

SPC – Statistical Process Control

U7 – Control

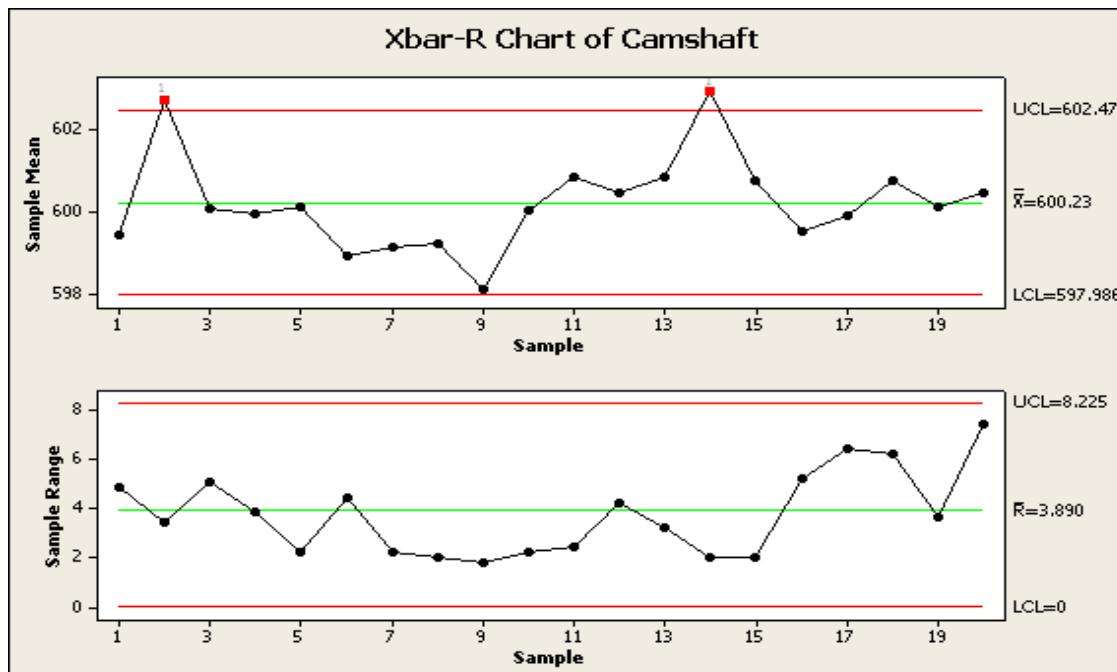
E1 – Statistical Process Control (SPC)

The element ‘Statistical Process Control’ explains the controls methods used to identify out-of-control situations and deviations over time. Different types of SPC charts are reviewed.

Statistical Process Control

Objectives and benefits

- Tells you if the process is stable or unstable
- Does NOT tell you if your process is producing products or services within customer specifications



Variation

- **'Common cause' variation: Inherent to the process itself (noise)**
Can only be reduced by changing or improving the process itself
- **'Special cause' variation: caused by special causes and situations (signal)**

'Data contain both signal and noise. To be able to extract information, one must separate the signal from the noise within the data.'



- Walter E. Shewhart -

Common cause variation (noise):

- Is inherent to the process
- Every process shows common cause variation
- It is produced by the process itself (the way we do business)
- It can be reduced or eliminated, but only by a fundamental change in the process

A process showing only common cause variation is ‘stable’, ‘predictable’ and ‘in-control’

Common cause variation

In the example of hot meals in Elderly home centre:

- There is a difference in walking distance to every customer
- Not every plate leaves the kitchen at the same time (some plates wait longer to be taken to the customers)
- Different cooks prepare at different temperatures
- The cover of the plate was not closed properly



Special cause variation

- This is variation that cannot be explained by common causes alone
- It is often very large as compared to common cause variation
- It is caused by problems that can be identified and often eliminated
- SPC helps to detect special cause variation

*A process showing special cause variation
is called 'out-of-control' and 'instable'*

Special cause variation

In the example of hot meals in Elderly home centre:

- The stove is not working properly any more
- The Elderly home centre has opened a new department which is closer to the kitchen



Statistical Process Control

Charts

- Example Xbar-R chart:

