

Practice: Calculating Capability Indices

Open the data set **Impurity.jmp**. This example involves the production of a polymer. An important input variable is the temperature (**Temp**, in degrees C). The internal specifications for temperature are 28 +/- 2 degrees C.

In this exercise, you conduct a capability study for **Temp**.

1. Use the Control Chart Builder to create an individuals and moving range chart for **Temp**, and use the tests for special causes to check the stability of the process. Is the process stable?

Yes, the process is stable.

2. Use the Distribution platform and a normal quantile plot (from the red triangle) to check the normality assumption. Is the underlying distribution approximately normal?

There is a slight curve in the normal quantile plot, but the data appear to be approximately normal.

3. Conduct a capability study using the Distribution platform to determine whether the operating specifications for **Temp** are being achieved.

a. What is the P_p ?

b. What is the P_{pk} ?

c. Is the process on target?

d. For the current process, what is the estimated percent of temperatures that will fall outside the spec limits?

a. 0.928

b. 0.681

c. No, the process is off target. It is shifted toward the lower spec limit.

d. 2.0777 – Approximately 2.056 are estimated to fall below the lower spec, and approximately 0.021% are estimated to fall above the upper spec.

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