Hertzler Systems Inc.®

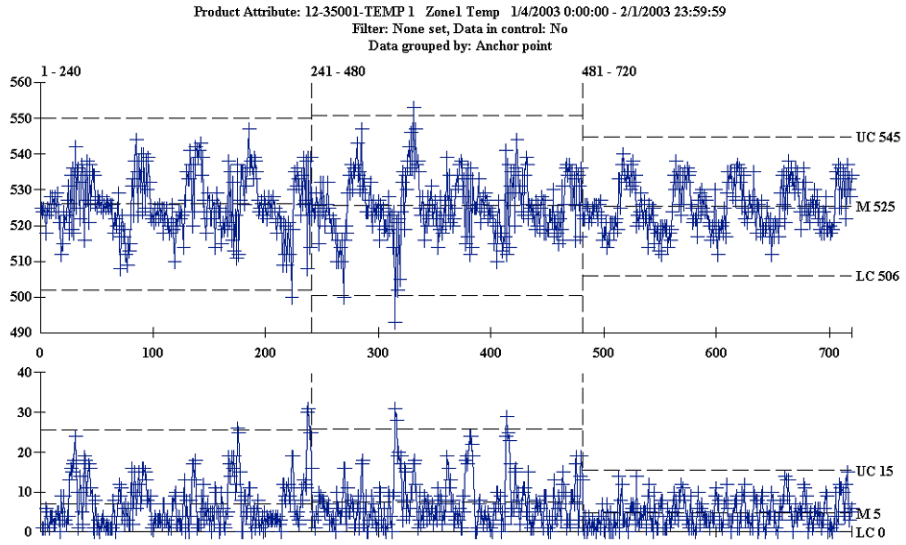
Changing the Measure of Quality Management

Data grouping and drill down

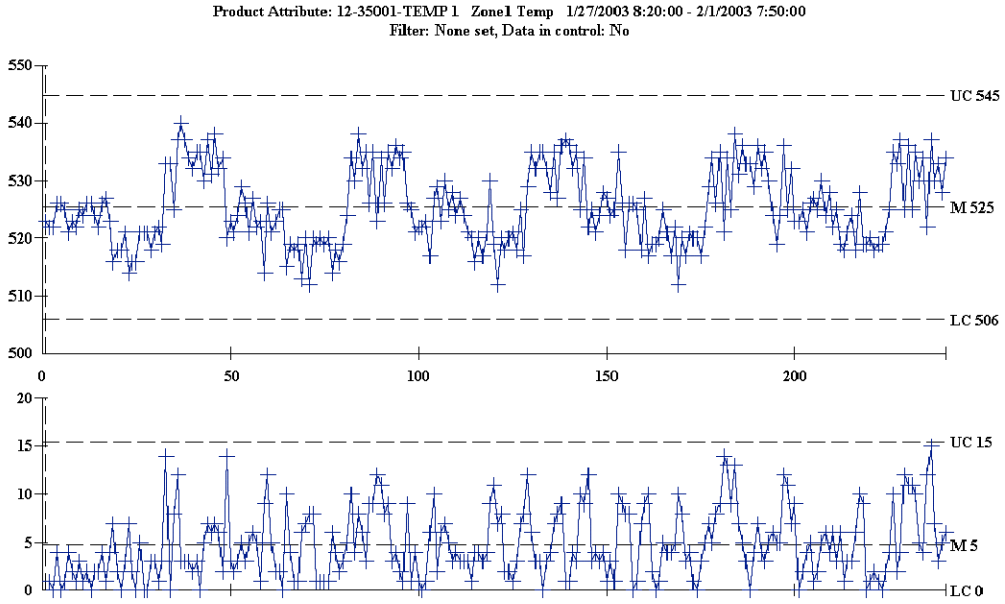
Introduction

Hertzler's GainSeeker 7.3 Suite introduces new tools for understanding process variation. These tools are unique and very powerful. This white paper gives examples from a manufacturing situation, but they apply equally anytime you need to understand process variation. Examples might include understanding variations in sales performance, wait times in hospital emergency rooms, cycle times for order fulfillment, and so forth.

GainSeeker 7.3 gives you the ability to **group data by** time period, process change, or any traceability field. This means that you can see a control chart like the one shown at the right, where data is grouped week-by-week.

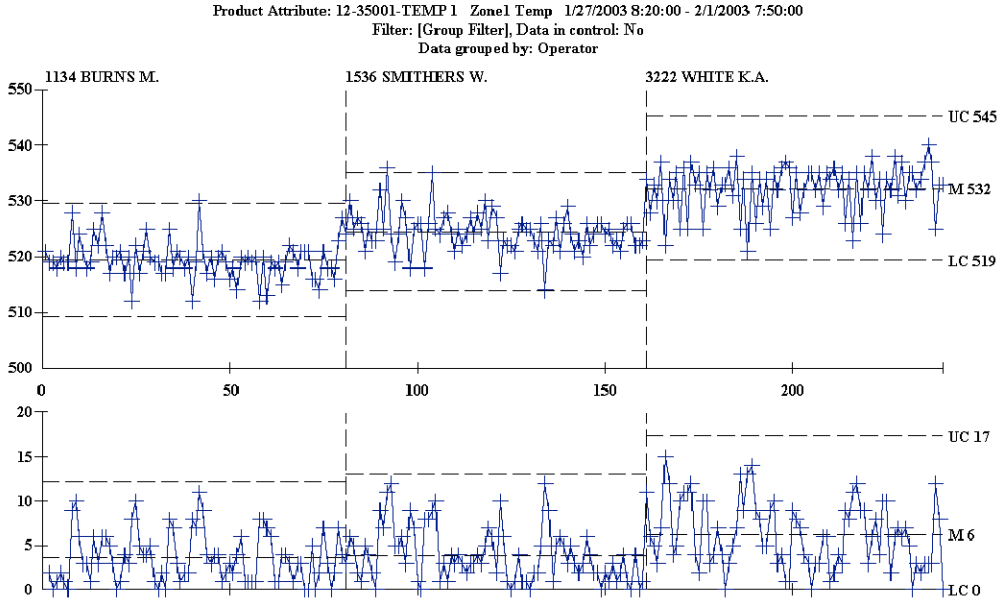


Then while the chart is on the screen you can **drill down** into any of the groups data and view that portion of the chart grouped by traceability field. Here we've drilled into the chart and selected just the third week of data.

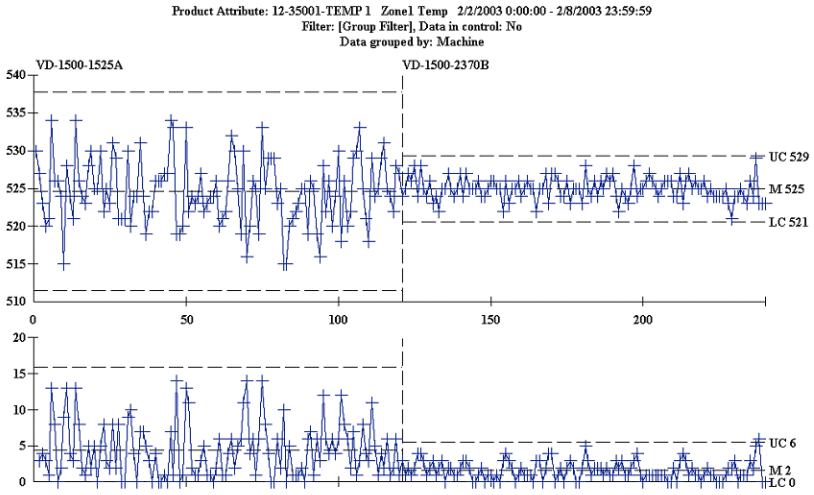


Once we have selected that group of data, we can group it by any traceability field to identify contributors to the variation.

In this example we have grouped the third week of data by Operator:



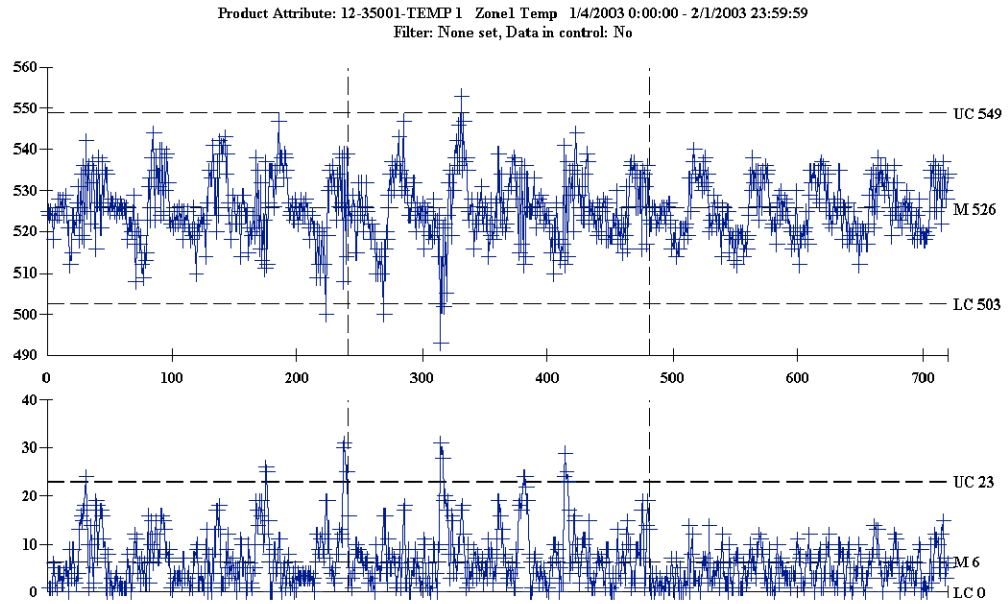
This can be an iterative process, so it is very easy to drill down further into a subset of the data, and then group that data by another logical grouping. Here we've drilled in and selected one operator (White, since she has the most variability) and then grouped the resulting control chart by machine.



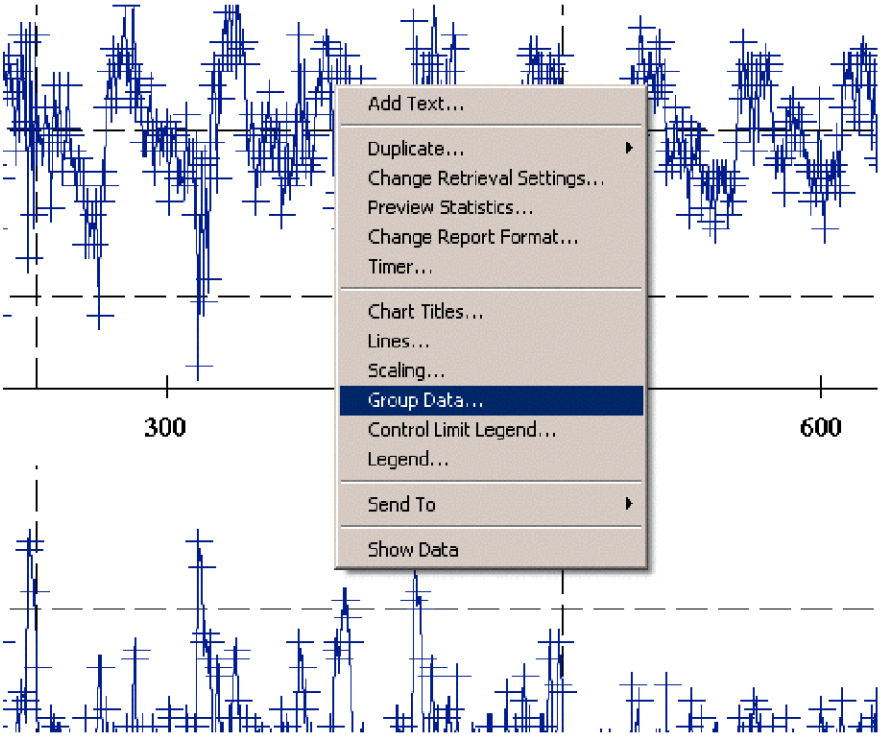
When used together, these **Group By** and **Drill Down** give you a powerful tools for understanding the root cause of common cause variation.

How the feature works

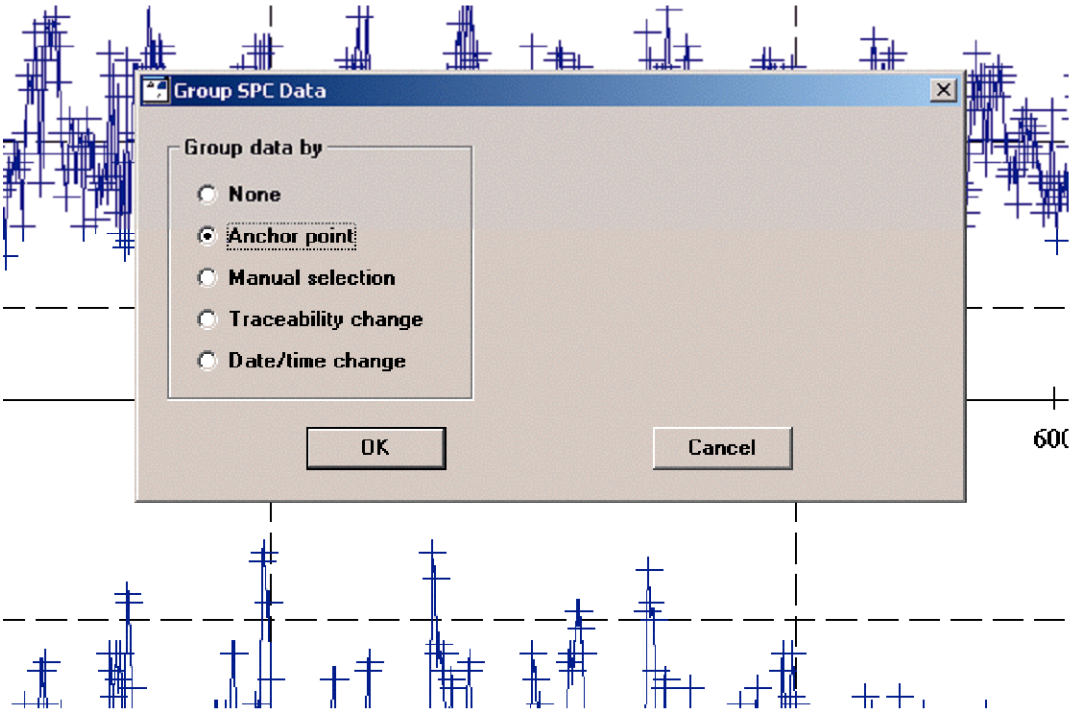
Anytime you open a control chart in GainSeeker SPC, the program automatically sorts the data by date and time (and numbered by count) across the x axis. The control limits displayed on the chart are calculated for the data that is displayed on the chart.



When the user right-clicks on this chart, he will see the chart menu.

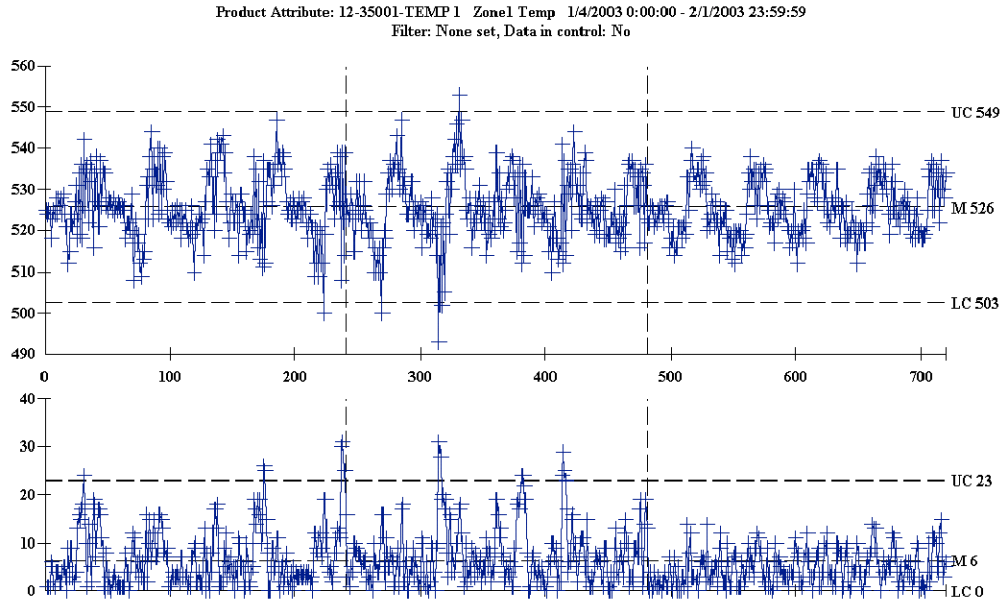


When the user selects Group Data… from this menu he will see the Group Data Dialog, shown below.

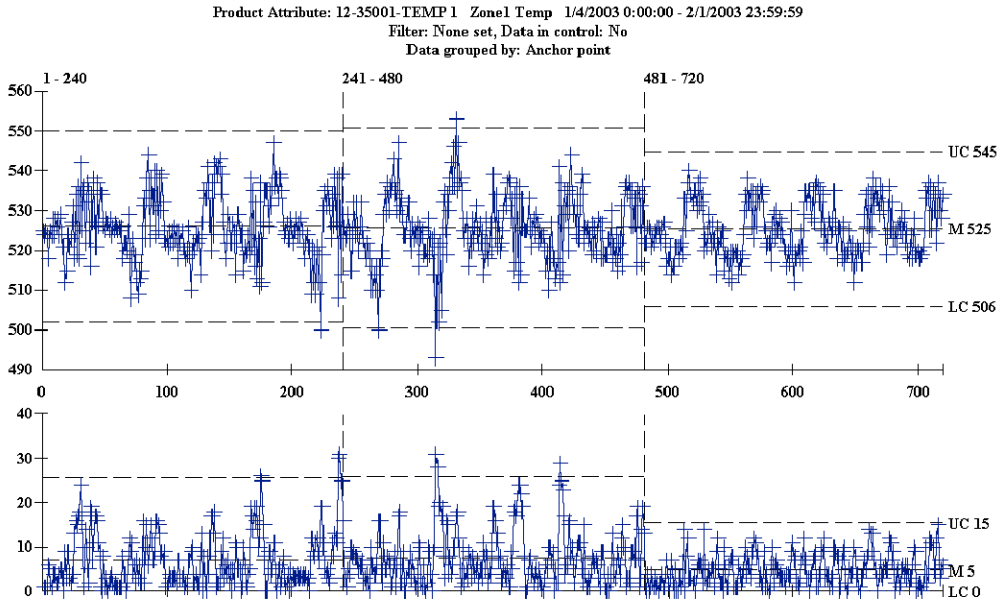


This dialog presents several options, but the ones we will concentrate most are Anchor Point and Traceability Change.

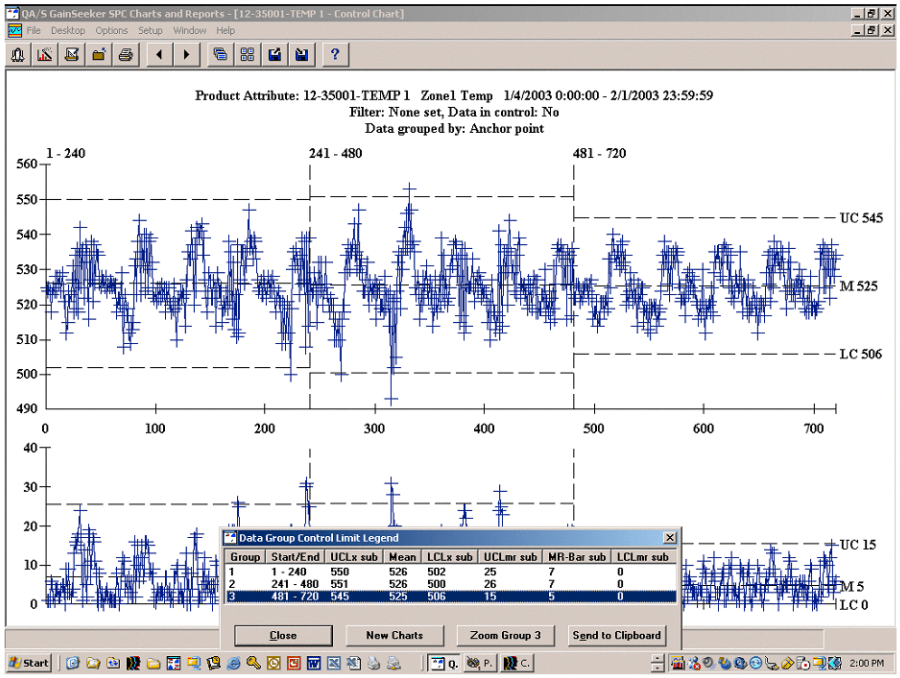
During data entry the user can insert an Anchor Point on any data point. You can use Anchor Points to indicate any process change or events such as changes in shifts, new material lot numbers and so forth. The Anchor Point is indicated on the control chart with a dashed vertical line. This chart has three anchor points – one at about point 240, and one at about point 480. This divides the chart into three groups.



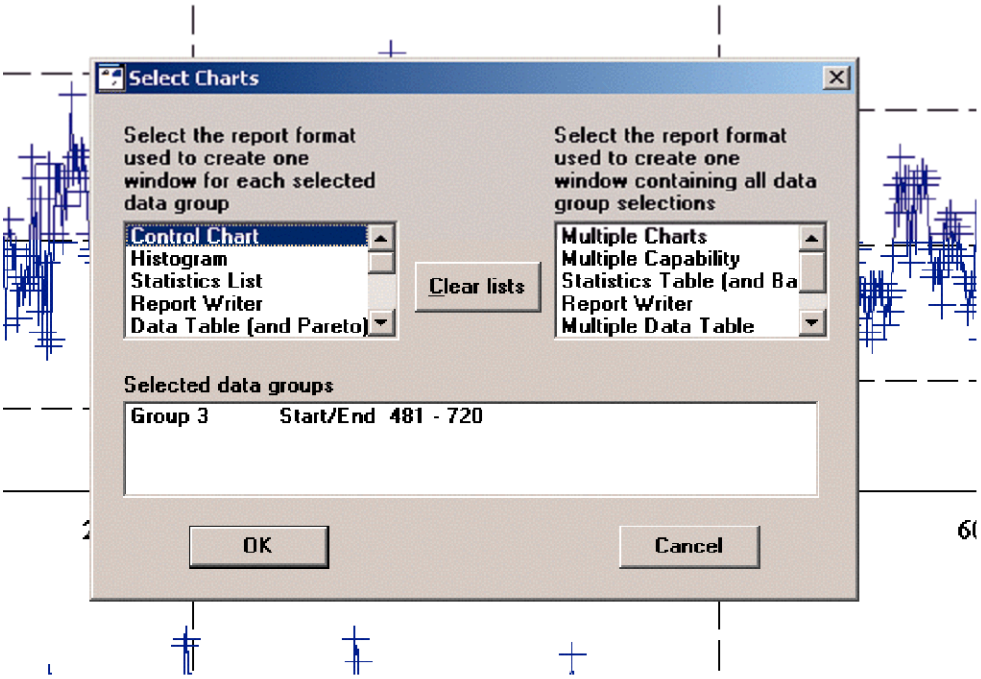
When the user selects to group data by Anchor Point, GainSeeker 7.3 Suite calculates control limits for the data between each Anchor Point, and displays them on the chart. Armed with this information you can very easily tell if three populations are significantly different. In this chart, when we group data by Anchor Point, we can see that the third group is significantly different. (The control limits for the third group would account for very few of the points in the first two groups – especially on the range chart.)



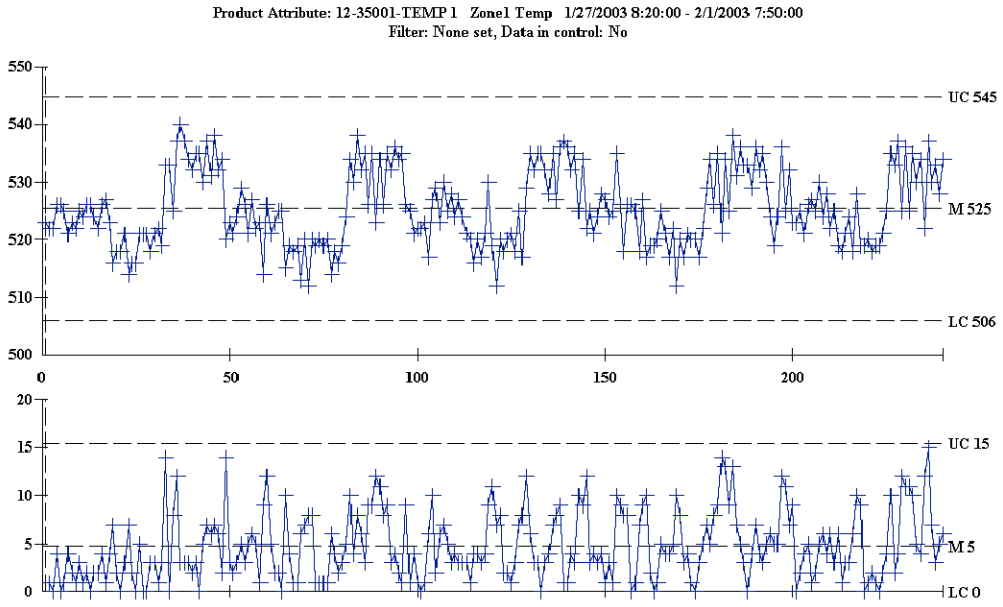
Once the data is grouped, you can zoom in on it by displaying the Control Chart Legend (shown below), highlighting one of the groups, and then selecting New Chart.



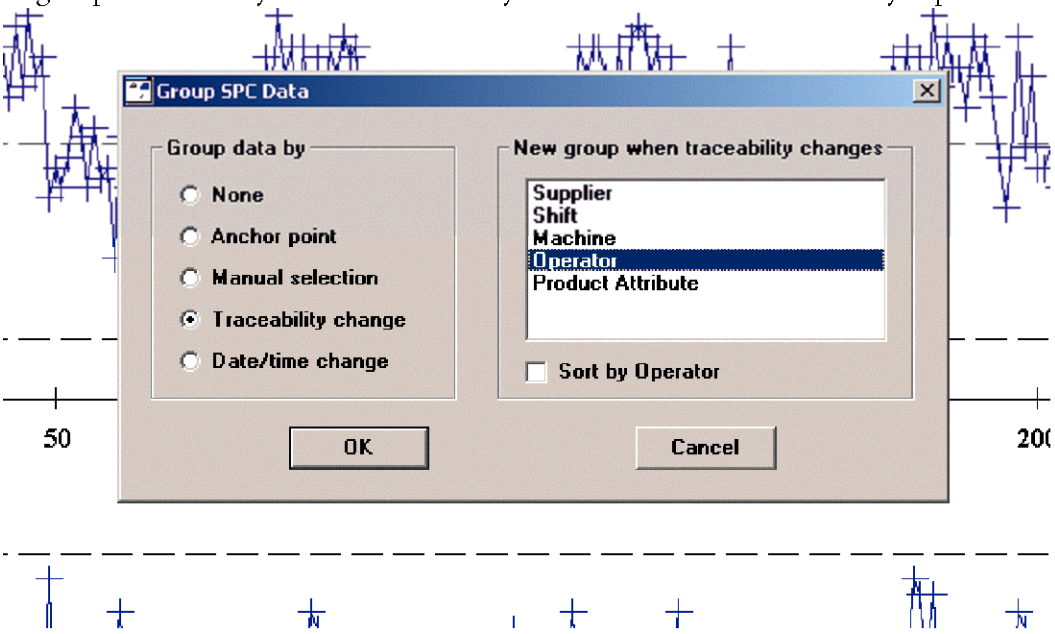
When you select New Chart (or Zoom) you'll see the Select Charts dialog.



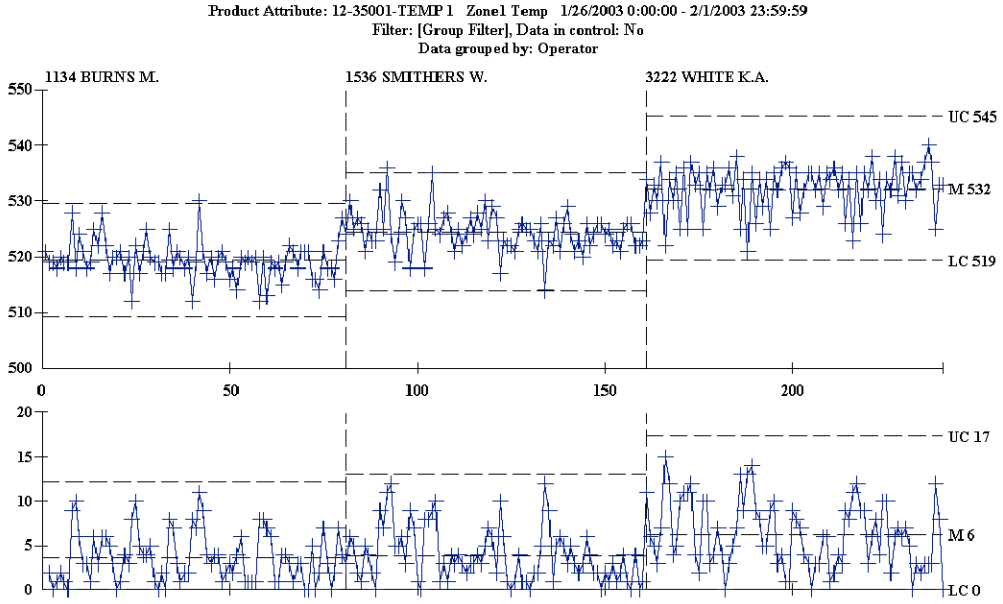
If you select Control Chart from this dialog you'll see the chart for the data that you've selected.



So far we've grouped data by anchor point, then drilled into one of those groups. Now we're ready to group this chart by another traceability field. This time we'll select by Operator.



Grouping and drilling into data gives us a powerful tool for understanding how various parameters affect the performance of the system.



Summary

GainSeeker 7.3 Suite includes a powerful and easy-to-use tool for understanding the root cause of common cause variation. This tool can help you quickly identify process improvement opportunities. Although the example shown here uses manufacturing data, the tool can be applied equally well with transactional data.

References

W. Edwards Deming. Out of the Crisis. MIT CAES. 1986. pp. 354f.