Qualitek-4 (QT4, Q&A)
Automatic Design and Analysis of Taguchi Experiments

On Qualitek-4 Capabilities:

Q. How many FACTORS can Qualitek-4 handle?
A. Up to 63 factors (variables) in experiments designed using an L-64 array.

Q. What factor LEVELS can I use for my experiments using Qualitek-4?
A. Qualitek-4 can handle 2-level, 3-level, and 4-level factors.

Q. Can Qualitek-4 help me PLAN my experiment?
A. Experiment planning (Brainstorming) is an important step in the application. This step require strict a discipline to follow a logical sequence of discussions. Qualitek-4 "Plan" option provides the steps to follow and describe the thought process in details.

Q How does one DESIGN experiments with Qualitek-4?
A. Qualitek-4 allows you to design your experiments two ways. In MANUAL design, you will select the Orthogonal Array from a long list of standard arrays. In AUTOMATIC design option, once you describe your factors, QT4 will select the array and assign the factors to the column.

Q. Is it possible to design experiment with NOISE FACTORS?
A. You can design experiments with noise factors using the OUTER ARRAY. In addition you also have the option to set up experiments with DYNAMIC CHARACTERISTICS.

Q. What type of ANALYSIS would I be able to perform?
A. QT4 allows you to perform STANDARD (using averages and standard deviations) and Signal-to-Noise ratio (S/N) analyses (six different formulae). In either approach, you will have the option to select BIGGER, SMALLER, or NOMINAL Quality Characteristic.

Q. Can I study INTERACTION using QT4?
A. Yes. QT4 has superior capabilities for interaction studies. Interaction between any two possible factor combinations (of levels 2, 3, or 4) can be graphically displayed and their SEVERITY OF PRESENCE compared. You can study all possible interactions among two factors regardless of whether you reserved any columns to study them or not.

Q. Can I graph and print MAIN EFFECTS?
A. Yes. Single and multiple graphs displays are available.

Q. Can QT4 test for SIGNIFICANCE after ANOVA calculation?
A. QT4 allows testing for significance each factor/interaction at a time or AUTOMATICALLY, all factors at a time.

Q. Is it possible to determine the relative influence of the factors from ANOVA in QT4?
A. Yes. There are standard paretoized graphs (BAR and PIE graphs) are available.
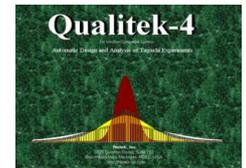
Q. Could I get meaningful INTERPRETATION of results when performing S/N analysis?

A. When S/N analysis is performed, QT4 provides a built-in option to TRANSFORM the expected performance data in terms of the units of the measured value.

Q. Would QT4 compute the CONFIDENCE INTERVAL (C.I.)?

A. Once the analysis is completed, QT4 allows you the option to compute C.I. at the desire confidence level. You will be able use these boundary values to validate the predicted performance at optimum by performing CONFIRMATION EXPERIMENTS.

Q. Can QT4 estimate the SAVINGS based on the performance improvements?

A. Upon completion of analysis, QT4 can automatically calculate and show graphs of VARIATION REDUCTION AND expected cost SAVINGS (see sample screens http://nutek-us.com/wp-q4w.html).

On the technique:

Q. What is the Taguchi method?

A. Taguchi method is a special (standardized) form of a statistical technique known as Design of Experiment (DOE). Users may refer to this subject as DOE/Taguchi. The technique is primarily used by engineers and quality assurance professionals for (1) product/process design optimization, and (2) production problem solving.

Q. What does Qualitek-4 do for users?

A. Qualitek-4 helps users accomplish EXPERIMENT DESIGNS and ANALYSES of results. When applying Taguchi technique, Qualitek-4 can save time and money.

Q. What kinds of activities use the DOE/Taguchi technique?

A. Product and process design activities of all kinds of manufacturing industries can benefit from DOE/Taguchi technique. Most current users today are from automotive, electronics, plastics, food, medicine, pharmaceutical, aeronautical, and defense industries.

Q. How does one learn about the technique?

A. From seminars, self-study, application experience, co-workers.

Q. Are there books available on the subject?

A. A number of texts are available on the subject. To see a complete list of reference, visit Nutek web site (http://Nutek-us.com/wp-txt.html). Also, in the Internet, search for sites under key words: TAGUCHI, SEMINAR, TEXTBOOK, SOFTWARE, CASE SUDY, etc.

Q. Who is the author of Qualitek-4?

A. Dr. Ranjit Roy of Nutek, Inc. is the designer and author of Qualitek-4. The software follows the same design and analysis format taught by him in his seminars and as described in his textbooks.

Q. Is qualitek-4 easy to follow even if I have not read any books by the author or taken Nutek's seminar?
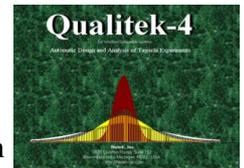
A. Qualitek-4's capabilities and ANALYSIS steps follow a common sense (natural) approach. Perhaps this is why over 90% of its satisfied users are not those who have been through Nutek seminar on DOE/Taguchi.

Q. Is TRAINING on the technique and the software available?
A. Dr. Ranjit Roy of Nutek, Inc. provides seminar/workshop on the application of the technique (http://Nutek-us.com/wp-s4d.html). This 4-day session is intended to prepare the attendees for immediate application. The attendees to this workshop also learn how use Qualitek-4 for experiment DESIGN and ANALYSIS tasks.

Q. Can I use the software for CLASSICAL DESIGN OF EXPERIEMNT?
A. Qualitek-4 is intended for experiments that utilize Taguchi ORTHOGONAL ARRAY. While it allows users to create their own array or modify standard Orthogonal Array, it does not check for the validity of such deviations.

Q. Does the software help users learn the technique?
A. No. Although, there is a large amount of information on the technique provided in the HELP section of Qualitek-4, and available free literature, it is not intended to teach users the technique. However, educated users who are familiar with the principles will find QT4's automatic design capabilities a dependable option.

Q. Other than attending the seminar, is it possible to call for HELP on the technique?
A. Support on the application of the technique is not included in the price of the software. You may however, contact Dr. Roy (http://Nutek-us.com/wp-rkr.html) and discuss your particular situation. and ask questions. You may also consider joining the DOE Discussion group and ask questions for other users to help you (https://groups.google.com/forum/?hl=en&fromgroups#!forum/TDA-DG). For general experiment design tips, visit http://Nutek-us.com/wp-tip.html .

On Program Installation and License:

Q. Can I install QT4 multiple times?
A. The registration number assigned to the user (displayed in the registration screen) clearly indicates single or multiple users. In case of change of system or relocation, you can use the program CD-RM to re-install the program to your new system.

Q. What does the DEMO do for me?
A. QT4 demo is a FULL FEATURED WORKING MODEL. It allows you to DESIGN and ANALYZE your own experiments that use an L-8 array. In addition, the demo contains over 50 example experiments of all sizes, which you can examine and print. (Qualitek-4 DEMO is as useful to you as a new vehicle which you are allowed to drive unlimited miles as long as you stay within the city limit.)

Q. Is it possible to DUPLICATE QT4 program disks for backup?
A. Yes. You may distribute the software CD-ROM freely, not the personal registration number. Without the registration number, the software will always be installed as a DEMO.

Qualitek-4 (QT4)
Automatic Design and Analysis of Taguchi Experiments

The Taguchi method of experimental design is a popular statistical technique utilized by the manufacturing industry today. Qualite-4 is designed to automatically design and analyze results of Taguchi experiments. Using its enhanced design capabilities, experienced users can layout experiments in a matter of minutes. When results are entered and the type of analysis indicated, QT4 readily computes main effect, performs ANOVA, determines optimum condition, and prints presentation quality reports.

Experiment Design - To help you design your experiments, QT4 allows you to do it yourself or in automatic design option, lets you simply indicate what are your factors and levels, and then it selects the array and assigns the factors to the appropriate columns. While automatic design can handle most of your common experiment designs, the manual design option allows you to create the special designs to suit your needs. Once you are satisfied with your experiment design, QT4 readily describes the recipes for you to carry out the experiments. It also suggests the random order of conducting each of the experiments, which are described in separate pages to resemble a work order.

Analysis - The three basic steps in analysis; Main Effect, ANOVA, and Optimum studies are carried out in sequence with click of OK buttons. Analyses can be performed using Standard or S/N for Smaller, Bigger, Nominal or Dynamic Characteristics.

Miscellaneous Features - Automatic test of presence of interaction, Plot of interaction between two, three and four level factors, Least Squares quadratic curve fitting between average effects for three and four level factors, plot of Main Effects, Bar graph and Pie diagram for ANOVA results, Stacked diagram for factor contributions to Optimum, etc.

System Requirements: IBM/Compatibles,Windows 95 and later. 30 MB disk space.