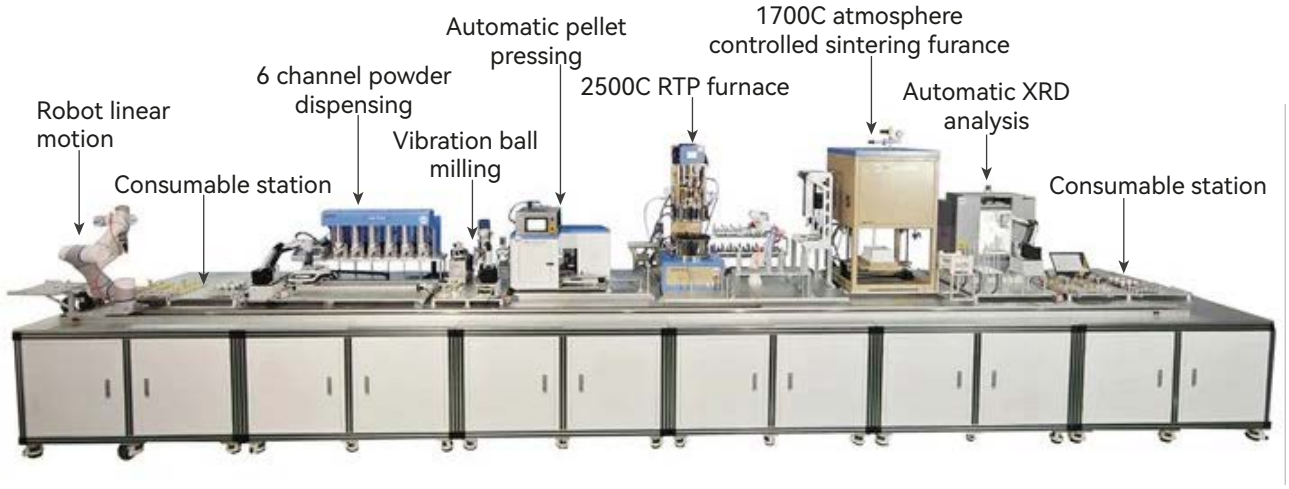
Automated Centrifugal Ball Miller :
Number of stations : 6
Ball Mill Jar Dimensions : Φ 20 mm × 25 mm (H)
Maximum Rotation Speed : 2000 RPM
Maximum Centrifugal Acceleration : 438 g

Automated Pellet Press :
Automatic Loading, Die Assembly, Pressing, and Ejection
Maximum Hydraulic Pressure : 24 T
12 Sets of Dies with Φ10 mm Core Size (Customizable at Extra Cost)
Maximum Mold Pressure Capacity : 3000 MPa

Automated Bottom-Loading Box Furnace :
Working Temperature : max. 1700 °C < 1 hour ; Continuous : max. 1600 °C
Chambers Dimensions: 200 mm × 200 mm × 200 mm

Fully Automated Vertical Vibration Crushing/Ball Milling/Mixing (Optional)

Autonomous Platform for Powder Sample Preparation with XRD Closed Loop - AMPS01



Automation :

Sample loading (assisted by robotic arm), pump-purge cycles, steady gas flow, heating, dwelling and cooling, sample retrieval (assisted by robotic arm

Machines:

6 Channel Powder Dispensing - AM-PD6

- Sample Feeding Containers : 6 glass feeder
- Glass Feeder Volume : 500 mL each
- Feeding Capacity : ≤ 100 g
- Particle Size : 10 – 100 µm
- Feeding Accuracy : ± 2 mg
- Sample Collection Container : 6 plastic containers
- Plastic Container Volume : 30 mL each
- Automation :
  Program the composition for each sample
  Place 6 empty containers on the tray
  Automated X-Y powder dispensing
  Batch completion notification

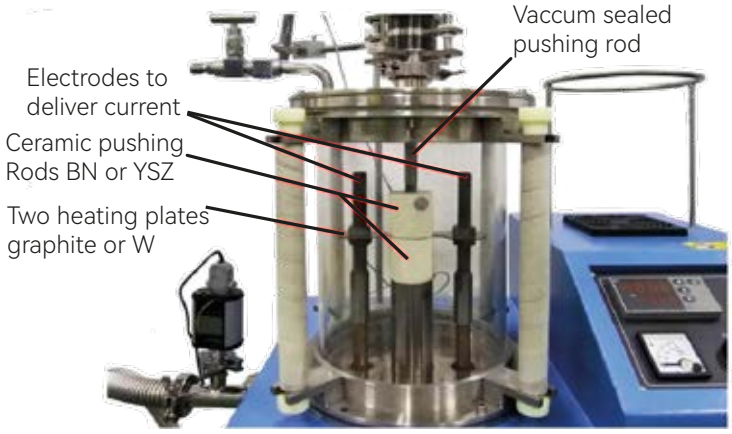
Planetary Ball Milling - MSK-SFM-1S

- Planetary Ball Milling :
  Sun Wheel Rotation Revolution : 0 – 500 RPM
  Sun Wheel Rotation Acceleration : ≤ 27 g
  Self-rotation Revolution : 0 – 800 RPM
  Speed Ratio : 1 : 2
- Material Output Size :
  Wet Milling : $\overline{\Phi} \leq 1$ µm
  Dry Milling : $\overline{\Phi} \leq 20$ µm
- Milling Jars : 4 sets of 100 mL SS jar x 4 cavity SS jar = 16 different material
- Control :
  Digital speed & time control
  Up to10 storable recipes
  5 speed segments per recipe, up to 10 cycles
  Max. segment time : 99 h 59 min 59 s
  Selectable rotation : clockwise/counterclockwise

Automatic Pellet Pressing - AM-YLJ-8T

- Batch Capacity : up to 6 samples
- Die Size : Φ 10 mm
- Max. Pressure : 1000 MPa
- Throughput : 6 samples in 60 min
- Automation :
  Top plunger placement
  Automated pressing & dwelling at set pressure
  Sample demolding
  Bottom core placed in holding tray
  Final sample stored in plastic cup

2500 °C RTP Furnace - RTP-M1



- Working Temperature : max. 2900 °C < 30 s
- Heating Rate : ≤ 200 °C/s
- Temperature Control Accuracy : ± 1 °C
- Quartz Vacuum Chamber : 216 mm OD x 206 mm ID x 300 mm L
- Vacuum Level : $1 \cdot 10^{-2}$ torr by mechanical pump ; $1 \cdot 10^{-5}$ by turbopump
- Vacuum-Sealed Deadweight : for hot pressing of samples
- Deadweight Pressure : max. 10 kg

1700 °C Atmosphere Controlled Sintering Furnace - VBF-1700X-L8AX

- Heating Chamber : 200 mm x 200 mm x 200 mm
- Working Temperature : max. 1700 °C < 1 h ;
  Continuous : 1100 – 1600 °C
- Heating Rate : ≤ 10 °C/min
- Temperature Control Accuracy : ± 1 °C
- Automation : automated bottom-loading
- Control : PID automatic, 30-stage programmable
  temperature control

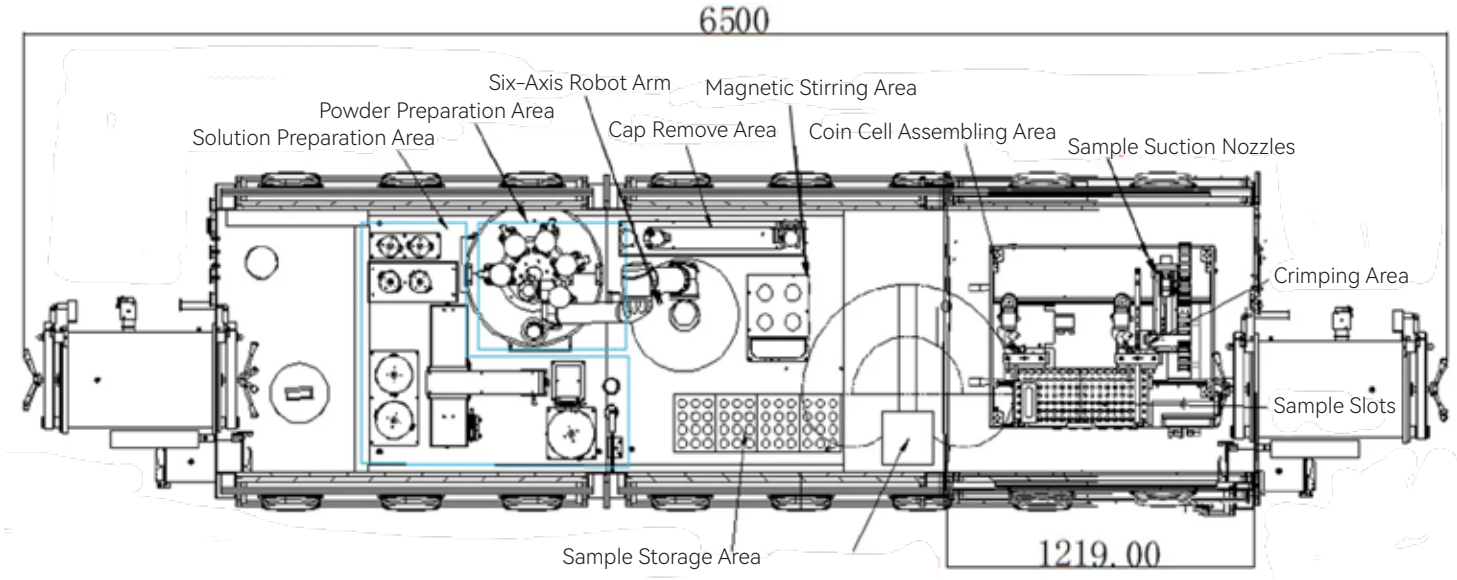
Coating

Automated Multi-layer Spin Coater(1000 layers) w/ Heating Cover and Solution Dispenser - VTC-100ML

- Spinning Speed : 500 – 10 000 RPM
- Layering: up to 1000 layers
- Z – axis Stroke : 250 mm
- Vacuum Chuck Size : 2.5 cm, 5 cm, and 10 cm
- Pressure Range : -100 – 100 kPa (pump is included)
- Heating Cover Temperature : up to 200 °C
- Heating Cover Material : PTFE
- Automation : dispensing, spin coating and drying
- Control : PLC
- Glovebox Compatible

Liquide Mixture Preparation

MSK-HTML-SLA16 - Automatic Electrolyte Preparation and Coin Cell Assembling for Battery R&D



- Electrolyte Dispensing Containers : 6 tanks (3 at 1000 mL and 3 at 500 mL)
- Powder Dispensing Containers : 5 tanks (300 mL each)
- Powder Dispensing Accuracy : ± 2.5 mg
- Throughput : 30 min per sample (stirring time not included)
- Coin Cell Assembly : 16 cells (preloaded components)
- Automation : liquid dispensing, powder dispensing, magnetic stirring, coin cell assembly, coin cell crimping
- Control : PLC (with exportable data)
- Glovebox : O_2/H_2O level ≤ 5 ppm

Automatic Liquid Dispensing System - MSK-HTML-L

- Dispensing Containers : 6 tanks
- Tank Volume : 3 L
- Tank Material : SS 304
- Sample Collection Tray : up to 64 samples (with individual recipes)
- Chanel Delivery Capacity : 0.1 – 20 mL
- Mettering pump pipeline : PTFE
- Automation : liquid dispensing, pipeline auto washing; Source liquid level detection
- Control : PLC (with exportable data)

Battery Assembling

MSK-BPE-MS Lab-Scale Automatic Multiple-Layers Pouch Cell Assemble Line for Battery R&D

General Characteristics :

Pouch Cell Dimensions : Length = 40 – 80 mm; Width = 40 – 60 mm; Max thickness: 6 mm

Application Scenarios:

- Atmosphere Box + Dehumidifier + Water Chiller (-50 ℃ dew point)
- Small/ Movable Dryroom (3 m * 5 m, - 40 ° C dew point)
- Glovebox (Four chambers, both side operation)

Automated units of the system :

Stacker :
Z-type stacking
Operation mode : manual load sample, automatic stacking and separator cutting

Taping Machine :
Taping mode : U-shape taping
Tape width : 10 mm

Welder :
Welding Power : 0 – 2 kW (adjustable)
Suitable current collectors : Copper and Aluminum
Welding frequency : 20 kHz
Standard welding area : 3 mm x 6 mm (other sizes are available upon request)

Top/Side Sealer :
Sealing Blade Effective Length : 110 mm
Sealing width : 3.5 mm (customization range 2 – 8 mm)
Maximum Temperature : 250 ℃
Sealing Time : 1 – 99 s (adjustable)

Automatic Electrolyte Filling and Vacuum Ssealing Machine :
Sealing Blade Effective Length : 180 mm
Sealing width : 6 mm (customization range 2 – 10 mm)
SealingMaximum Temperature : max. 220 ℃
Sealing Time : 1 – 99 s (adjustable)
Electrolyte Transfer Tank : 150 mL (PTFE as inner material)
Electrolyte Filling Pump :

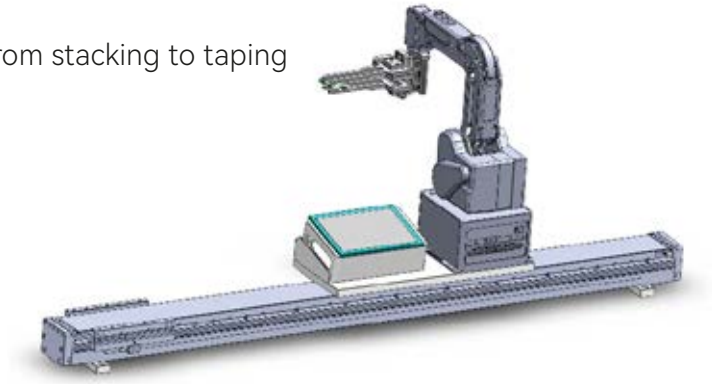
- Feeding Speed :100 RPM
- Vacuum Level : -80 kPa
- Accuracy : ± 1.5 % (5 g) ; ± 1 % (50 g) ; ± 0.8 % (100 g)

Robot Arms (photo on next page) :

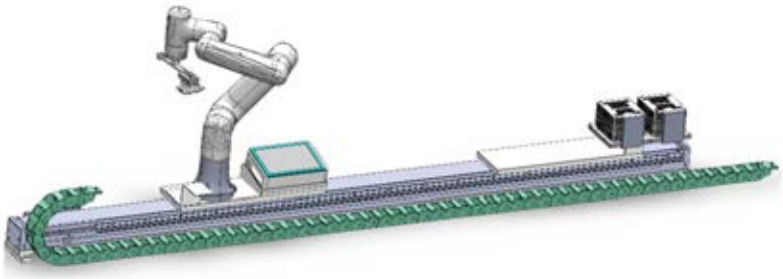
- Four-Axis Robot Arm : from stacking to taping
- Six-Axis Robot Arm : from taping to the end

Robot Arms :

- Four-Axis Robot Arm : from stacking to taping



- Six-Axis Robot Arm : from taping to the end



High Throughput Coin Cell Assembling System Up to 64 Cells Per Hour For Battery Research - MSK-HTBA

- Batch Capacity : 64 channels (8 x 8 layout)
- Cell Type : CR 2032 (other coin cell type can be customized at extra cost)
- Cathode Feed : 8 materials
- Anode Feed : 8 materials
- Electrolyte Feed : 2 electrolytes
- Electrolyte Injection Accuracy : 0.5 µL
- Drive type : Pneumatic
- Assembly Deviation : ± 0.5 mm
- Automation : Automated cases / separator / electrodes / spacer loading, electrolyte dispensing, electric crimping
- Control : PLC and PC control (data tracking system)
- Glovebox : O_2/H_2O level ≤ 1 ppm

ACCESSR

Email: contact@accessr-energy.eu
Telephone: +33 (0)5 63 76 08 67
Website: www.accessr-energy.eu
Address: 8 Av. Pierre-Gilles de Gennes
81000, Albi, France

website ACCESSR