Pre-Control

A simple way to keep a process in control
The Discovery of Pre-Control

• What is Pre-Control?
• Key benefits of Pre-Control
• Mechanics of Pre-Control
• Summary
What is Pre-Control?

...a principal tool in the SPC world developed to maintain control conditions in the production process.
Key benefits of Pre-Control

• **Ease of use by operator**
  Green, yellow, red zones easy to understand

• **Simplicity**
  Pre-control is middle half of specification width

• **Discriminating power**
  Risk of rejection is low: <2% under worst conditions, 0% with $C_{pk}$ of 1.66

• **Economical**
  Inexpensive calculations prevent manufacture of defects
Mechanics of Pre-Control

1. Draw 2 Pre-control lines surrounding the middle half of the specification.

2. To qualify the process as “ready to run” (actually the instant process capability), 5 units in a row must be within the pre-control lines (green zone)
3. In production, sample 2 units consecutively and periodically
4. Act as guided below:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 units in Green Zone</td>
<td>Continue production</td>
</tr>
<tr>
<td>One unit in Green Zone, one unit in Yellow Zone</td>
<td>Continue production</td>
</tr>
<tr>
<td>Two units in same Yellow Zone</td>
<td>Adjust</td>
</tr>
<tr>
<td>Two units in opposite Yellow Zone</td>
<td>Stop*</td>
</tr>
<tr>
<td>One unit in Red Zone</td>
<td>Stop*</td>
</tr>
</tbody>
</table>
Mechanics of Pre-Control

5. Frequency of Sampling: Divide average interval between stoppages by 6.

* To resume production, 5 units in a row must be within the green zone.
Exercise
Summary

• As the simplicity and effectiveness of Pre-Control becomes better publicised, “traditional” control charts may become less common.
• Pre-Control is a simple, inexpensive alternative to control charts.
• The mechanism is intuitive, and can be taught to anybody in industry.
• Pre-Control is a versatile technique in determining when to adjust the process or change a tool.