Evolution of Lead Smelting Furnaces

Choices available for today’s secondary smelter

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secondaryleadconference.com
Historically there are three types of furnace available to the secondary lead smelter:

- Reverberatory furnace
- Shaft or blast furnace
- Rotary furnace
First designed in 18thC for ore smelting!

- Poor thermal exchange
- High energy consumption
- Static charge, large ‘dead zones’
- High levels of lead in slag
- High levels of lead fume
- Poor design lead to fugitive emissions
- Number of openings difficult/expensive to ventilate

Best consigned to history books & museums
SHAFT or BLAST FURNACES
Even older than reverberatory furnaces!

- Good productivity and thermal yield
- Good separation of lead and slag
- Smelt whole batteries or grids - poles and paste
- High cost of environmental protection
- Must run constantly 24/7
- Valid for high tonnages
- High maintenance
Production 42,000 Tonnes from 58,000 tonnes of scrap
ROTARY FURNACES
Probably the most versatile melting furnace ever!
Fixed axis rotary furnaces
Short body furnaces
CASTING OPTIONS

- Forward tilt
- Rear-tap
CONCLUSIONS

- Rotary furnaces extremely flexible
- They are compact & user friendly
- In some ways almost too easy to operate
- Very forgiving
- More thought should be given to metallurgy as hardware is only half the story!