Aluminium Siphoning System

Typical Application

• Siphon Transfer of Liquid Aluminium from transfer crucibles to aluminium holding furnaces

• Other Applications on request

Benefits over Conventional Transfer Methods

• Safer molten metal transfer practices

• Reduction of metal loss of around 75% of dross make due to the hot metal transferring operation

• Automated vacuum control system utilising PLC

• Low residual of aluminium remaining in transfer crucibles

Rio Tinto Alcan
Major is licensed on behalf of the Rio Tinto Alcan Group to manufacture and sell Siphon Systems for transferring molten metal from transfer crucibles into holding furnaces. Siphon Pipe Design, PLC controlled vacuum system, siphon raise-lower systems are all covered by this license.

Rio Tinto Alcan, who manage primary aluminium smelters all over the world, together with Major, have jointly developed siphon pipe handling systems, their structures and the lifting and lowering mechanisms.

Tests with the fully operational system have demonstrated a reduction of some 75% of dross make due to the enhanced, non-turbulent flow achieved through siphon metal transfer.

The siphoning system is a PLC controlled vacuum system which transfers metal via a siphoning method from one bath of liquid metal to another.

The main elements of the system are:

**PLC Controlled Vacuum System**
- The system incorporates a PLC system to control the vacuum which enables metal to be transferred at variable flowrates through the siphon pipe.

**Siphon Lifting Mechanism**
- Provides concise alignment of siphon pipe into the furnace.
- Permits clear vehicle clearance when siphon pipe is parked.
- Safety latch mechanism retains the siphon pipe in parked position.
- Enables the operator to have clear view of siphon pipe during raising and lowering.

**Siphon Roller Post**
- Guides siphon pipe into furnace port.

**Siphon Pipe Heating System**
- Pre-heat burner on post heats siphon pipe in parked position.

**References**
The Rio Tinto Alcan-Major siphoning system is successfully installed at the following primary aluminium plants.

- Boyne Smelters, Queensland, Australia
- Sohar Aluminium, Sohar, Oman

**COMPLEMENTARY TECHNOLOGIES**

**Siphon Pipe Transport/Changeover Vehicle**
- Single operator siphon pipe changeover.
- Delivers clean siphon pipe and changes used pipe in single setup.
- Clamps used pipe and transports to cleaning station.
- Moves clean siphon to roller post station.
- Safe and quick siphon pipe changeover.

**Crucible Tilting System**
Can be used to enable the transfer crucible to be tilted adjacent to the holding furnace, freeing up the crucible transfer vehicle to transport other crucibles during siphoning.

**Tilting Rotary Furnace**
The dross generated by subsequent metal handling processes can be safely and efficiently processed in our tilting rotary furnace, further reducing metal loss.

**Reverberatory Melting and Holding Furnaces**
Major supplies an extensive range of reverberatory melting and holding furnaces from 1 tonne to 80 tonne capacity and can retrofit existing reverberatory furnaces to accommodate siphon systems.

Technical Data is subject to change without notice.  
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For further information or assistance on our range of aluminium processing technologies please call one of our sales team.