



# Welcome to the program

## Six Sigma

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# The Secret of Success behind Fortune-500 Companies

# About MEQMP

(Share, Exchange & Learn)

- Formed in April 2005
- To gather Quality Management Professionals
- More than 1150 members from Middle East including UAE, Kuwait, Qatar, Saudi Arabia, Bahrain, Oman, Iran, Iraq, Jordan, Pakistan and India
- Consultants, Trainers, Auditors, Managers or Coordinators
- Programs for different management issues like Quality, Environment, H & S and Knowledge management

# Mission

- **To develop a forum of Quality Management Professionals from different business sectors where:**
  1. Share their knowledge and experience of Quality Management
  2. Latest information about concepts, theories, trainings and certifications
  3. New comers in the field of quality can be benefited through the leadership of senior professionals and gurus.
  4. Quality Management Professionals can be assisted through necessary guidance provided by senior members for their better future.
  5. Selected professionals work to expand the scope for further improvements.

# Vision

Fostering learning, information awareness and knowledge management in the area of Quality focusing collaboration, persists in continual improvement and development by utilizing current research and standards.

# Membership Benefits

- Monthly technical meetings on QHSE issues
- Information about latest quality issues
- Discount on books and Annual Meeting registration
- Eligible to present papers at the Annual Meeting
- Eligible to vote as member of MEQMP for Executive Board and Technical Committees
- Networking with more than 1200 members
- Receive e magazine and informed about job opportunities in QHSE field

# About the Presenter

- Mr. G.K.K. Singh
- 28 years of Quality Management experience in the industry
- Director of the Asian Institute of Quality Management
- Has trained more than 25000 persons till date
- He has mentored over 160 successful Six Sigma projects till date.

# ABOUT ASIAN INSTITUTE

- ❑ **Established 1999**
- ❑ **Part of The Galaxy Group of Companies**
  - **A Group into Manufacturing, Exports, Training and Consultancy Activities**
- ❑ **Only Institute in Asia Accredited by ASCB (Europe) Ltd., UK - a leading Accreditation Body**

# OUR VISION

**Asian Institute of Quality Management (AIQM), a leading institute in Asia , is dedicated to empowering management professionals & students to achieve excellence in business performance through application of quality – management practices, in the core processes of their organizations.**



# No. of “Contact Class” Courses Conducted by AIQM in India & Abroad

- ❑ **Six Sigma White Belt – 7551 Nos**
- ❑ **Six Sigma Yellow Belt – 683 Nos**
- ❑ **Six Sigma Green Belt – 492 Nos.**
- ❑ **Six Sigma Black Belt – 307 Nos.**



# Some Organizations who have sponsored participants for our Six Sigma Courses



I.T.	BPO	Mfg.	Others
<ul style="list-style-type: none"> <li>■ ICICI Infotech</li> </ul>	<ul style="list-style-type: none"> <li>■ Wipro BPO</li> </ul>	<ul style="list-style-type: none"> <li>■ Tata Motors</li> </ul>	<ul style="list-style-type: none"> <li>■ Tata Share Registry</li> </ul>
<ul style="list-style-type: none"> <li>■ Wipro Infotech</li> <li>■ Perot Systems</li> </ul>	<ul style="list-style-type: none"> <li>■ I B M Daksh</li> <li>■ IBM Global</li> </ul>	<ul style="list-style-type: none"> <li>■ Nilkamal Plastics</li> <li>■ SKF Bearings</li> </ul>	<ul style="list-style-type: none"> <li>■ ICICI Bank</li> <li>■ IDBI Bank</li> <li>■ Lehman Bros.</li> </ul>
<ul style="list-style-type: none"> <li>■ Tata Infotech</li> </ul>	<ul style="list-style-type: none"> <li>■ W N S</li> </ul>	<ul style="list-style-type: none"> <li>■ Skoda Auto</li> </ul>	<ul style="list-style-type: none"> <li>■ Deutsche Bank</li> </ul>
<ul style="list-style-type: none"> <li>■ Datamatics</li> </ul>	<ul style="list-style-type: none"> <li>■ P &amp; O Nedlloyd</li> </ul>	<ul style="list-style-type: none"> <li>■ Mahindra &amp; Mahindra</li> </ul>	<ul style="list-style-type: none"> <li>■ Indian Army</li> <li>■ Indian Navy</li> </ul>

I.T.	BPOs	Mfg.	Others
<ul style="list-style-type: none"> <li>■ Rolta India</li> </ul>	<ul style="list-style-type: none"> <li>■ Tracmail (Canada)</li> </ul>	<ul style="list-style-type: none"> <li>■ Crompton Greaves</li> </ul>	<ul style="list-style-type: none"> <li>■ Kaizen Institute (Uganda)</li> </ul>
<ul style="list-style-type: none"> <li>■ Cap Gemini (USA)</li> <li>■ Golden Source (Austria)</li> </ul>	<ul style="list-style-type: none"> <li>■ ICICI One Source</li> <li>■ Principal Global (USA)</li> </ul>	<ul style="list-style-type: none"> <li>■ Johnson &amp; Johnson</li> <li>■ Reliance Industries</li> </ul>	<ul style="list-style-type: none"> <li>■ KNPC – (Kuwait)</li> <li>■ Kuwait Oil Co. (Kuwait)</li> </ul>
<ul style="list-style-type: none"> <li>■ CMC</li> </ul>	<ul style="list-style-type: none"> <li>■ Mphasis</li> </ul>	<ul style="list-style-type: none"> <li>■ Mazgaon Docks</li> </ul>	<ul style="list-style-type: none"> <li>■ ISO 9K NSG (Malaysia)</li> </ul>
<ul style="list-style-type: none"> <li>■ Otis Software Divn.</li> </ul>	<ul style="list-style-type: none"> <li>■ Global Telesystems</li> </ul>	<ul style="list-style-type: none"> <li>■ Otis Elevators</li> </ul>	<ul style="list-style-type: none"> <li>■ Indian Railways</li> </ul>

# SIX – SIGMA OVERVIEW

# Some Myths About six Sigma

- ❑ **Myth –1: It is for only people in the role of Quality and Operations / Production**

**The fact is that everyone in the organization has a role to play by reducing the defects in their activities and eliminating the waste in their departments, thereby contributing towards increase in profits.**

# Some Myths About six Sigma

- ❑ **Myth –2: It is another technique for improving quality**

**Six Sigma is a new way of managing the Organization and an excellent route to Improving profits in the current scenario of global competition.**

# Some Myths About six Sigma

- ❑ **Myth –3: You have to be an expert in Statistics to understand and implement Six Sigma**

**Statistical techniques are a set of tools available in six sigma management methodology.**

**But a lot of activity in six sigma is non-statistical, using elements like Cross-functional teams, Involvement of people, Standardization, Innovative thinking, Documentation and Self-discipline.**

# Some Myths About six Sigma

- ❑ **Myth –4: Six Sigma is only for very large organizations**

**Six Sigma uses the “people-power” in an organization. Therefore, even a small organization can benefit greatly by using the tools and techniques of six sigma.**

- ❑ **Myth –5: Six Sigma is very costly for implementation**

**The costs incurred on six sigma implementation are more in the nature of an investment. For example, an investment of \$ X in “prevention” will normally result in a savings of at least \$ 5X.**



# SIX SIGMA HISTORY

- ❖ **Motorola – 1987: First in the world to use Six Sigma approach**
- ❖ **Established a methodology to quantify Quality**
- ❖ **Achieved the Inaugural Malcolm Baldrige National Quality Award – 1988**
- ❖ **Their President Robert Galvin shared the secrets of Six Sigma success with others.**

1987 - Motorola

1989 - IBM

1991 - Kodak, DEC

1993 - ABB

1995 - GE, Allied Signal

1997 - Dow Chemical, Dupont, NEC, Samsung,  
LG Electronics, Sony, Toshiba, Whirlpool

1999 - American Express, J&J, Ericsson, NCR,  
Nokia, Philips, US Postal Service

- **MORE THAN 53% FORTUNE-500 COMPANIES AND ABOVE 82% FORTUNE-100 COMPANIES ARE THERE TODAY BECAUSE THEY RELY ON SIX SIGMA**

# GAINS MADE BY SOME OF THESE ORGANIZATIONS:



- **Motorola – Saved US \$ 2.2 billion in a Four year time frame**
- **General Electric – Increased profits by US \$ 9.0 billion in Five years**
- **Dupont – Increased profits by US \$ 1.0 billion in Two years and further US \$ 2.4 billion in next Two years**
- **Bank of America – Cut Cycle times by half saved US \$ 0.8 billion in first Three years**

# TRADITIONAL VIEW OF “QUALITY” Vs “SIX SIGMA” VIEW

<b>TRADITIONAL VIEW</b>	<b>SIX SIGMA VIEW</b>
<ul style="list-style-type: none"><li>• <b>QUALITY MEANS “GOODNESS” IN PRODUCT / SERVICE</b></li></ul>	<ul style="list-style-type: none"><li>• <b>QUALITY IS “CONFORMANCE TO CUSTOMER REQUIREMENTS</b></li></ul>
<ul style="list-style-type: none"><li>• <b>QUALITY CANNOT BE MEASURED</b></li></ul>	<ul style="list-style-type: none"><li>• <b>QUALITY IS PRECISELY MEASURABLE</b></li></ul>
<ul style="list-style-type: none"><li>• <b>ERROR IN WORK IS INEVITABLE</b></li></ul>	<ul style="list-style-type: none"><li>• <b>ERROR IN WORK CAN BE PREVENTED, IF PLANNED</b></li></ul>
<ul style="list-style-type: none"><li>• <b>QUALITY REQUIRES TOP MANAGEMENT SUPPORT</b></li></ul>	<ul style="list-style-type: none"><li>• <b>QUALITY REQUIRES TOP MANAGEMENT PARTICIPATION</b></li></ul>

**Six Sigma involves disciplined data collection & analysis to achieve one of the following THREE Goals:**

- Reduce defects in any process to less than 3.4 per million operations**
- Eliminate Wasteful Practices**
- Delight internal and external customers by fulfilling their present & future needs.**  
***The Ultimate Goal in all efforts: To Increase R.O.I for the organization***

# KEY THEMES IN SIX SIGMA

# 1. START WITH THE CUSTOMER

- FIND HIS CTQ  
(CRITICAL TO QUALITY) REQUIREMENTS

- ON AN ON – GOING BASIS

FOR BOTH INTERNAL & EXTERNAL  
CUSTOMER

## 2. VIEW EVERY ACTIVITY AS A PROCESS

- $Y = f(X_1, X_2, \dots, X_n)$

- START WITH THE GOAL. WHAT IS THE “Y” WE WANT TO ACHIEVE ONE OF THE PROCESS?

IDENTIFY THE CTPs.

WHICH OF THE “Xs” ARE CRITICAL TO PROCESS?

PLAN TO ENSURE THAT THE “RIGHT” Xs ARE MANAGED SO AS TO ACHIEVE THE DESIRED “Y”



### **3. WHAT LEADS AN ORGANIZATION TO EXCEL IN PROVIDING SATISFACTION TO CUSTOMER?**

- **EXCELLENT PRODUCT QUALITY**
- **EXCELLENT SERVICE QUALITY**
- **OPTIMUM COST**
- **TIMELY DELIVERY**

**SIX SIGMA VIEWS THESE 4 CROSS-  
FUNCTIONAL GOALS AS  
SUPERORDINATE  
(ABOVE ALL FUNCTIONAL GOALS)**

## 4. HOW MUCH DOES IT COST TO IMPROVE QUALITY?

■ THE ANSWER: NOTHING

■ RATHER IF WE INVEST RS. X ON INCREASING COST OF CONFORMANCE (INSPECTION + PREVENTION)

WE WILL SAVE RS. 5X ON THE COST OF NON-CONFORMANCE (INTERNAL FAILURE + EXTERNAL FAILURE + HIDDEN COST)

## 5. IMPORTANT PRINCIPLES OF SIX SIGMA

- **GENUINE FOCUS ON CUSTOMER – ON ONGOING BASIS**
- **USE ANALYSIS OF DATA ALONGWITH CRITICAL THINKING**
- **FOCUS ON IMPROVING THE PROCESSES, NOT THE PRODUCT**

- **CREATE A CULTURE OF PRO-ACTIVE MANAGEMENT**

**(BUILD PREVENTION INTO THE PROCESSES, NOT CORRECTION)**

- **BOUNDARYLESS COLLABORATION AND TEAMWORK BETWEEN CUSTOMER, EMPLOYEES AND SUPPLIERS.**

**(TREAT YOUR SUPPLIERS AS PARTNERS IN THE BUSINESS).**

- **ADOPT INNOVATION AS A ROUTE TO ACHIEVE BREAKTHROUGH GOALS IN ADDITION TO THE CONTINUAL IMPROVEMENT GOALS**
  
- **BUT MANAGE THE RISKS TO MINIMISE CHANCES OF FAILURE (USING FMEA)**

# SIX SIGMA IMPLEMENTATION STEPS

**STEP – 1: FOUNDATION LEVEL COURSE FOR TOP MANAGEMENT**

**STEP – 2: TRAINING OF GREEN BELTS IN GROUPS OF 20 PERSONS EACH**

**STEP – 3: TRAINING OF BLACK BELTS AS PER REQUIREMENT**

**STEP – 4: IDENTIFY PROJECTS FOR SIX SIGMA WITH HELP OF CONSULTANT**

**STEP – 5: FORM SIX SIGMA TEAMS CONSISTING OF**

- CHAMPION (PROCESS OWNER)**
- BLACK BELT**
- GREEN BELT**

**STEP – 6: START WORK SIMULTANEOUSLY ON (SAY) TEN PROJECTS WITH GUIDANCE OF CONSULTANT**

**STEP – 7: CHOOSE METHODOLOGY FOR THE PROJECTS WITH HELP OF CONSULTANT**

**STEP – 8: COMPLETE PROJECTS AS PER THE STRUCTURED METHODOLOGY OF DMAIC OR 8 – D USING TOOLS LIKE C & E DIAGRAM, PARETO, CORRELATION ANALYSIS, SPC, FMEA, DESIGN OF EXPERIMENTS, ETC.**

**STEP – 9: CELEBRATE THE SUCCESS ON COMPLETION OF EACH PROJECT.**

**EVERY BB PROJECT MUST END IN PROFITS / COST SAVINGS OF ABOUT 1.0 M SAR FOR THE ORGANIZATION.**



# REASONS WHY SIX SIGMA PROJECTS CAN FAIL

- **TOP MGT PARTICIPATION ABSENT**
- **SELECTION OF (WRONG) BLACK BELT**
  - \* **CREATIVITY**
  - \* **TEAM LEADERSHIP**
  - \* **ENTHUSIASM**
- **RESISTANCE TO CHANGE – NOT HANDLED ADEQUATELY....TYPICAL CHANGES NEEDED:**
  - \* **WILLINGNESS TO COLLECT & ANALYSE DATA**
  - \* **EMPLOYEES SHOULD QUESTION EXISTING PRACTICES**
  - \* **COMMUNICATE OPENLY ABOUT FAILURES**
  - \* **THINKING IN A PROACTIVE MANNER**
  - \* **POSITIVE ATTITUDE TO INT. & EXT. CUSTOMERS**
  - \* **CROSS-FUNCTIONAL COOPERATION**

# Major Results of Six Sigma Implementation

## EXAMPLE– L. G. Electronics, Korea

Year	1998	1999	2000	2001
Sigma level of major CTQs	3.5	4.5	5.2	5.4
Completed Projects	109	682	1,124	1,312
Profit gains by projects (million \$)	-	19.9	53.9	66.4
Cost of Non-Conformance To Sales Turnover	5.4%	3.6%	1.9%	0.8%

# EXAMPLES OF TOP MANAGEMENT PARTICIPATION (FROM GE):



- **Jack Welch Announced: Six Sigma will be Top priority for the company for next 5 years**
- **If Executives cannot support Six Sigma 100%, then GE is not the right company for them**
- **Objective for all Management level persons to be at least a Six Sigma Green Belt**
- **40% of Managers' incentives tied to Six Sigma results**

# SIX SIGMA – DIFFERENCE FROM APPROACHES LIKE TQM, SPC, ISO 9001



- IMPROVEMENT OF MANAGEMENT PROCESSES IN ADDITION TO TECHNICAL PROCESSES
- IDENTIFY CTQs & CTPs
- FOCUS ON MANAGING & MONITORING CTPs
- LINKAGE WITH BOTTOMLINE GOALS – TYPICAL SAVINGS FROM EACH PROJECT ARE DEFINED
- ENCOURAGE PRO-ACTIVE THINKING
- BREAKTHROUGH IMPROVEMENT ALONG WITH RISK MANAGEMENT
- ACTIVE PARTICIPATION OF PEOPLE INCLUDING TOP MANAGEMENT