Abstract

The Knowledge Base of a Fuzzy Logic Controller (FLC) encapsulates expert knowledge and consists of the Data Base (membership functions) and Rule-Base of the controller. Optimization of these Knowledge Base components is critical to the performance of the controller and has traditionally been achieved through a process of trial and error. Such an approach is convenient for FLCs having low numbers of input variables however for greater number of inputs, more formal methods of Knowledge Base optimization are required. Genetic Algorithms (GAs) provide such a method to optimize the FLC parameters. An intelligent multi input multi output (MIMO) control for the cement milling circuit is presented. The FLC is optimized by GA for varying nonlinearity in the plant. The proposed control algorithm was tested on the cement mill simulation model within MATLAB Simulink environment. Parameters of the simulation model were set up based on the actual cement mill characteristics. The performances of the proposed control technique are compared with various control technique. The results of the control study indicate that the proposed algorithm can prevent the mill from plugging and control the cement mill circuit effectively compared to the other control technique.
Evolutionary Design of Intelligent Controller for a Cement Mill Process

- Cordon, O.; Alcala, R.; Alcala-Fdez, J.; Rojas, I. "Guest Editorial Genetic Fuzzy Systems:
Evolutionary Design of Intelligent Controller for a Cement Mill Process


Index Terms

Electronics Control Systems
<table>
<thead>
<tr>
<th>Key words</th>
<th>FLC</th>
<th>GAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cement Mill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plugging</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>