



International Lead Conference

June 23rd, 2023 – Athens,
Greece

***Engitec Technologies, the widest range of
Plant capacities: from the CX[®] SMART up
to the biggest Breakers in the world***

Speaker:

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OUR VALUES

MASTER IN CIRCULAR ECONOMY

Spreading Engitec Plants for recycling of non-ferrous metals worldwide is:

- ✓ important for us
- ✓ Important for the environment
- ✓ Important for the entire world



SUSTAINABILITY

Engitec mission is to optimize and improve the metallurgical production processes, by designing and building sustainable Plants



CONTINUOUS INNOVATION

Engitec Research Center (ERC) currently employs more than 10 Chemists and Engineers, guided by a strong spirit of improvement and creativity



CUSTOMER CARE

Through the new department of Customer Care (ECC), composed by a highly experienced team, Engitec maintains constant contacts with the Clients, providing the necessary technical and technological support



THE ROAD MAP OF BATTERIES RECYCLING



LEAD FOUNDRY (TONOLLI GROUP)



LEAD REFINERY (TONOLLI GROUP)

Starting of the activities in batteries collection and classification

1

1920

Semi-mechanized operations, through mobile blades, cutting the lids of the batteries fixed on a conveyor

3

1940

2

First batteries treatment through manual crushing and smelting of "plates"

1930

4

First rotary furnaces are installed

1950

5

First mechanized systems are applied to crush and separate the batteries, thanks to rotary drums and sink & float systems

1960

6

New concept of batteries processing system through crushing system and hydrodynamic actions

1970

1978

7

Establishment of Engitec from a spin-off of a major operator in the non-ferrous industry

ENGITEC CLIENTS DISTRIBUTION – GENERAL

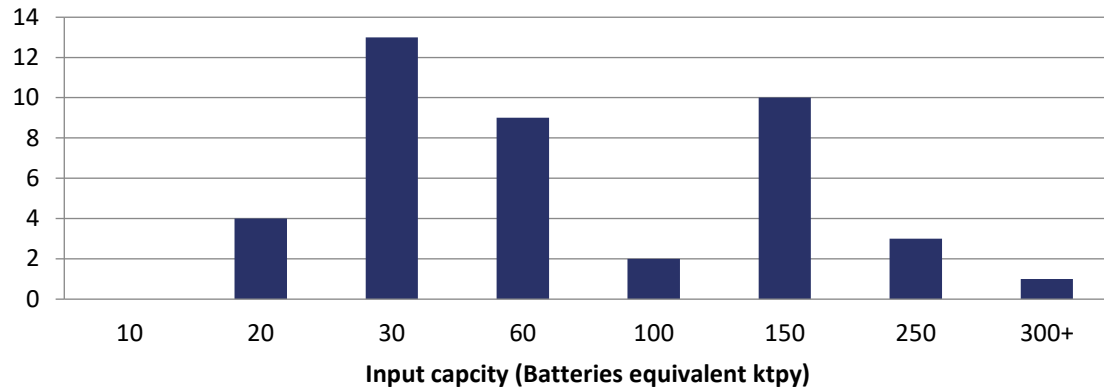
ENGITEC HAS INSTALLED ABOUT THE 50% OF THE WORLD BATTERY RECYCLING CAPACITY

EUROPE and CIS COUNTRIES	42 PLANTS
NORTH, CENTRAL and SOUTH AMERICA	14 PLANTS
MIDDLE EAST and AFRICA	8 PLANTS
FAR EAST and AUSTRALIA	3 PLANTS
BRICS	20 PLANTS



ENGITEC CLIENTS DISTRIBUTION – EUROPE AND CIS COUNTRIES

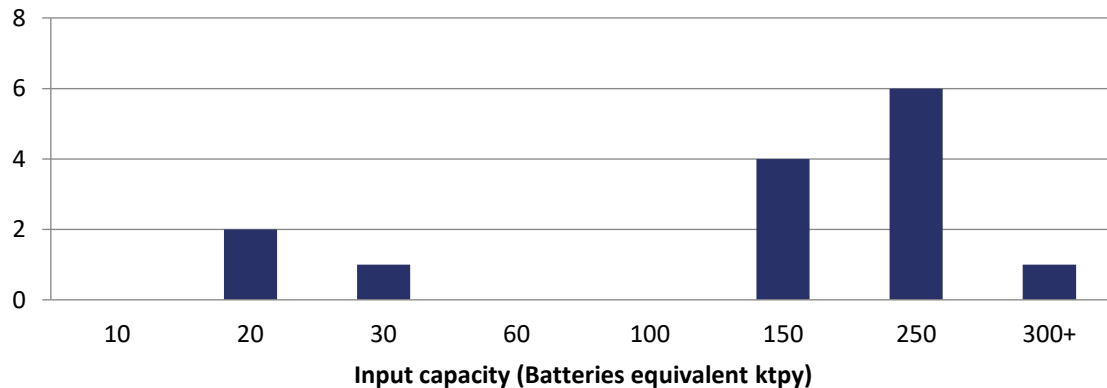
EUROPE and CIS COUNTRIES
Engitec Plants per Capacity



- Small-medium Plants (<60,000tpy) mainly located in the Eastern part of Europe
- Strong presence of big Companies (>120,000tpy), with more than one Plant
- Market forecast: Limited space for new Plants. Possibility of revamping, improvements and expansions

ENGITEC CLIENTS DISTRIBUTION – NORTH, CENTRAL, SOUTH AMERICA

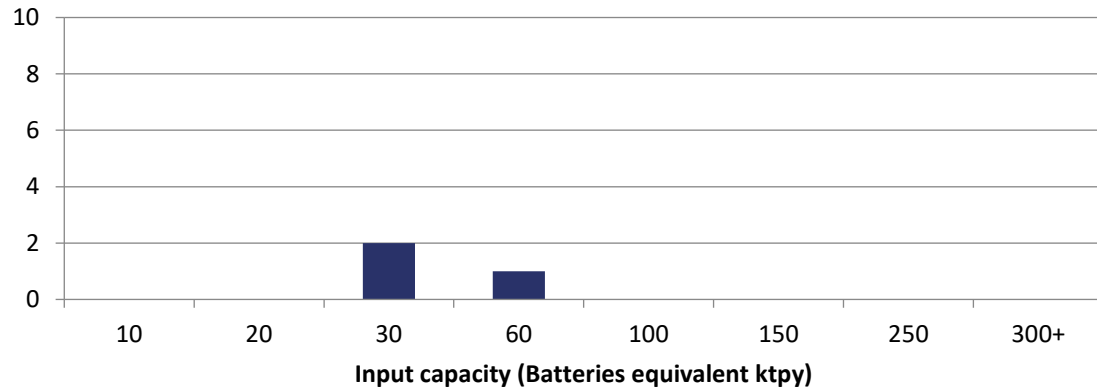
NORTH, CENTRAL, SOUTH AMERICA
Engitec Plants per Capacity



- North and Central America is characterized by the presence of big Plants (>150,000tpy)
- South America (except Brazil) is characterized by the presence of small Plants (<30,000tpy)
- Market forecast: potential for new big Plants and expansions in North and Central America, with growing interest towards cosmo Plants (>300,000tpy). New small-medium Plants for South America, where possible restrictions of the environmental regulation might represent a driving factor

ENGITEC CLIENTS DISTRIBUTION – FAR-EAST AND AUSTRALIA

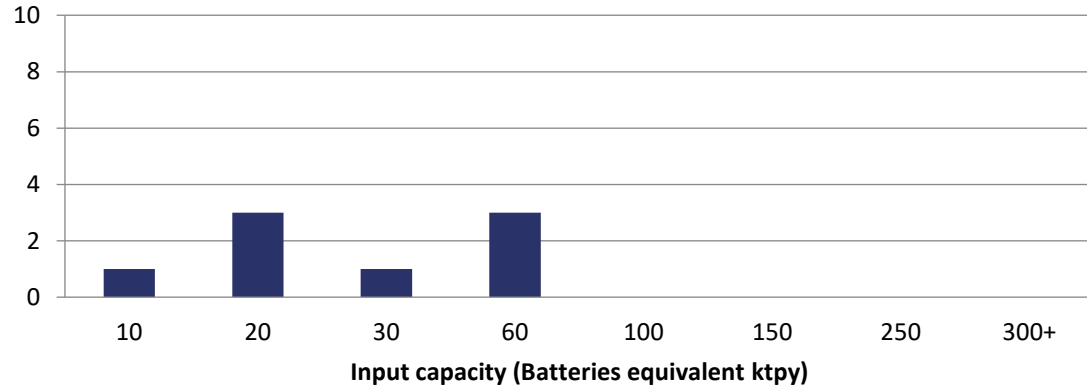
**FAR-EAST and AUSTRALIA
Engitec Plants per Capacity**



- Far-East and Australia are characterized by the presence of small-medium Plants (<60,000tpy)
- Australia is one of the world major producers of primary Lead
- Market forecast: for the Far-East market, the forecast is mainly related to revamping and expansions of the existing Plants.
In Australia there is space for new medium Plants, as well as further growth of the primary Lead production

ENGITEC CLIENTS DISTRIBUTION – MIDDLE-EAST AND AFRICA

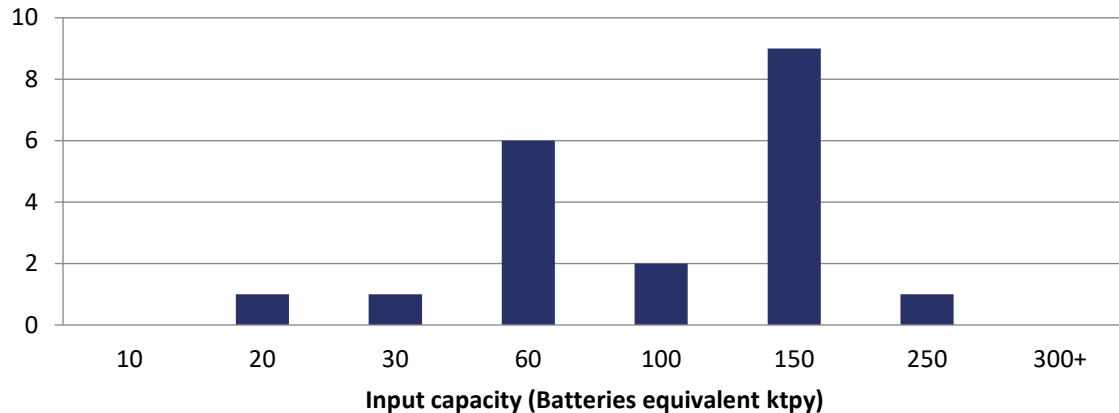
**MIDDLE-EAST and AFRICA
Engitec Plants per Capacity**



- Middle-East is characterized by the presence of small-medium Plants (<60,000tpy)
- Africa can be considered almost a virgin market
- Market forecast: Middle-East is becoming a global center of recycling for many non-ferrous metals, including Lead. There is space for new Plants, mainly small (<30,000tph) and for expansions. Africa will be one of the greatest challenges for the upcoming years: the potential of development is incredible – According to recent UN forecasts, by 2050 the Continent is expected to nearly double its population, reaching more than 2.4 billion inhabitants

ENGITEC CLIENTS DISTRIBUTION – BRICS

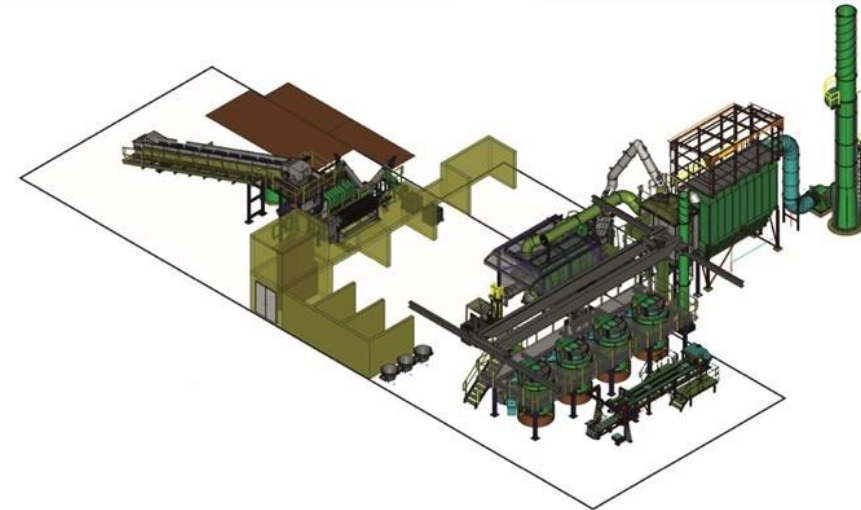
BRICS (Brazil, Russia, India, China, S. Africa)
Engitec Plants per Capacity



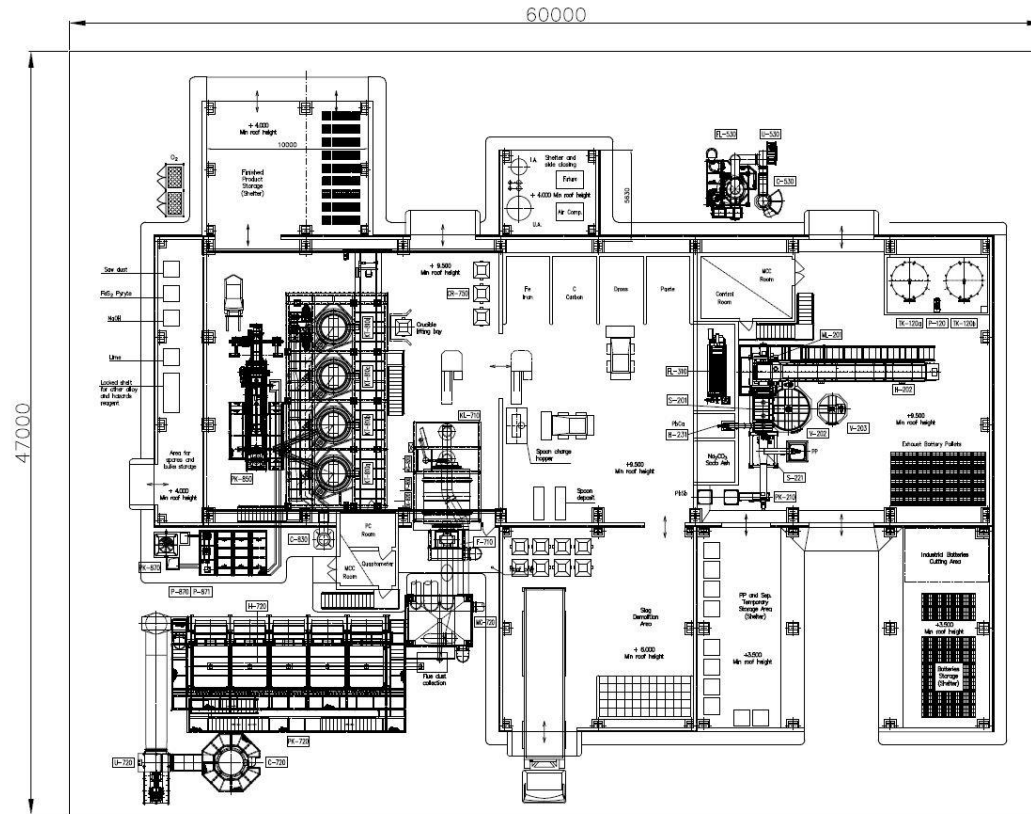
- Brazil: presence of medium Plants, with tendency to move to big size Plants
- Russia: presence of small and medium Plants
- India: presence of all sizes of Plants. Strong tendency to move to big Plants
- China: presence of big Plants
- South Africa: presence of medium Plants
- Market forecast: Russia potential has been affected by the current geo-political situation. Revamping and expansions for South Africa. Brazil and India represent the Countries with the highest potential for new Plants. China might move, in the short-term, from big Plants to cosmo Plants (>300,000tpy)

FROM THE CX[®] SMART...

- Input of **1.5 t/h**
- Rotary Screens for AGM batteries
- Components Separation, including PbSb/PbCa
- Paste Filtration
- 1.5 m³ Rotary Furnace
- 4 t/h ingots casting



FROM THE CX[®] SMART...



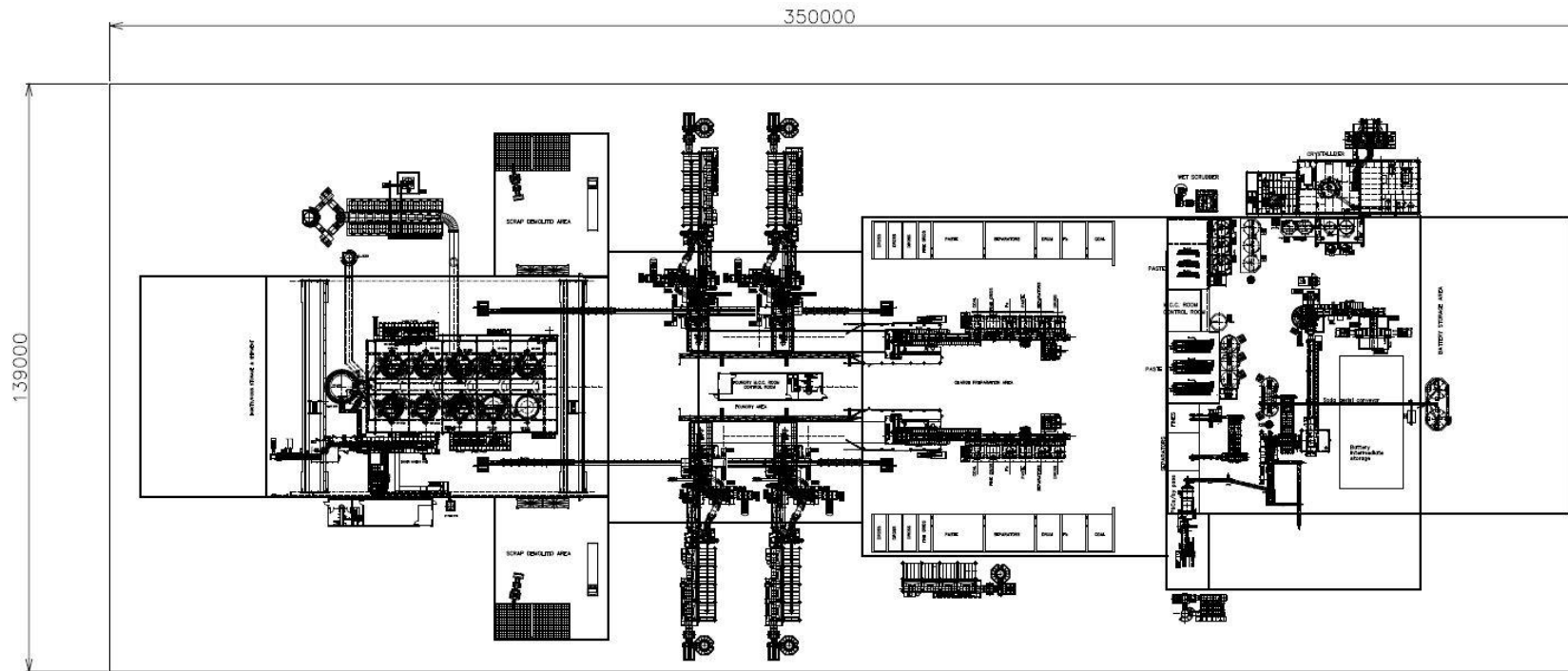
- A typical, complete, CX[®] SMART Plant requires a covered building of only approx. 1,500 m², for the technological line
- The total area required is around 3,000 m²

...UP TO THE BIGGEST CX[®] BREAKERS IN THE WORLD

- Input of **50 t/h**
- Battery pre-crushing unit
- Lithium Battery Detection
- Paste and Grids Desulphurization
- Fully Automatic Charge Preparation Unit
- 12 m³ Rotary Furnace
- 40 t/h ingot casting, fully automatic



...UP TO THE BIGGEST CX[®] BREAKERS IN THE WORLD



- A typical, complete, CX[®] 50tph Plant requires a covered building of around 40,000 m², for the technological line
- The total area required is around 120,000 m²



*Our experience
at the service of the Lead Industry*



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Thank You For Your Time!

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