LMRC:

Shell Heat Exchanger (SHE)

Use of LMRC's Shell Heat Exchanger Technology to open the operating amperage window for a reduction cell. This allows the smelter to move from the standard steady state operation to a dynamic operation that can be changed readily in relation to variables such as power and metal price. Benefits include:

1. Smelter can reduce or increase amperage at will to increase smelter profitability in all market conditions.

2. Use the smelter as a "battery" by releasing power back to the grid when there is a shortage and increase production and power consumption when there is an oversupply of power. This is particularly important in areas with high dependence on renewable energy.

LMRC's Role:

1. Patent and Licence holder of the Shell Heat Exchanger Technology.

2. Work with client and licenced technology supplier to design a fully customized SHE system which provides target functionality without compromising normal operations and safety.

3. Work with and advise smelter and equipment suppliers during procurement, installation and commissioning processes.

4. Define the full system capability and benefit through use of vigorous testing regimes.

5. Provide training programs to smelter operators on how to use and get the most of the SHE technology.

6. Continual development of value adding enhancements for the current system

Results:

- Quickly change cell power input by more than ± 20% for periods ranging from hours to months.

  - Maximise profitability - Allows flexibility to change production to follow power and metal price markets

  - Reduce power usage without the need to shut down pots

- Superior heat balance control

  - Improve cell stability even at base amperage. Long term current efficiency improvements of >1.5% have been realized.

  - Improve energy consumption through ability to further squeeze ACD (on non-ACD limited pots). Reductions of >0.75 DC KWh/kgAl have been realized .
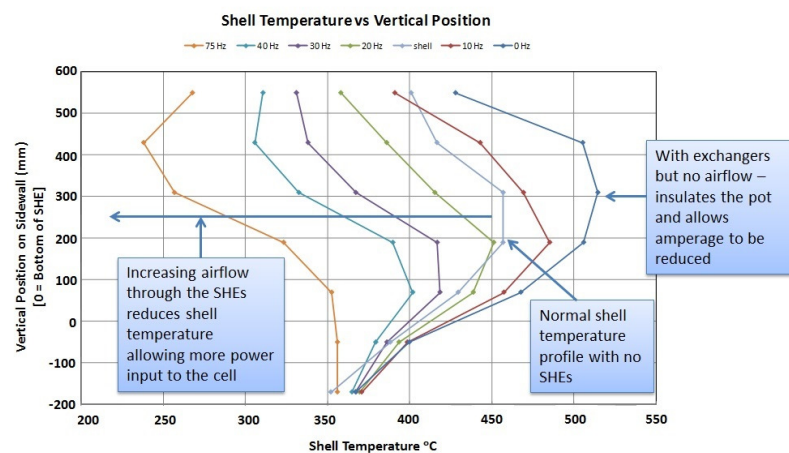
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