



THE WIRTZ GROUP
of Companies



Third Annual International Science and Technology Conference "Battery Innovation-2021"

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'Innovation in Continuous Plate Pasting Process Technology'

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‘Innovation in Continuous Plate Pasting Process Technology’

With the ever increasing demand for **better battery performance** and the development of new applications; the focus is now on the production of **lighter, lower cost (less lead), more durable (longer service life), higher performance batteries**; which in turn requires **them to be manufactured from optimum quality raw materials, using world-class manufacturing equipment and process technology.**

This presentation reviews the recent advances in continuous plate pasting process technology; illustrates the importance of selecting the appropriate manufacturing process to handle both ‘traditional’ and ‘advanced’ paste formulations; for the consistent high-speed production of optimum quality positive and negative pasted plates for use in ‘high performance’ lead-acid cells/batteries for industrial, reserve power energy storage and transportation applications.

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Key Objectives for 'QUALITY' Grid Pasting

- Active Material-to-Grid contact and coverage on both sides of the grid.
- Consistent and uniform application of paste both weight and thickness.
- Achieving the above with minimal change to the paste density, porosity, moisture content.



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MANUAL Steel Belt Paster (SBP):

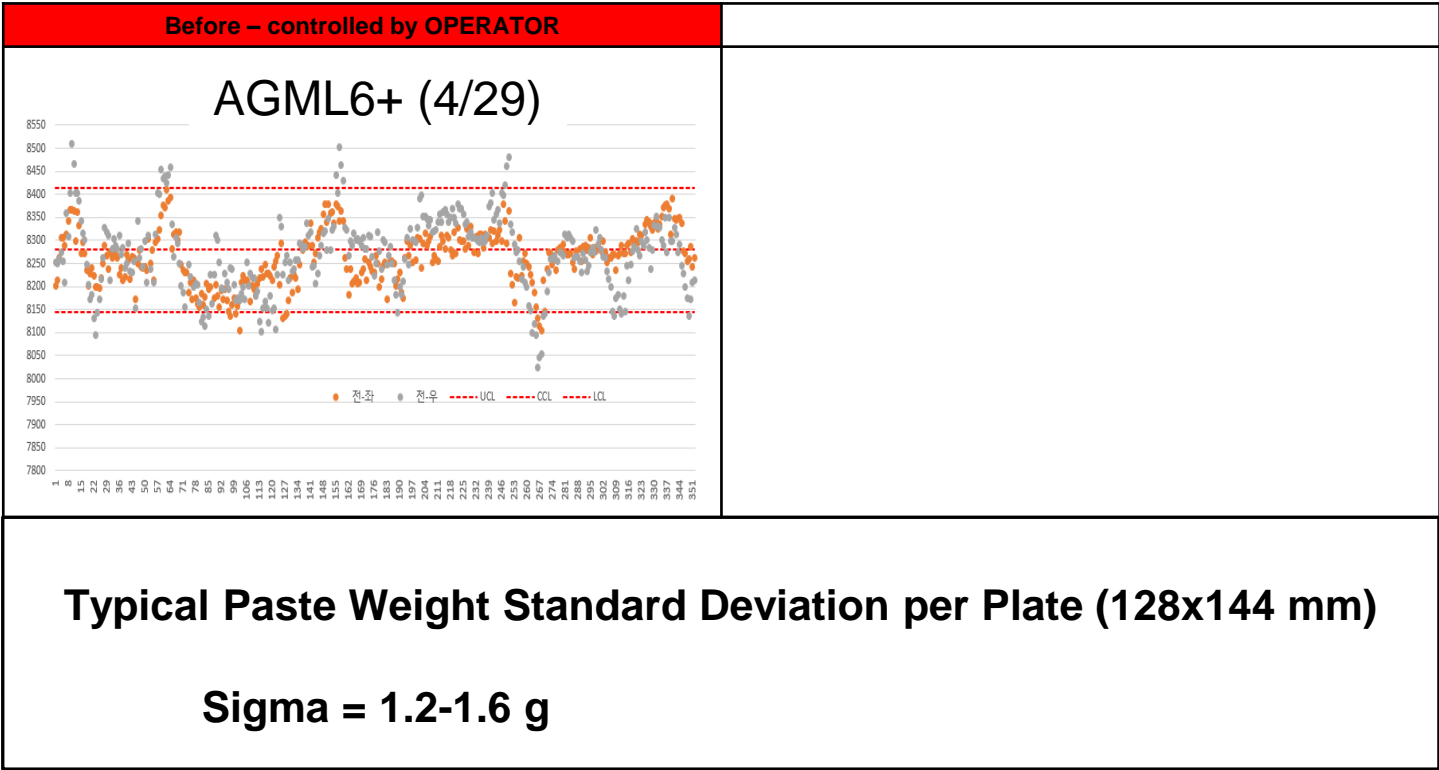
The dimension of the pasted plate thickness is 'set' ('gauged' or 'fixed') as required; and with correct machine set-up, maintenance and operating procedures; the resulting WIRTZ SBP pasted plate thickness is **+/- 0.05 mm (0.002 “)**.

(128x144 plate, nominal paste density 4.20 g/cm³)

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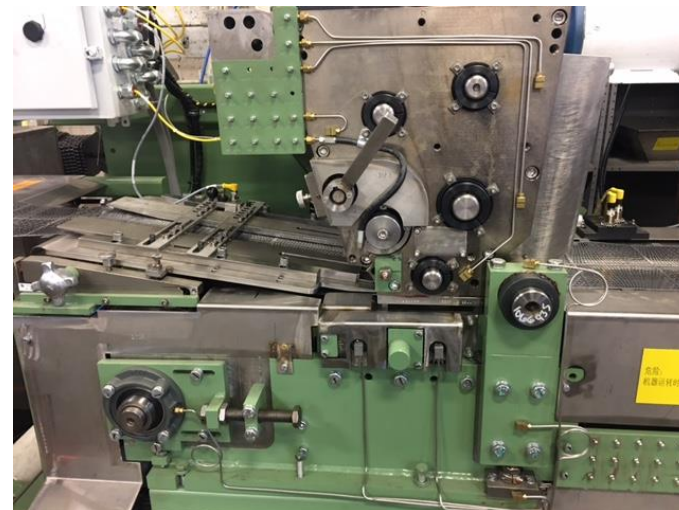
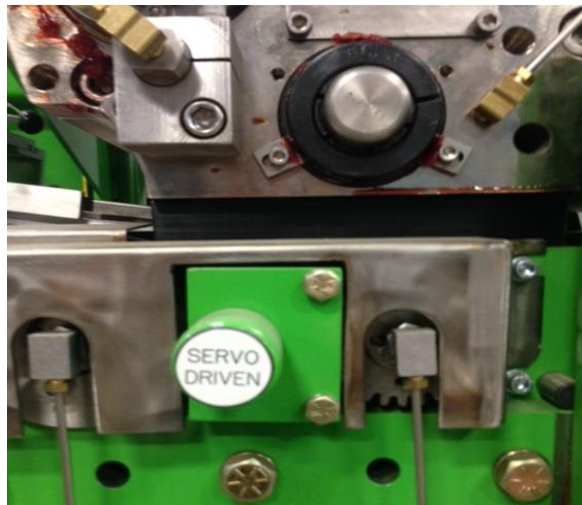
WIRTZ SBP 13-200 SERVO Controlled Plate Thickness Retrofit Results



(351 samples of 50 LH and RH plates from ~2,500 m of continuous grid/plate production)

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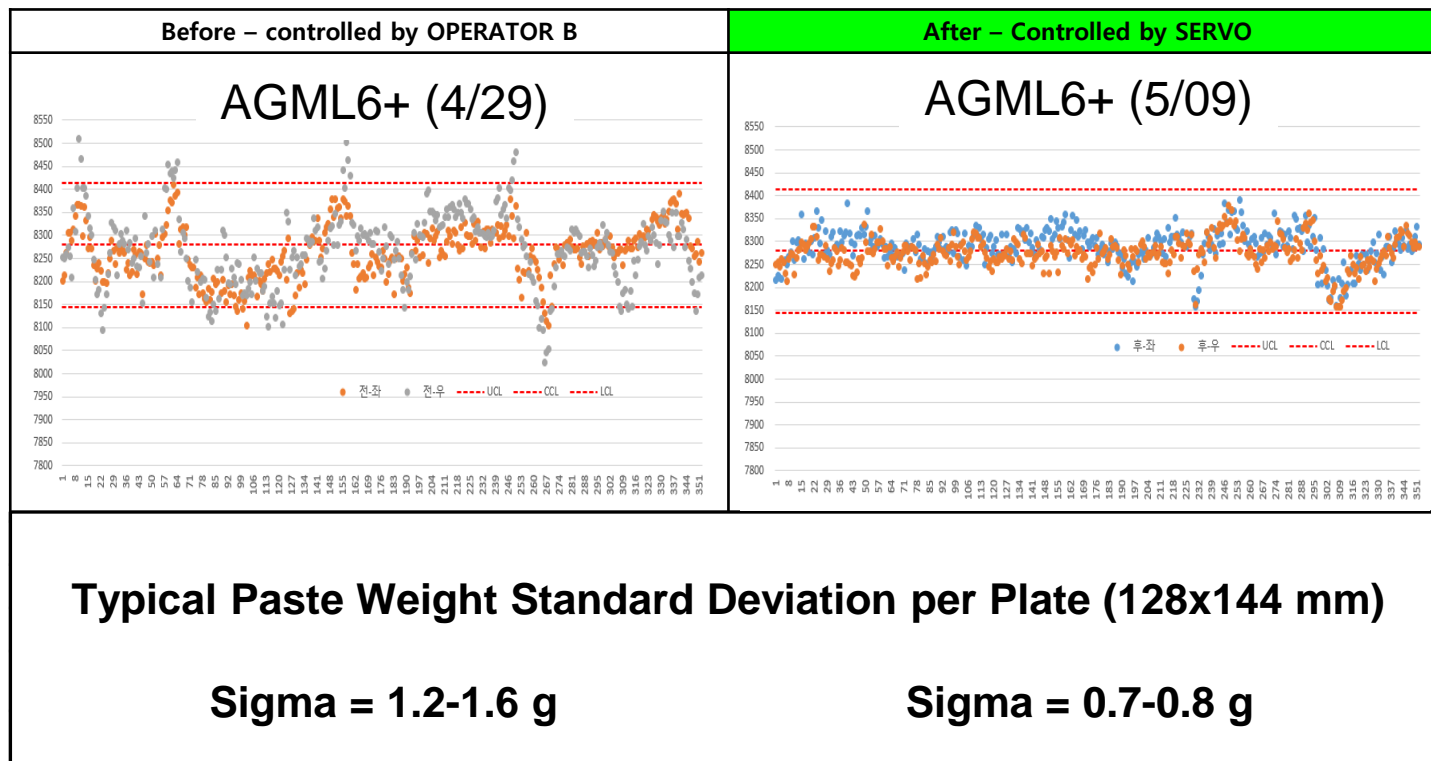
SERVO Steel Belt Paster (SBP):



Patented SERVO control adjusts the pasted plate thickness 'on the fly' in 0.0005 inch (.0127mm) increments, controlled from a 'high precision', dynamic (in motion) closed-loop plate weight or thickness monitoring device.

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WIRTZ SBP 13-200 SERVO Controlled Plate Thickness Retrofit Results



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SBP13-200 Steel Belt Paster (SBP):

The observed values of Sigma (above) are entirely the result of **grid weight, and paste density variations under 'normal' operating conditions in the plant** (where it is often difficult to maintain these parameters precisely), and do not represent the true capability of this machine.

The Steel Belt Paster, with closed-loop SERVO Control is a 'world class' process, and capable of achieving pasted thickness and weight better than;

+/- 0.015 mm or +/- 1.0 g

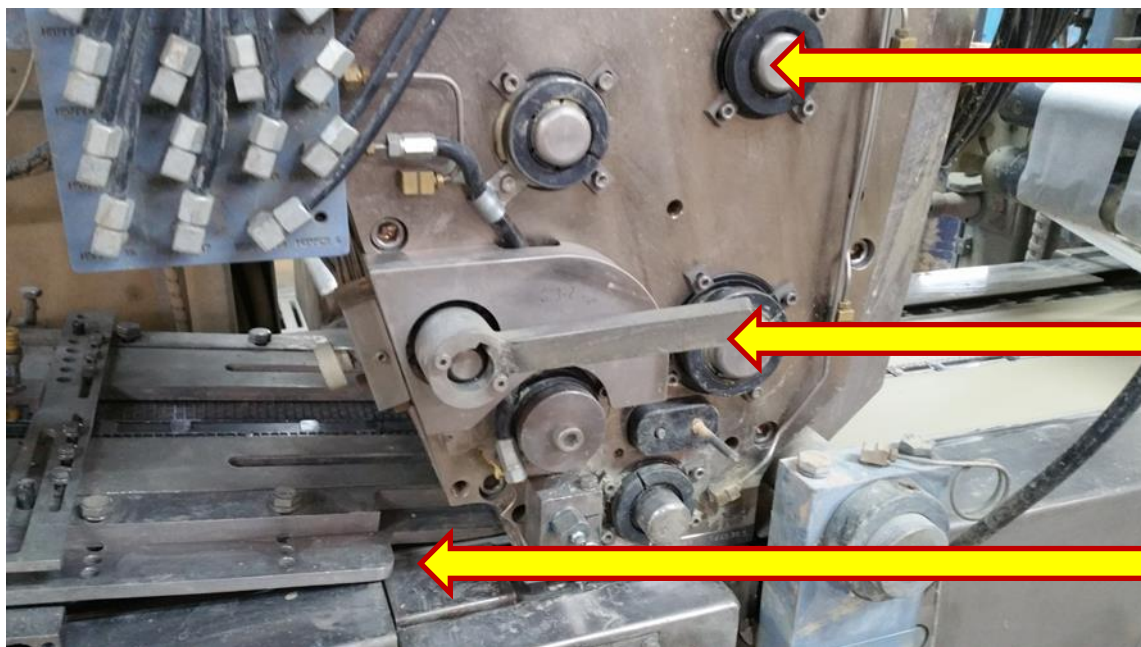
(128x144 mm plate, nominal paste density 4.20 g/cm³)

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SBP13-200 Steel Belt Paster (SBP):



HMI control of three (3) Variable Speed Drive(s) ensures optimum paste delivery, flow and fill, for all paste 'variants' (oxide, density, moisture, rheology 'flow' and additives).

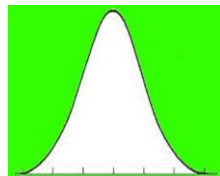


Paddles (2)

Rollers (3)

Belt Speed

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Automatic **SERVO** Control

38.0g **mean** **43.0g**
(LCL) **40.5g** **(UCL)**

SERVO Steel Belt Paster (SBP):

The resulting pasted plate thickness is;

+/- 0.03 mm (0.0012 ")

(128x144 plate, nominal paste density 4.20 g/cm³)

Reducing the mean pasted plate weight by 1.5g

~\$ 150-200,000 / year

(1 million batteries, requiring 50 million plates)

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Gravity-cast and continuous grid making..... 

Oxide manufacture and paste mixing..... 

High-speed precision pasting, and curing..... 

Battery assembly equipment..... 

Formation and finishing lines, acid plants..... 

Environmentally responsible battery recycling. 



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Organized by AKOM named in honour of N.M. IGNATIEV, JSC and Innovations Accumulator, LLC
with the support of the Samara region Government.

THANK YOU FOR YOUR ATTENTION!

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