**Process Capability Index**

**Cp And Cpk are the process capability indices.,**

**Cp- Process Capability - Measures the variation - how close the measures readings.,**

**Cpk – Process Capability Index -Measures the central tendency - how close the measures readings to Nominal**

*C*pk is an index (a simple number) which measures how close a process is running to its specification limits, relative to the natural variability of the process. The larger the index, the less likely it is that any item will be outside the specs.

*C*pk measures how close you are to your target and how consistent you are to around your average performance. A person may be performing with minimum variation, but he can be away from his target towards one of the specification limit, which indicates lower *C*pk, whereas *C*p will be high. On the other hand, a person may be on average exactly at the target, but the variation in performance is high (but still lower than the tolerance band (i.e., specification interval). In such case also *C*pk will be lower, but *C*p will be high. *C*pk will be higher only when you are meeting the target consistently with minimum variation

Process capability index (Cpk) is a statistical tool, to measure the ability of a process to produce output within customer’s specification limits. In simple words, it measures producer’s capability to produce a product within customer’s tolerance range. **Cpk is used to estimate how close you are to a given target and how consistent you are to around your average performance.** Cpk gives you the best-case scenario for the existing process. It can also estimate future process performance, assuming performance is consistent over time.

Cpk is a standard index to state the capability of one process, **the higher the Cpk value the better the process is.** For instance, Machine 1 has a Cpk of 1.7 and machine 2 has a Cpk of 1.1. From the Cpk value, one can derive that Machine 1 is better than 2. Since Cpk uses specification limits and parts variation (sigma), we can also arrive at the yield processed and losses from the machine.