How to get the best Performance?

A chain is only as strong as its weakest link…

A coherent FULL LOOP SOLUTION, based on top quality components, is essential to achieve the best performance.

The whole project management and fine tuning by a SINGLE EXPERT PARTNER is just as essential to magnify the performance of the loop.

Best value through complete AMLC-SR approach

Quality evolution of the 5 casters below are shown before and after upgrade.

CC 3-4-5    full AMLC-SR
CC 1-2   multiple suppliers approach

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast Time</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Spec Deviation</td>
<td>21%</td>
<td>15%</td>
</tr>
</tbody>
</table>

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Automatic Mould Level Control

One Single Partner
One Coherent Full Loop
Unique Performance

Flow Valve
Controller
Automatic mould Level Control
Full Loop Performance

AMLC-SR: top quality hardware within full loop approach

SENSOR: XLEV
- Accurate and reliable eddy-current sensor
- No interference with operation
- Total drift compensation

CONTROLLER: UCN
- Self-adaptive control strategy
- Smart decision making

STOPPER FLOW VALVE: M-Type
- Consistent and fast reaction
- Full loop performance

Phase 1:
- Auto balance
- On-line analysis:
  - Automatically switch to the relevant control strategy
- Operator pulpit aside strand with screen for feedback information
- PLC in electric room for ladder logic and most control modules

Phase 2:
- Linearization
- PC for advanced control modules and data storage and analysis

Optional and Ancillary Equipment
- Argon injection system
  - Multi-channel in one enclosure
  - True mass-flow controllers: no need for pressure/temperature compensation
  - PLC controlled, remote control and monitoring
  - Full traceability into AMLC data storage unit

- SEM3085 Tube Changer
  - For long sequences on slab casters
  - Optimised contact pressure for improved tightness
  - Double stroke emergency shutoff for extended safety
  - Automatic tube change function embedded in UCN controller
  - Robot ready design
  - Pneumatic version available (TCD3000)

- Chop Gate Kit for Tube Changer
  - Conversion of a SEM3085 into a chop gate
  - Conversion of a SEM3085 into a chop gate for occasional use with SEN
  - One man operation
  - Safe shut-off
  - Full proof operation

- User-friendly calibration
- No oscilloscope required
- No laptop required
- Easy installation, no mould modification
- Head shape customized to caster needs

Fast
Accurate
and
Reliable
Full Loop Performance

Accurate and reliable eddy-current sensor
- No interference with operation
- Total drift compensation

- Smart decision making
- Full loop performance

- Steady state control (no significant perturbation)
- Sudden perturbation (unclogging, fast speed change,…)
- Transient phase (Auto-
tart, ladle change, SEN change, mould width change,…)
- Periodical perturbation (Waves, bulging,…)

- Ability to manage perturbations with several frequencies occurring at same time
- Reduced downtime
- No oil burning risk

- Precise stopper positioning
- Performance consistency all year long
- Ultra fast response time

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Automatic Mould Level Control

Flow

Valve

Controller

Level Sensor

One Single Partner
One Coherent Full Loop
Unique Performance

AMLC-SR: top quality hardware within full loop approach

SENSOR: XLEV
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STOPPER FLOW VALVE: M-Type
- Consistent and fast reaction

User-friendly calibration
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AMLC-SR SLAB-print.indd   2
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**Automatic Mould Level Control**

- **One Single Partner**
- **One Coherent Full Loop**
- **Unique Performance**

**Full Loop Performance**
- **Fast Response Time**
- **Accurate and Robust**
- **Smart Decision Making**

**AMLC-SR**: top quality hardware within full loop approach

**SENSOR**: XLEV
- Accurate and reliable eddy-current sensor
- No interference with operation
- Total drift compensation

**CONTROLLER**: UCN
- Self-adaptive control strategy
- Operation quite stable even under significant perturbation
- Auto balance, auto switch to relevant control strategy

**STOPPER FLOW VALVE**: M-Type
- Ultra fast response time
- Precise stopper positioning
- Performance consistency all year long
- Reduced downtime
- No oil burning risk

**Optional and Ancillary Equipment**

- **Argon injection system**
  - Multi-channel in one enclosure
  - True mass-flow controllers: no need for pressure/temperature compensation
  - PLC controlled, remote control and monitoring
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  - Safe shut-off
  - Full proof operation

**On-line analysis**
- Automatically switch to relevant control strategy
- Phase 1: Auto balance
- Phase 2: Linearization

- Operator panel: safe control with screen for feedback functions
- Steady state control (no significant perturbation)
- Sudden perturbation (unclogging, fast speed change,…)
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**User-friendly calibration**
- No oscilloscope required
- No laptop required

**Phase 1**
- Auto balance
- On-line analysis

**Phase 2**
- Linearization

**PLC in electric room for ladder logic and most control modules**

**100% electric stopper valve**
- Ultra fast response time
- Precise stopper positioning
- Performance consistency all year long
- Reduced downtime
- No oil burning risk

**PC for advanced control modules and data storage and analysis**

**Avemis XLEV-L ledge sensor**
- Handled manually or by manipulator
- Easy installation, no mould modification
- Head shape customized to caster needs

**Avemis XLEV-S suspended sensor**
- Handled manually or by manipulator
- Easy installation, no mould modification

---

**Kenko XLEV, bridge sensor**
- In-field calibration is possible
- No taping required
- No oil burning risk
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Best value through complete AMLC-SR approach

Quality indicators of the 5 casters below are shown before and after upgrade.

<table>
<thead>
<tr>
<th>Caster</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC 1</td>
<td>0%</td>
<td>21%</td>
</tr>
<tr>
<td>CC 2</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td>CC 3</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>CC 4</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>CC 5</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

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Automatic Mould Level Control for Stopper-Rod Slab Casters

SERT and AVEMIS Products and Systems
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