

***p* Chart**

In some quality control processes the measure is a binomial variable indicating the presence or absence of a defect in the product. In an automated production environment, there may be continuous measurement of the product and a “tagging” of the product which is non-conforming to specifications. Due to variation in materials, tool wear, personnel operations, etc. one may expect that a certain proportion of the products will have defects. The *p* Chart plots the proportion of defects in samples of the same size and indicates by means of upper and lower control limits, those samples which may indicate a problem in the process.

To demonstrate the *p* Chart we will utilize a file labeled pchart.txt. Load the file and select the Analyses / Statistical Process Control / *p* Chart option. The specification form is shown below along with the results obtained after clicking the Compute Button:

p Control Chart

Directions: The *p* Chart for nonconforming parts assumes you have a variable (column of data) which represents the number of nonconforming parts in a sample lot of size *N*. You are expected to enter the sample size *N* in which each of the observations was made. You will also need to enter *P*, the expected or target proportion of defects in a sample of *N* parts. To select the measurement variable, click on the name of the variable in the list of variables available. Enter the *N* and *P* values in the boxes provided. If you desire a sigma value for the upper and lower control limits, click the button of your choice. Click the Compute button when you are ready for the results.

Selection Variables: Defects

No. of parts sampled: 1000

Expected proportion of defects: .01

No. of Sigma Units for UCL and LCL:

- ☒ 3 Sigmas (default)
- ☐ 2 Sigmas
- ☐ 1 Sigma
- ☐ X Sigmas where X =

Measurement Variable: Defects

Options: ☐ Print the c Control Chart

Buttons: Reset, Cancel, Compute, Return

Figure 1 The SPC *p*Chart Specification Dialog

Target proportion = 0.0100
Sample size for each observation = 1000
Average proportion observed = 0.0116
Defects *p* Control Chart Results

Sample No.	Proportion
1	0.012
2	0.015
3	0.008

4	0.010
5	0.004
6	0.007
7	0.016
8	0.009
9	0.014
10	0.010
11	0.005
12	0.006
13	0.017
14	0.012
15	0.022
16	0.008
17	0.010
18	0.005
19	0.013
20	0.011
21	0.020
22	0.018
23	0.024
24	0.015
25	0.009
26	0.012
27	0.007
28	0.013
29	0.009
30	0.006

Target proportion = 0.0100
 Sample size for each observation = 1000
 Average proportion observed = 0.0116

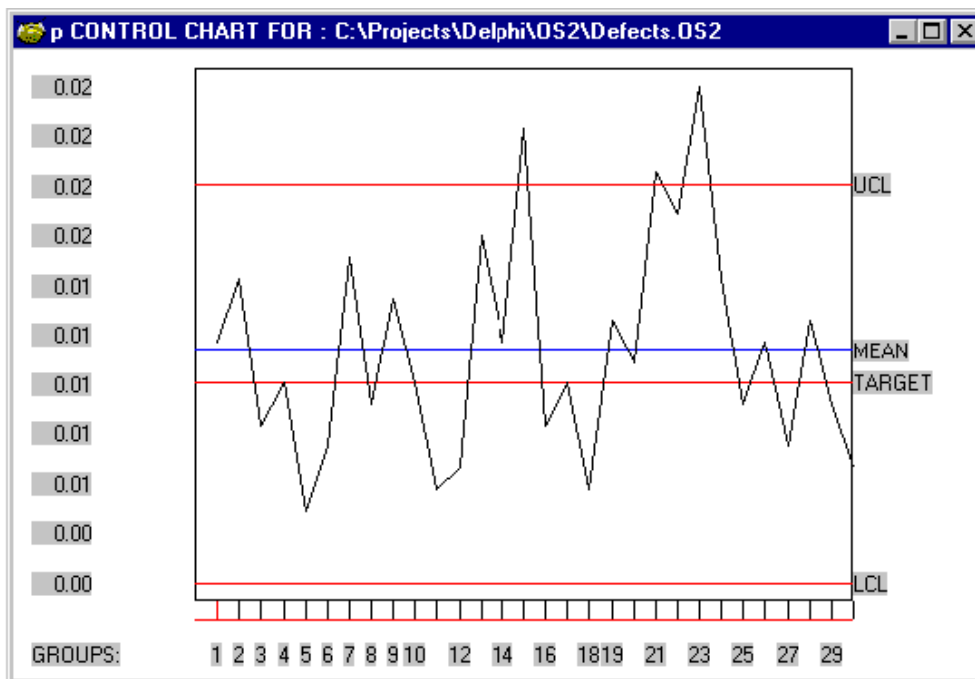


Figure 2 An SPC pChart