



## Black Belt Six Sigma



### Context

You wish to take things to the next level, after following a Green Belt Six Sigma or Process Improvement Methodologies training, and deepen your knowledge of applicable advanced statistical or Lean techniques? Don't miss the opportunity & sign up for our Black Belt Six Sigma training. The techniques mentioned below will allow you to zoom in on difficult process & quality problems.

### What can you expect?

We provide insight into the statistical tools that have proven to be of great help in solving everyday problems in an industrial environment:

- Decide whether the results of 2 or more groups (e.g. machines, suppliers, 2 control methods, ...) are different and / or better.
- Find important process variables that can influence the output and the quality of the product and even make predictions about the quality.
- Perform experiments: many people involved in process improvement regularly carry out tests. Over time, "smart" methods such as Design of Experiments have been developed to provide maximum insight into the influence of parameters and their possible interactions on the desired outputs with a limited number of tests. With the new, revolutionary "Definitive Screening Designs" you will really understand what it means to get a maximum of information with a minimum of tests.

### Target group

This program is focused on those people who have experience in projects and who are involved in the improvement of complex manufacturing, supply chain or design processes. Green Belt level is a prerequisite.

### Our approach

- The Black Belt training program consists of 2 work sessions each of 3 consecutive days.
- Each session offers a mix of theoretical foundation and practical exercises.
- Each session offers the opportunity to exchange experiences with other participants.



## Programme Six Sigma

- Recap of the basic statistics and extended with statistics used with discrete outputs (good-bad situations).
- The hypothesis tests, both for continuous and for discrete outputs, are practiced and complemented with the non-parametric tests, which are very useful alternatives for classical hypothesis testing (Wilcoxon, Mann-Whitney, Kruskal-Wallis).
- The applications for advanced regression analyses are explained. This includes the combination of discrete and continuous input variables, the non-linear regression and the logistic regression for use with discrete outputs (good-bad situations).
- The Principal Component Analysis is the trigger for Big Data analysis and is used in those many cases where ordinary regression is not allowed or even fails.
- Design of Experiments (DOE), Response Surface Methodology and the top of the bill: the new Definitive Screening Designs that form the bridge between the Screening designs and Optimisation designs. Split plot Designs are explained. These are used when there are so-called Hard-to-Change factors in the experiment.
- Gage R&r, a special DoE that is used to determine the suitability of a measuring system, is stripped of all its secrecy. The ANOVA type II method used here is also explained.
- The influence of autocorrelation on the calculated control limits is explained in the advanced Statistical Process Control module.

## Black Belt Certification

- Participants receive, after following the training and passing the exam, a Black Belt Training Certificate. If they want to receive a Black Belt Certificate, they need to successfully perform a process improvement project according to the DMAIC-roadmap.
- Stanwick can coach them during this project execution and after participating in the final presentation of the project hand them their Black Belt Certificate. Please do not hesitate to contact us if you want to receive more information on project certification.

### Testimonials about the training

"If statistics were explained in the same practical way in our school study, more people would deal with data more professionally."

"A course that I hated at the university suddenly becomes a passion and my most important tool for process improvement."

"Unbelievable how ignorant and clumsy we dealt with data before this training."

"It is unbelievable how we can better understand and make our process easier to understand with a very limited number of tests (Design of Experiments)."

"The pallet of tools provided now allows us to find the causes and find solutions for practically all problems."

"The tools provided in the Green Belt are now also much clearer to us."

"The importance of statistical process control is seriously underestimated and it is not understandable that it will no longer be applied."