



**WORLD CLASS** BATTERY MANUFACTURING EQUIPMENT & TECHNOLOGY

# WIRTZ LOCATIONS



# Presentation Agenda

## Advancements and Innovation in Plate Making Technology to Support Current and Future Market Trends

- Markets Forecast and Trends in the Lead Acid Market
- Wirtz Grid Making– Concast – Benefits and whats new?
- Wirtz Plate Making – Steel Belt Pasting
- ***Gravity Flow Caster – New Product Introduction***





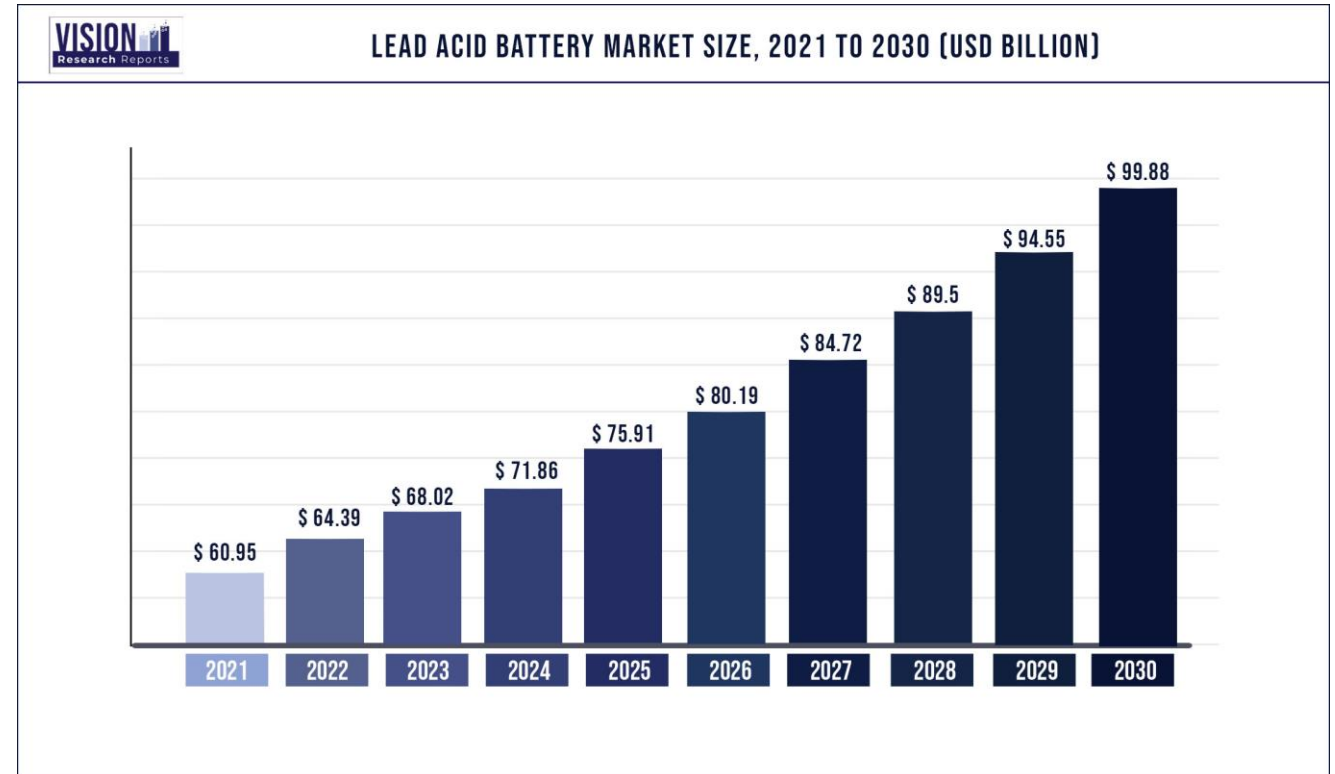
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# Current Market Trends

## Lead Acid Market Forecast

- Lead Acid Batteries forecasted to grow annually by approx. 5% CAGR over the next 7-10 years
- Advanced Lead Acid Battery technologies
- Advanced methods for production
- Automation and reduction of people



# WIRTZ CONTINUOUS CASTING

## CONCAST SYSTEM BENEFITS

- Wirtz **DEVELOPED** this technology
- Continuous Full frame designable negative grid design
  - The optimal grid manufacturing process for AGM battery grids
- High Speed, Zero Scrap Production
- Lowest Cost Method to Make a Full Frame Negative Grid
- Great Flexibility




**THE ONLY CONTINUOUS NEGATIVE GRID MADE IN A SINGLE PROCESS.**

The Lowest Cost Method To Make Grids. The Wirtz Continuous Casting Process is the only negative gridmaking process which produces grids with side frames and designable wire features, to exact thickness and weight tolerances. The process casts directly from pig or hog lead with no additional process steps and does not generate any scrap lead to be reprocessed. It's also the only continuous negative gridmaking process suitable for the new generation of AGM batteries.

A Fully Automatic, Integrated Platemaking System. With our Continuous Platemaking Process, every step in the plate manufacturing process can be automatically controlled. Plates pasted on either a Wirtz steel belt or fixed orifice pasting machine can be accurately overpasted on both the top and bottom of the plates to +/- .002 inches of thickness (0.05 mm) and +/- 2 grams of wet paste weight, making Wirtz pasted plates your only choice for AGM batteries. Our new plate stacker completes our platemaking line and is completely synchronized to our line speed producing stacks of aligned single or double panel plates. The machine features a patent pending reject station which eliminates stacker downtime due to misaligned plates.

Cured Plates in 8 Hours. From the stacker, plates can be robotically loaded into the Wirtz ConCure chamber or a Wirtz conventional cure chamber. The Wirtz ConCure curing chamber generates steam and are very competitively priced.

To put the Wirtz totally automated continuous platemaking system to work for you, call us at +1.810.987.7600 or email [sales@wirtzusa.com](mailto:sales@wirtzusa.com).

INNOVATION. PERFORMANCE. RELIABILITY.

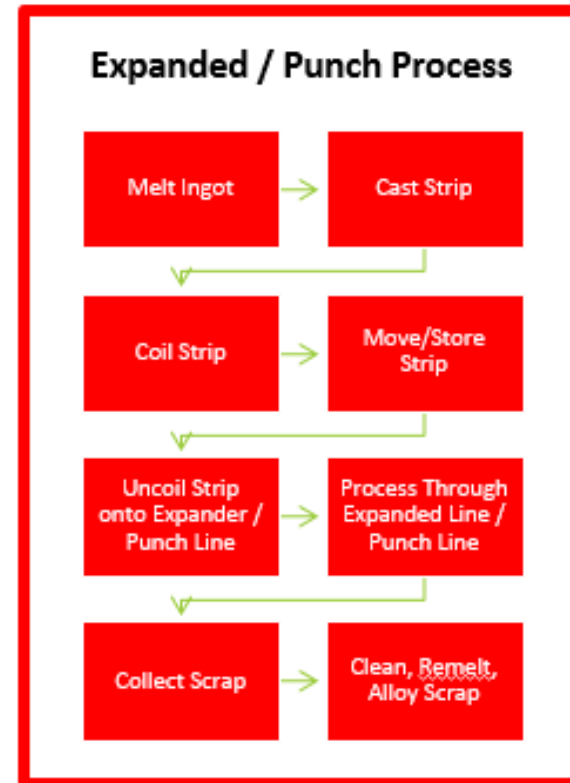
[www.wirtzusa.com](http://www.wirtzusa.com)



# WIRTZ CONTINUOUS CASTING

## CONCAST: WHATS NEW?

- Established TPPL grid making technology
- Industrial grid making technology
  - Can cast up to 3.5mm thick
- Increased Automation
- Lowest Cost Method to Make a TPPL Grid and full frame Industrial grids



# WIRTZ CONCAST: TPPL

## TPPL CONTINUOUS CASTING

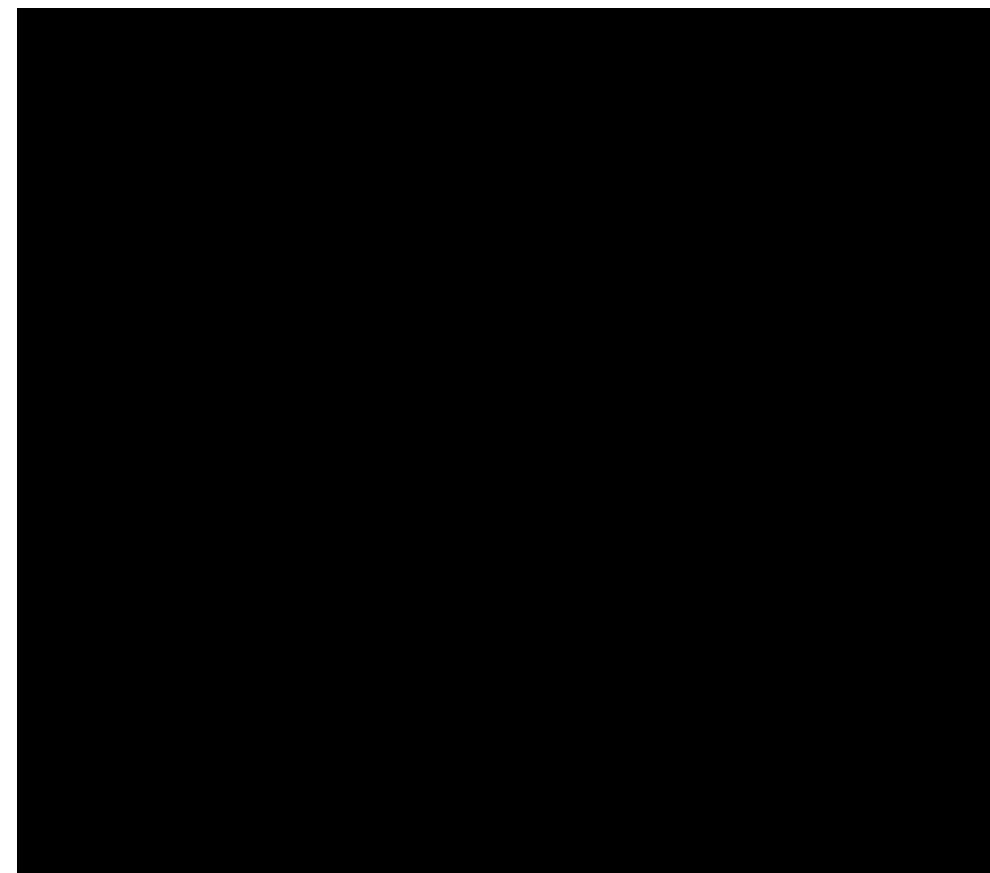
- ***Continuous TPPL casting technology***
  - ConCast is the LOWEST Cost Method to Make TPPL grid – Potential for Positive and Negative Pure Lead grids
  - The most experience in producing TPPL grids
    - Over 15 years
  - One line to produce final product
    - Ingot -> Cast Grid Strip
  - Lowest operational costs
    - 1 operator
    - Low Energy Costs



# WIRTZ CONCAST: INDUSTRIAL

## INDUSTRIAL CONTINUOUS CASTING

- Pure lead Industrial or typical calcium
- Pure lead capability up to 660mm(26") wide grid
- Traditional calcium grid thickness up to 3.5mm
  - Video shows a 2.7mm thick calcium grid being continuously cast
- Both of these products can be cast on the same system as smaller plates, with only a change of the tool





# WIRTZ CONTINUOUS CASTING – AUTOMATION

## NEW DEVELOPMENTS

- **SMART TOOLING AND SPOOLS – PATENT PENDING**
- **AUTO ADJUSTMENTS – PATENT PENDING**
  - *Integrated Servos and automation*
- **Vision Quality recognition**
- **Data Acquisition and Plant Visibility Screens**



# WIRTZ STEEL BELT PASTING LINE

## PROVEN RESULTS FOR AGM AND TPPL

- Proven system with the tolerance capability for AGM and TPPL/Pure Lead grid production
  - The only line on the market with 15 years of proven results for TPPL Plate production
  - The preferred pasting line at Global Market leaders for production of both positive and negative plates
- High Speed – Up to 60m/min
- Entry Table/Orifice Plate for Uniform Over Paste
- Available in up to a 24" wide Industrial System
- Superior Thickness Control
- A cutter solution for every plate type and every customer requirement
  - ***Mechanical cutters, Electronic cutters, TPPL Cutters***





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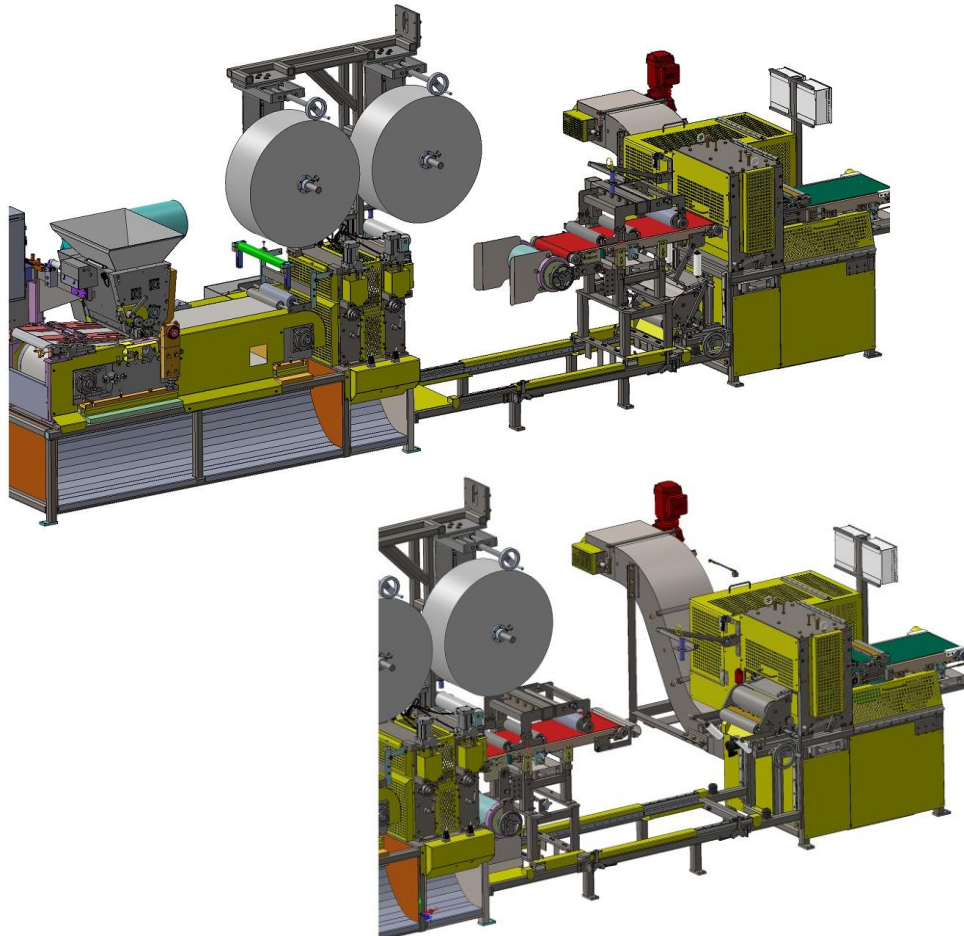
# STEEL BELT PASTING LINE (SBP/RPC)

## TOLERANCE CONTROL

16 Hour/ day Production Estimated Savings							
	1 gram	2 gram	3 gram	4 gram	5 gram	6 gram	7 gram
80 ft/min	\$162,754.97	\$325,509.93	\$488,264.90	\$651,019.87	\$813,774.83	\$976,529.80	\$1,139,284.77
100 ft/min	\$203,443.71	\$406,887.42	\$610,331.13	\$813,774.83	\$1,017,218.54	\$1,220,662.25	\$1,424,105.96
120 ft/min	\$244,132.45	\$488,264.90	\$732,397.35	\$976,529.80	\$1,220,662.25	\$1,464,794.70	\$1,708,927.15
140 ft/min	\$284,821.19	\$569,642.38	\$854,463.58	\$1,139,284.77	\$1,424,105.96	\$1,708,927.15	\$1,993,748.34

**How Many GRAMS are you giving away with the wrong pasting equipment?**  
**1 gram a plate running 30mpm for 16 hours a days could be costing you \$250,000USD in lost paste**

# STEEL BELT PASTING LINE (SBP/RPC)



## ROTARY PLATE CUTTING

- Over 15 years of experience in TPPL pasting
- Completely convertible line for lugs in, lugs out, TPPL – All in one line
- One line convertible between Electronic cutter and TPPL cutting for complete line flexibility
- Quick Change cutter modules
- The most flexible pasting line in the world

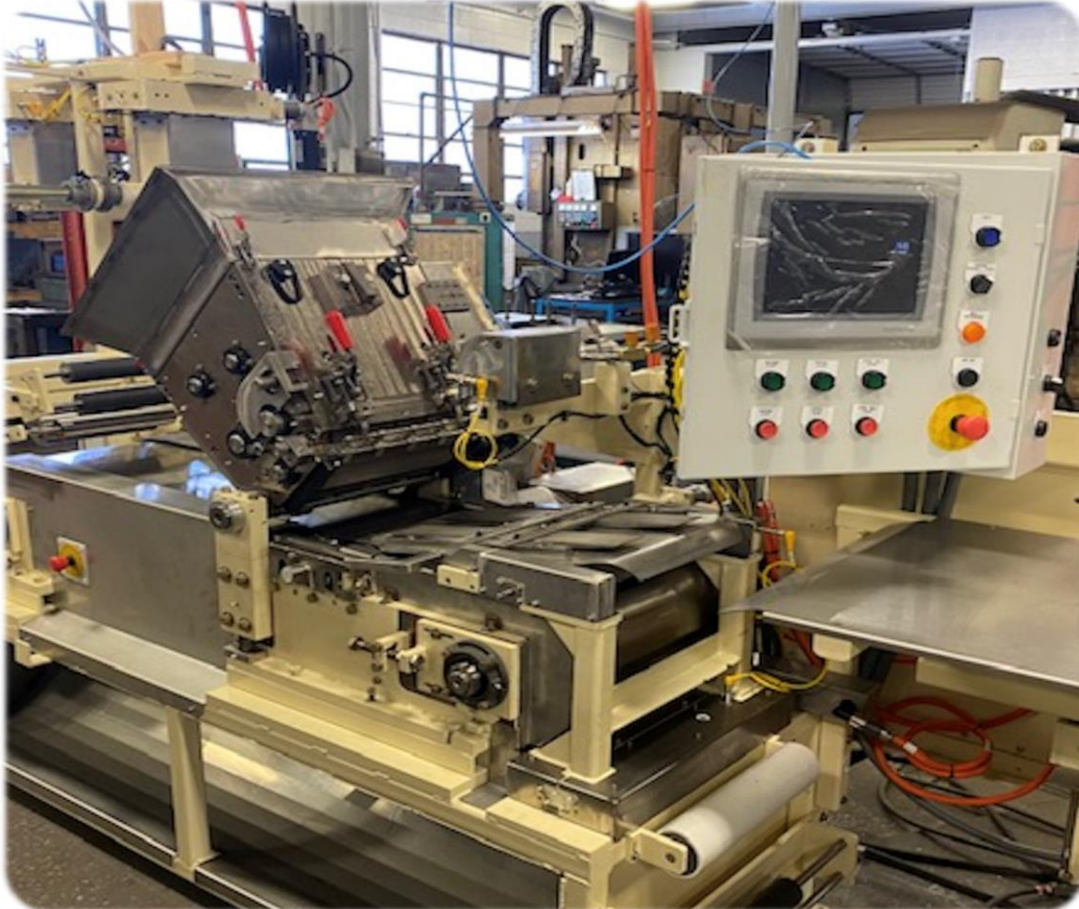




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# STEEL BELT PASTING LINE (SBP/RPC)

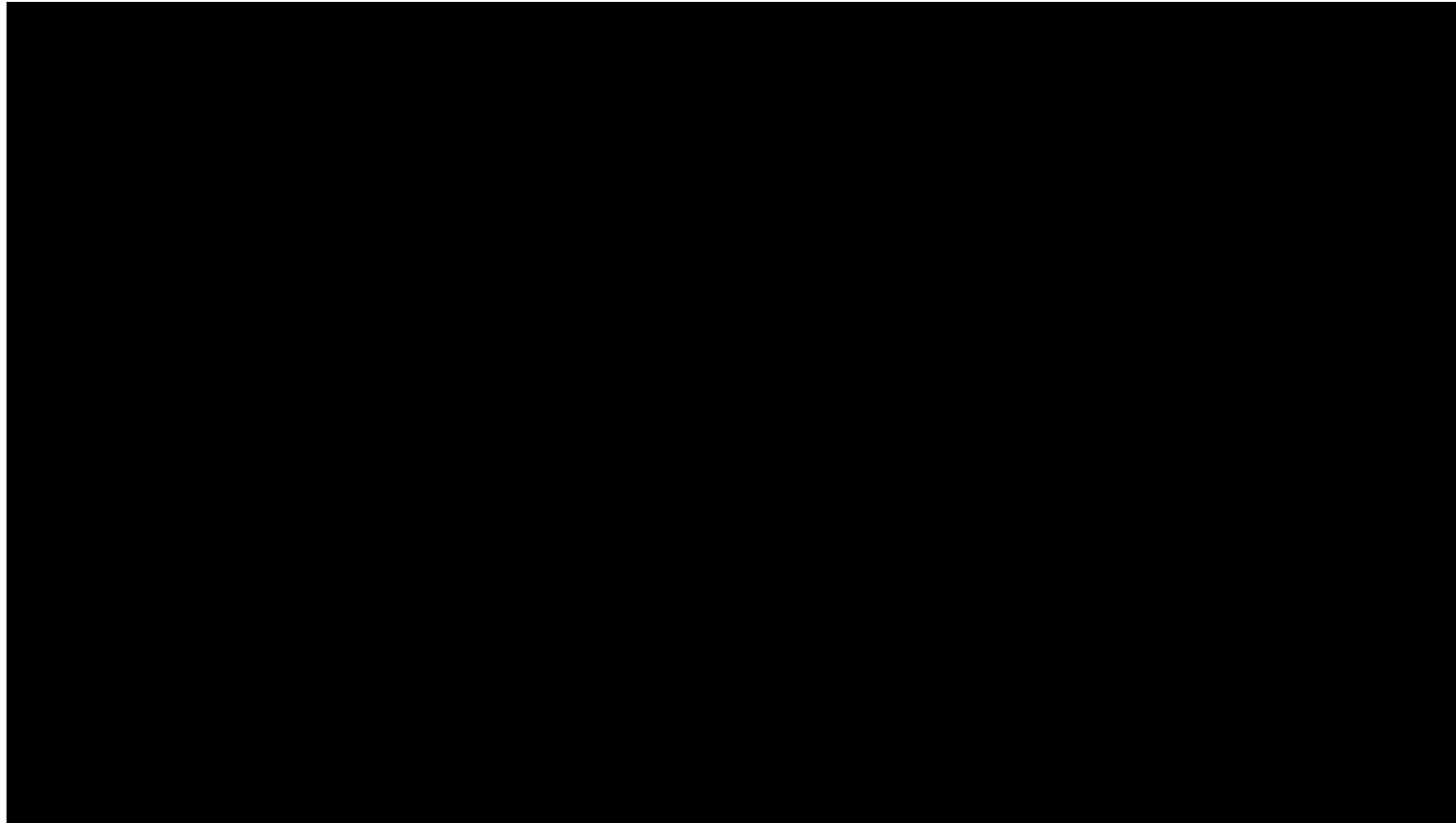


## NEW DEVELOPMENTS

- SMART Tooling - **PATENT PENDING**
- Servo Control of critical line adjustments for different grid types – **PATENT PENDING**
- Closed loop Servo Thickness Control System – **PATENTED**
- SMED Tooling (Single Minute Exchange of Die) **PATENT PENDING**



# GRAVITY FLOW CASTER EUROPEAN PRODUCT LAUNCH





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# Summary – Concast Grid Making

- **Concast – Negative grids and TPPL**
  - Lowest cost continuous full frame grids, TPPL grids available today
  - Capable of producing industrial grids over 3mm thick, or pure lead up to 650mm Wide
  - High Production rates
  - Most flexible grid making process on the market
  - No scrap
  - Reduced workforce requirements – 1 operator
  - Reduced grid weight
  - Over 145 global installations!!





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# Summary - Plate making

- **Pasting and Plate making**
  - Near Perfect Thickness control
  - Highest production rate in the industry
  - Expanded size capability to paste continuous Industrial size grids up to 24"
  - Automated process control
  - Flexibility and Proven – Punched, Concast, Expanded, TPPL, and Industrial size
  - Proven systems : Over 225+ SBP Lines





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# Summary – Gravity Flow Caster

- **Gravity Flow Caster**

- Capable of continuously casting High Antimony
- Provides a rough surface texture for paste adhesion
- Able to run traditional calcium, and more difficult to run alloys on one system
- Reduced workforce requirements – 1 operator for multiple lines
- Reduced stress of workforce when you go continuous
  - Less lifting and moving for operators
- Easy to run system





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# Summary – Your Partner for the Future

The complete portfolio of advanced industry leading grid and plate making solutions for the highest speed, tightest tolerance solutions for battery grids and plates in the world are available to you today.....



- **ONLY FROM WIRTZ!!**



# THANK YOU

PLEASE COME VISIT US AT BOOTH