

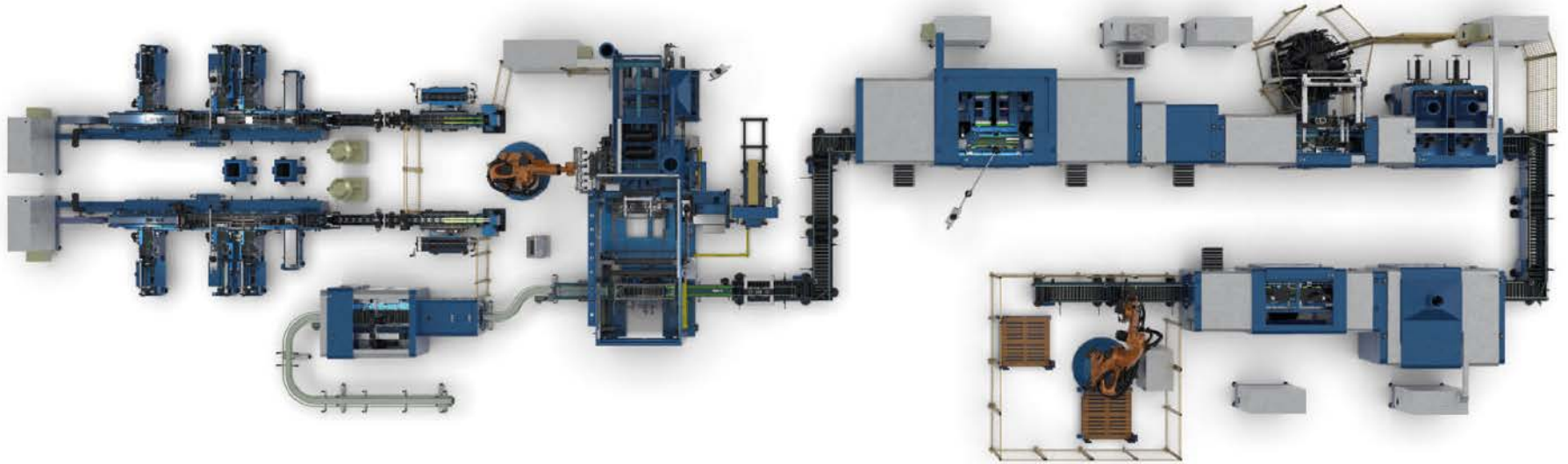
**hatek**

# Automatic Battery Assembly Line



Batek Makine AS, 2023

# Layout



# Overview



## BATTERY RANGE

Flooded or AGM batteries at DIN (L1-L5) and JIS (B20-D31) sizes.



## CAPACITY

Max. 4,5 batteries per minute (DIN55)



## INSTALLED POWER

ca. 310 Kw



## PERSONNEL

3 permanent



## TYPICAL CHANGEOVER

45 minutes

# 1.500.000

Batteries can be produced annually\*

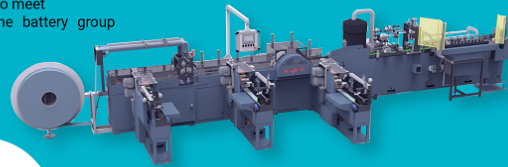
# Enveloping-I

## Options

Secondary Decoiler  
Lug Counting  
Lug Bending  
AGM Processing Upgrade  
Camera Vision Control  
Group Check & Reject  
Splice Station  
Setup Tool (Plate Width)  
Spare Part Set

## FAST AND USER FRIENDLY

The machine is enhanced to meet increasing demands in the battery group assembly.



## ENVELOPER BT225

The machine is capable to handle all common SLI plates with a speed of up to 150 enveloped plates per minute. The machine is integrated with multiple servo drives at several sectors to ensure smooth and reliable operation.



### Servo Drives

There are seven servo drives in the machine to ensure accurate harmonic operation and user friendliness. It is one of the most talented machines in the market.



### Triple Belt Transport

Triple belt transport design is incorporated to ensure smooth and stable plate drive during lug brushing.



### Servo Driven Shuttle

Servo plate shuttle for easy and fast pre-notching and crease control.



### Double-side lug brushing

Individual motor powered lug brushing at both sides. Easy setup and maintenance features are provided for user friendly operation.



### Electronic double plate detection

Double plate detection at all plate feeding belts. Plate check at all relevant sectors of the machine.



# Enveloping-II

## Options

Secondary Decoiler  
Lug Counting  
Lug Bending  
AGM Processing Upgrade  
Camera Vision Control  
Group Check & Reject  
Splice Station  
Setup Tool (Plate Width)  
Spare Part Set

## THE ALL-AROUND ELEMENT MAKER

A versatile machine designed to handle  
all common SLI plates in the market



### ENVELOPER BT270HB

The machine is capable to handle, with adequate tooling and option, PE envelope, leaf type and AGM separators. It incorporates two plate feeding belts, and processes plate at a speed of up to 130 (enveloped) plates per minute. The standard machine comes with a vertical pocket conveyor and group alignment unit.



#### Servo for All Drives

Plate shuttle, separator drive, separator cut and machine main drive are all done by means of servomotor to enhance reliability and consistency of harmonic operation.



#### Vacuum Belt Feeding

Vacuum belt transport for separator drive to facilitate accurate separator feed in various rib designs and at higher speeds.



#### Plate Transport Belt

Gentle and smooth handling of the plates are made by the vacuum belt powered pick and place system.



#### Double-side lug brushing

Individual motor powered lug brushing at both sides. Easy setup and maintenance features are provided for user friendly operation.



#### Electronic double plate detection

Double plate detection at all plate feeding belts. Plate check at all relevant sectors of the machine





# COS-Flooded

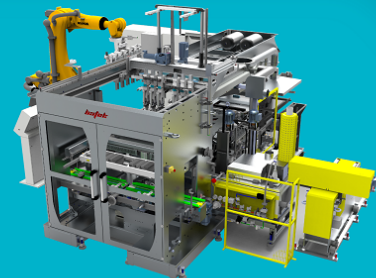
## Options

- Flux Drying System
- Surcharge for Power Mould / Each Mould
- Surcharge for Gas Heated Pot
- Weight Scaling
- Tool Kit for Mould Cleaning
- Vacuum Cleaner for Maintenance
- Alternate Recirculation Pump
- Alternate Lead Pump
- Additional Boxing Jig / Each Box Size
- Additional Lug Aligner / Each Lug Center
- Additional Plate Aligning Tool / Each Plate Width and/or Height
- Additional COS Mould
- Additional COS Mould Post Insert Set
- Spare Part Set



## THE EXPERT ELEMENT BUILDER

The machine incorporates many special features to meet varying requirements in the element production



### COS MACHINE BT2500A

The machine is the only one in the market comes with a robotic loader in the standard version. It can process all 6x1 cell batteries in the market with a speed of up to 4,5 batteries a minute.



#### Robust Design

The rugged machine frame allows maintaining the precision throughout the service life. Meanwhile, the machine is designed in a way that it can be transported in the standard freight containers.



#### Robotic Loading

Loading of the groups into the machine is made by a six-axe robot to guarantee flexibility and durability of precision.



#### Servo Driven Unloading

Servo driven unloading unit enhances accuracy and repeatability of the process. The unit is driven on a heavy duty linear guides for a long and trouble free service life.



#### Parallel push lug aligning

The design of the lug aligner facilitates building perfectly aligned groups. The unit can be easily and quickly changed over by a single operator.



#### Moulds designed by expertise

We design highly efficient moulds with an experience accumulated over the past decades. Moulds are also available with 'power mould' technology.





# COS-Dual

## Options

Flux Drying System  
Surcharge for Power Mould / Each Mould  
Surcharge for Gas Heated Pot  
Tinning System  
Alternate Lead Pot incl. Pumps  
Weight Scaling  
Tool Kit for Mould Cleaning  
Vacuum Cleaner for Maintenance  
Alternate Recirculation Pump  
Alternate Lead Pump  
Additional Boxing Jig / Each Box Size  
AGM Boxing Jig / Each Box Size  
AGM Pushing Tool / Each Box Size  
AGM Gripper Set  
Additional Lug Aligner / Each Lug Center  
Additional Plate Aligning Tool / Each Plate Width and/or Height  
Additional COS Mould  
Additional COS Mould Post Insert Set  
Spare Part Set



## THE FAST AND PRECISE ELEMENT MAKER

The last generation COS machine with several unique features ensuring highest flexibility, efficiency and precision.



### COS MACHINE BT2500AF

The machine is capable to process both flooded and AGM batteries with a relevant tools at a capacity of up to 4,5 batteries (flooded) or 3,0 batteries (AGM) a minute.



#### Robust Design

The rugged machine frame allows durability of precision throughout the service life. Meanwhile, the machine is constructed so that it can be shipped in standard freight containers.



#### Robotic Loading

Loading of the groups into the machine is made by a six-axis robot to guarantee flexibility and durability of precision. Enhanced grippers to withstand AGM processing.



#### Servo Driven Jigbox

Universal jigbox with servo drive for both flooded and AGM battery designs. Relevant squeeze and release motors provided at the loading and unloading stations.



#### Servo-driven rotary table indexing

Indexing is made much smooth and faster to ensure shorter cycle time and user friendly operation.



#### Servo-driven rotary table lifting

Motorized indexing allows the table to be lifted fast and in double step configuration for coking, maintenance and repair purposes.



# Hole Punch

## Options

Container Feed Conveyor-3m  
Horizontal Container Buffer  
Vertical Container Buffer  
COS Feed Conveyor-3m  
QR Code Laser Marking  
QR Code Check and Reject  
Additional Punch Die  
Spare Part Set

## FAST AND ACCURATE

Suitable for all common SLI sizes, and is offered both as a standalone or part of a complete assembly



## HOLE PUNCHER BT30A

The machine has a gantry three axis servo driven punch head, and is capable to process both round and oval shaped punch holes at a speed of up to six containers per minute. The standard supply comes with a burr cleaning unit.



### Servo Driven Head

The servo driven head provides fast and accurate punching operation, and also facilitates container type changeover procedure.



### Pellet Suction

The machine punch head is designed to incorporate also a pellet suction unit. Pellets are collected in a tank integrated into the machine frame.



### Burr Cleaning

The burr cleaning is done by means of a flame application. A gas burning system and individually driven roller conveyor is provided at the unit.



### Quick punch position calculation

To avoid measurement errors in manual setup, a special program function is available to automatically calculate all punch position for the given container size.



### Through punch die air blowing

The unique punch die design facilitates discharge of the pellets out of the die during the punching by air blowing.



# Combi Welder

## Options

- Flag Alignment System
- Weld Quality Check
- Matuschek DC Welding Controller
- Secondary Short Tester
- Chiller
- Line Entry Conveyor - 5mt
- Strap Cooling Tunnel
- Strap Temperature Control
- Weld Tip Cleaning System
- Additional Jig for Short Test Head / Each Battery Size
- Additional Battery Setup Lig / Each Battery Size
- Additional Weld Check Head
- Spare Part Set

## THE WELD MASTER

A renowned TTP Welder with proven performance in many factory conditions



### COMBI WELDER BT670AD

The machine is available to handle all common 6x1 cell batteries on the market with a speed up to 5 batteries a minute.



#### Servo Driven Heads

TTP weld heads are three axis servo driven. Each head is able to process a battery individually. Automatic weld position calculator is provided for easy and accurate recipe building.



#### Short Circuit Testing

Short test circuit is integrated with a probe contact control. Test head is provided with quick and easy changeover features. Defective cell indication for all batteries accumulated at the reject conveyor.



#### Flexible Supply

The machine is available with a secondary short testing and/or a weld quality checking. Standard machine comes with an AC welding system. DC welding systems can be integrated as an option.



#### Process consistency features

The machine is incorporated with jaw temperature control and cooling water flow control. Optionally, strap temperature control is also available.



#### Efficient support services

The line is supplied with the well appreciated BATEK after sales support.



# Lid Placer

## Options

Post Lubrication

Manual Feed Conveyor-2m

Add Battery Setup Jig Set / Each Battery Size

Add. Pick Up Head Set

Spare Part Set

## A PICK AND PLACE WIZARD

The machine efficiently handles lids, and is available with custom made gripping heads.



shown without safety fences

### LID PLACER BT690A

The machine is available to process 6x1 cell batteries only. The lid magazine can store up to 200 lids in total. The standard machine comes with a post centering station, a lid aligning unit and many features ensuring reliability. The lid magazine is available for front or rear positioning.



#### Servo Driven Heads

The machine comprises 2 gantry units in total 5 drives. One of the drives transfers the lids from magazine to the aligning unit while the other picks the lid at the aligning unit and places it onto the battery.



#### User Friendly Design

Unique design to adjust all 6 lid magazines by a central setup mechanism. The magazines can be refilled while the machine is in run.



#### Post Centering

The post centering operation is made before the lid placing at a separate station. The station is provided with easy and quick setup features.



#### Electronic lid pick up control

For correct lid pick up at the lid magazine, the pick up head is equipped with a device to ensure that the lid is correctly is picked up.



#### Lid feed orientation control

The lid pick up head is provided with a special device to check the orientation of the lid so that the pick head orientates itself for correct lid placing.



# Heat Sealer

## Options

Manual Feed Conveyor-2m  
Battery Compression Jig / Each Battery Size  
Add Battery Setup Jig Set / Each Battery Size  
Battery Stopper Jig / Each Container Size  
Additional Lid Holder Set  
Additional Lid Mirror Set  
Additional Box Mirror Set  
Spare Part Set



## THE ULTIMATE HEAT SEALING MASTER

The renowned BATEK machine for processing batteries with top precision at a high speed.



### HEAT SEALER BT600AD

The machine is capable to process batteries at the range of JIS (B19-E41) and DIN (L0-L5) with a speed of up to 5 batteries a minute. The machine comes with a fast heater change-over system, all safety fences & doors and one set of tools.



#### Servo Driven Platen

Accurate and fast drive to eliminate the cooling effect on heated parts. Special platen position to optimise cycle performance.



#### Double Side Press

Servo press at both lid and container side to ensure highest accuracy. Precision machine datum level ensures minimal geometric variation across the battery.



#### Separate Twin Head

Independent twin-head design to allow flexible setup for each head. Both heads are available for single head operation with individual process parameters.



#### Force based seal finishing

The machine, together with timers, incorporates also a torque measurement algorithm in configuring the sealing process parameters.



#### Multiple zone temperature control

Multiple platen temperature sensors and individual heater controls guarantee high consistency in the heating across the minor.



# Post Burner

## Options

Infeed Conveyor-2m  
Add Battery Setup Jig Set / Each Battery Size  
Add. Mould Insert  
Spare Part Set



## UNSURPASSED POST WELD QUALITY

A post weld master with several user friendly features and compact design.



### POST BURNER BT70AD

The machine is capable to process batteries at the range of JIS (B19-E41) and DIN (L0-L5) with a speed of up to 5 batteries a minute. The machine comes with a push button change-over feature for many of machine setting procedures.



#### Servo Driven Head

Weld pin drive is made by means of a servo motor with a numeric dip setting for higher quality post welds.



#### Push Button Setup

Both main heads in the machine are driven by servomotors in Z and X axis to facilitate quick setting with a higher precision.



#### Mould Cooling

All post moulds in the machine are individually temperature controlled. Complete cooling circuit is provided in the machine with individual flow controls for each mould.



#### Weld pin temperature control

To ensure highest safety and process quality, all weld pins are provided with a temperature control.



#### Flexmould design

Welding mould is designed so that variations in the heat seal finishing shall be compensated to avoid quality problems.





# Leak Tester

## Options

Exit Conveyor-2m

Laser Marking

Height Check

Weight Check

Add Battery Setup Jig Set / Each Battery Size

Add Test Head Jig

Test Head for Secondary Lids / Each Lid Size

Spare Part Set

## THE PRECISION TESTER

Leak testing all common  
6X1 cell batteries

### LEAK TESTER BT80AD



Twin test head machine handles batteries at the range of JIS (BT9-E41) and DIN (L1- L5) with a speed of up to 5 batteries a minute. The machine applies pressure decay test in checking leaks in batteries.



#### Compact Frame

Machine is provided with an enclosure ensuring both protection and user friendly operation. HMI panel interface is provided for operator controls.



#### Quick Changeover

The machine is supplied with battery and test head jigs for quick and easy setup. Fine tuning features are also available.



#### Testing Head

Testing heads are designed to enable operator removing or fitting the heads easily. Heads are custom designed for relevant battery lids.



#### Electronic pressure control

Pressures designated for a complete testing cycle are electronically adjusted. Total recipe based process setup is provided.



#### Lifting table for battery testing

Precision datum level is provided to ensure that the constant and same sealing pressure is applied across the battery.





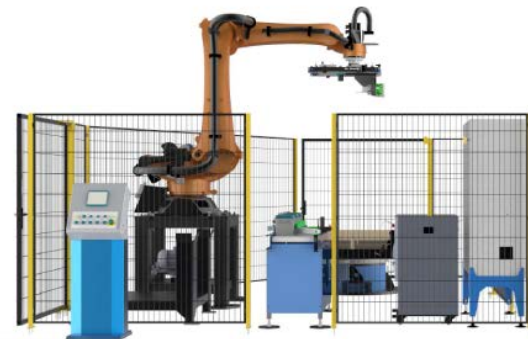
# Palletizer

## Options

Linear Palleting Conveyor / Surcharge  
Automatic Pallet Dispenser  
Additional Gripper Head  
Kuka Calibration Kit  
Spare Part Set

## BATTERY PALLETIZER BT10-PT

Flexible to suit both for assembly and finishing lines. The system is available to handle all automotive and HD batteries at a capacity up to 5 cycles per minute.



### Universal Gripper

The gripper design allows handling all battery sizes and spacers with a single head. Both mechanical and vacuum powered battery pick up unit is available.



### Indexing Table

Indexing table design allows easy and quick loading and discharge of the pallets while it requires lesser space than alternative systems.



### User Friendly Operation

HMI based recipe creation and availability of recipe revision ensure easy operation of the system. No robot controller pendant is necessary for incorporating another battery type into the system.



### Pallet Dispenser (Option)

Smooth and uninterrupted palleting operation can be ensured with the implementation of the automatic pallet dispenser. That option comes with linear palleting conveyor.



### Compact Palleting

Batteries are placed onto the pallet in such a way that no gap takes place between batteries. That ensures tight palleting and safe handling.

# Projects

