

Two-Day Course On

Taguchi Method to QUICKLY Achieve Better Quality at Low Cost

26-27 Apr 2018 at Pllazio Hotel

Address: 292-296, Sector 29, City Center, Sector Road, Gurugram, Haryana 122001

for

Quality Council of India

Course Instructor

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Abstract

Taguchi Method is an effective engineering design optimization methodology that improves the quality of existing products and processes and simultaneously reduces their costs very rapidly, with minimum engineering resources and development man-hours. The Taguchi Method achieves this by making the product or process performance "insensitive" to variations in factors such as materials, manufacturing equipment, workmanship and operating conditions. In other words, Taguchi method makes the product or process robust.

It is an appropriate solution as it attacks existing products and processes with a high success rate. Taguchi method is an experimental engineering tool and not a management tool, hence the success of its application does not depend on the company environment - cultural changes are not really required.

The course objective is to explain the philosophy of Taguchi method, its applications, its relevance to manufacturing industry and its successful application globally through presentation of real-life successful case studies. Course aims at motivating the industry to learn to apply this important method for making the product / process ROBUST against existing noisy conditions and reap the economic benefits.

What Do Engineers Gain?

Training in Taguchi Method will help engineers to understand "How To"

1. Improve quality of products and simultaneously reduce cost
2. Quickly optimize new processes
3. Compare and/or Evaluate two or more process techniques

Who Should Attend

Senior Engineers, Managers and General Managers concerned with Technical matters such as quality, design and development, Manufacturing and Production.

*** A basic understanding of elementary applied statistics will be helpful.**

Workshop Outline

1. Overview of Taguchi Methods
2. Principles of Quality Engineering or Robust Design
3. Taguchi's Quadratic Loss Function and Signal-To-Noise Ratios
4. Matrix Experiment Using Orthogonal Arrays, Factor Effects and Anova
5. 8-Steps in Robust Design
Generic Procedure: For all Engineering and Scientific Problems
6. Taguchi Method for Static Problems: A Case study
Improving quality of Spark Erosion or EDM m/c
7. Taguchi Method For Dynamic Problems: A Case Study
Improving quality of N/C machines
8. Put It All Together
9. Concluding Session

Course Material

Comprehensive notes, that cover all the Taguchi tools, will be given at the time of registration. It will contain 50 pages of "Introduction to Taguchi Method"

Recommended Text-Books

- (1) Madhav S. Phadke,
"Quality Engineering using Robust Design"
Pearson Education, 2008, 334pp
- (2) Genichi Taguchi, Subir Chowdhury, Shin Taguchi
"Robust Engineering: Learn How to Boost Quality While Reducing Costs and Time to Market"
McGraw Hill Education, 2009, 254 pages

Course Faculty

The course will be conducted by **Prof. Prakash R. Apte**

Professor Apte joined Indian Institute of Technology at Mumbai after having 30 years of research experience at the Tata Institute of Fundamental Research, Mumbai. He has since retired as Emeritus Professor from IITB and started his own company APTinnovate for Training and Consultancy in **TRIZ Innovation** and **Taguchi Optimization**. For the last 20 years he has been practicing the new method of Russian origin, called “TRIZ – Innovative problem solving”, and its potential in innovative problem solving and opportunity creation. In the past 17 years, he has conducted over 100 CEP “open” and “in-house” courses, 40+ of which have been for Mahindra and Mahindra, training over 500 engineers and solving over 250 problems. In last 3 years, he has conducted 34 TRIZ courses and 8 Taguchi courses.

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Course Schedule Day-1 (8:45 am to 5:00 pm)

Sr. No.	CONTENTS	TIME (Hrs)	
		From	To
FIRST DAY			
	Registration and inauguration	08:30	09:00
01.	Overview of Taguchi Method	09:00	10:30
	<i>T e a B r e a k</i>	10.30	11.00
02.	8-Steps in Taguchi Method	11:00	11:45
03.	Properties of Orthogonal arrays	11:45	12:30
i.	Interactive session : On Orthogonal Arrays	12:30	13:00
	<i>L u n c h B r e a k</i>	13:00	14:00
04.	Matrix Experiment and Additive Model	14:00	15:30
05.	EDM case study using 8-steps		
	<i>T e a B r e a k</i>	15:30	16:00
06.	Static Problems – P-Diagram without Signal Input S/N Ratios for → Smaller-the-better, LARGER-the-better and Nominal-the-best	16:00	16:30
07.	EDM case study using 8-steps (Full Calculations)	16:30	17:00

Course Schedule Day-2 (9:00 am to 5:00 pm)

Sr. No.	CONTENTS	TIME (Hrs)	
		From	To
SECOND DAY			
	Summary of Day1	09:00	09:15
08.	More static case-studies → Polysilicon Defects reduction (process Optimization)	09:15	10:00
09.	More static case-studies → Schmitt Trigger simulations (Insensitive to Temperature)	10:00	10:45
	<i>T e a B r e a k</i>	10:45	11:15
10.	‘Dynamic Problems’ P-diagram with signal input	11:15	12:00
11.	S/N Ratios for Dynamic Problems	12:00	12:30
12.	Dynamic Case-study #1 → NC Machine using 8 steps	12:30	13:00
	<i>L u n c h B r e a k</i>	13:00	14:00
13.	Dynamic Case-study #2 → CFRP molding	14:00	14:30
ii.	<i>Real Case Studies from Participants : Static Problems → Real problems Formulation using 8-steps</i>	14:30	15:30
	<i>T e a B r e a k</i>	15.30	15.45
iii.	<i>Real Case Studies from Participants : Dynamic Problems → Real problems Formulation using 8-steps</i>	15:45	16:30
14.	Putting it all together : Use of Taguchi Methods for Process or Product Optimization and Technolgy Development	16:30	17:00