

FESTO Academy

Industrial Management School



Executive Master's degree

Lean Six Sigma Certifications* Green Belt and Black Belt

- Integrating Lean and Six Sigma tools to increase process productivity and profitability
- Operational project work with savings for the company
- Ideal for industrial and service realities
- Real-world experiences, practical exercises, and teaching in an effective mix to learn by doing

*Complies with ISO 13053 and ISO 18404



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Lean Six Sigma

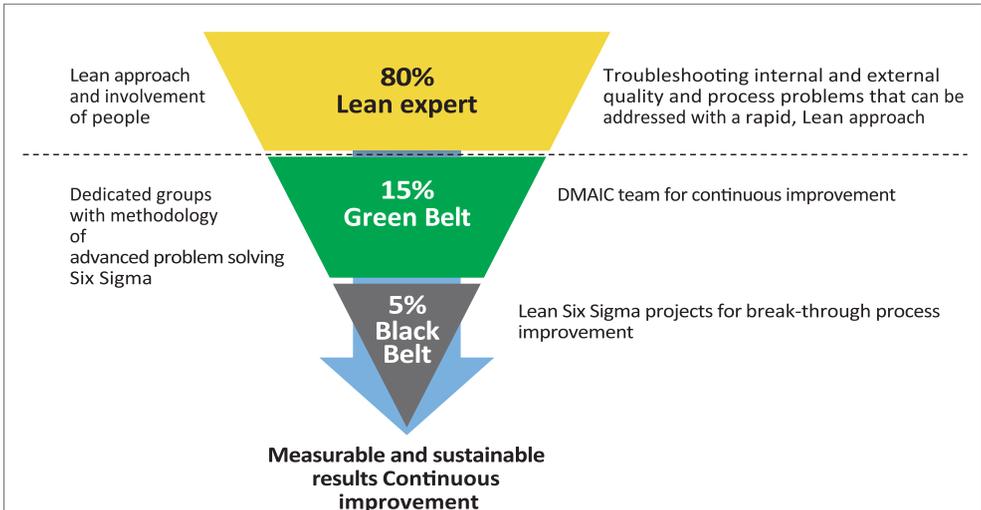
Lean provides efficiency and flexibility in production and decision-making processes, reducing waste.

Six Sigma improves the reliability and quality of internal processes, products and services offered to customers.

Together:

- Enable optimization of the choice of analysis and intervention tools according to the complexity of problems and expected costs/benefits
- They give stability and solidity to processes of improvement and change throughout the organization

Hierarchy of problem solving and escalation



The Six Sigma

The Six Sigma method is an improvement strategy that relies on the power of objective measurement.

It combines tools and techniques used in Total Quality Management to analyze the root causes of problems in business processes and aims to reduce errors and control results to a 6 Sigma level (3, 4 errors per million opportunities).

- An approach and mindset that provide a rigorous methodology for improvement and project management
- A structured set of methodologies to achieve high quality levels
- An analysis methodology that integrates analysis of available data, processes, and information to identify causes of problems
- A process improvement program geared toward customer satisfaction and reduction of nonquality costs
- A methodology that can be applied to all business areas, thus to both the logistics-production area and the commercial-administrative area

Six Sigma is successfully used in companies of different sizes with some specificities depending on the context.

It can also be used on individual issues by involving “technical” task forces, but the most significant results are achieved with the extended in-house approach.

The Lean

The guiding principle of Lean leads the company to focus resources on creating the value required by the customer through radical simplification of processes, stimulating an active contribution of people and promoting an integrated use of technology and human activities. Lean has proven its effectiveness in both industrial and service processes by enabling great results in terms of effectiveness and efficiency with simple and shared tools, leveraging the value of people and the contribution to improvement that those working in the process can make.

The model is based on the concept of value, analyzing what the “customer’s perceived value” is, that is, what the customer is willing to pay the asking price for.

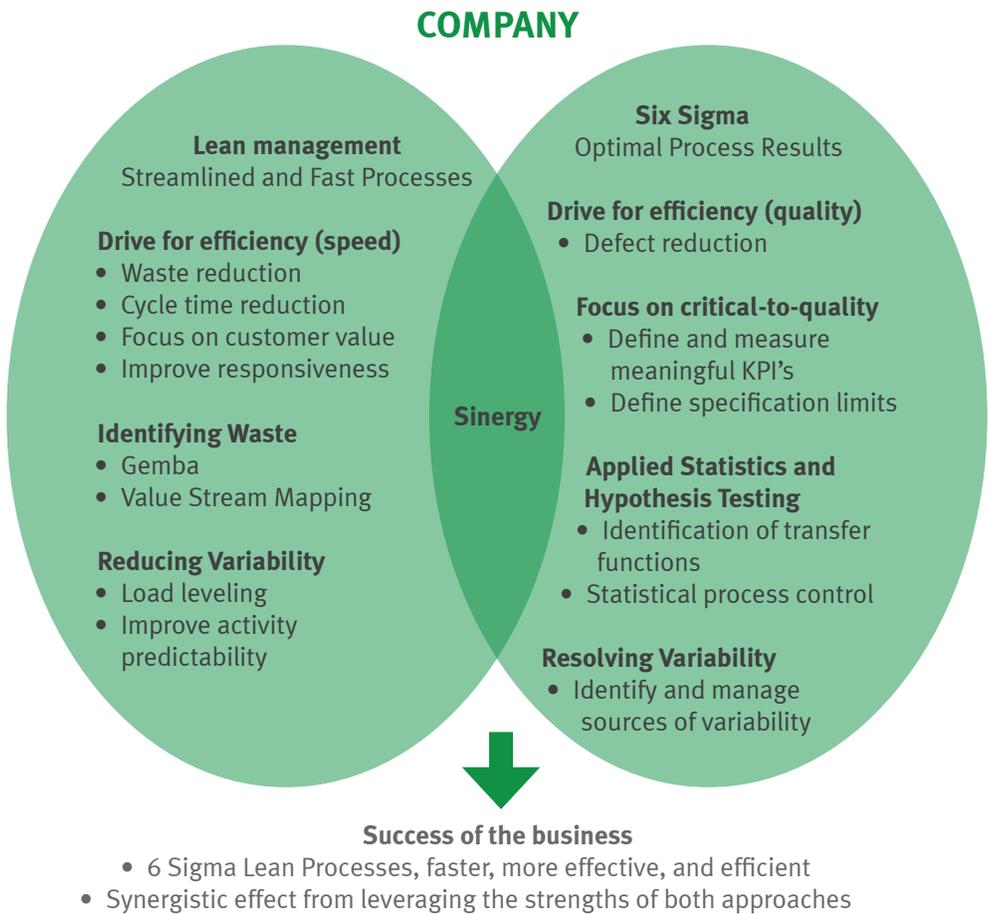
The 8 Muda



Learning to see what is not visible and recognize sources of waste

Integrating Lean and Six Sigma

A Six Sigma program will be most effective if it deals with lean and simple processes. A Lean program will be more effective if it deals with processes that are governed and not subject to variability.



Benefits for the company

Increase productivity and profitability through:

- Increased value-added activities and reduced waste and defects
- Reduction of non-quality plant costs, from production costs to warehousing and transportation costs
- Increased production efficiency
- Reducing transactional costs of nonquality
- Reducing process variability
- Increased customer satisfaction

Orient the corporate culture toward improvement with rigor and rationality through:

- Trained and improvement-oriented staff capable of leading internal dissemination of the approach
- Focus on quality and real customer needs
- Application of structured problem solving methodologies

Proper implementation of the Six Sigma methodology enables economic benefits that can be estimated in the range of 2 to 3 percent of turnover, with peaks of 10 percent Festo Group uses the Lean Six Sigma approach in both industrial and transactional settings with projects, for example, in the Marketing and Sales areas.

The Executive Master Lean Six Sigma

The Master's program aims to provide knowledge enrichment for managers and professionals who undertake Six Sigma and Lean projects and wish to learn more about the techniques and tools to manage them effectively.

To whom it is addressed

- Plant managers
- Managers and function and/or process managers
- Improvement project managers
- Quality managers
- Process engineers
- Project manager
- Design, industrialization and new product development managers
- Production managers
- Logistics and Supply-Chain Managers

To which companies

The approach integrates very well with all improvement initiatives already in place. In addition, it has general validity, i.e., it is applicable on both physical (production, logistics, new product development) and transactional processes (order management, administrative, commercial processes).



In fact, many service organizations have already adopted the Lean Six Sigma program, confirming its validity for these types of companies as well; particularly in sectors with intense competitiveness or with critical demands on service levels.

The program is also extremely valuable and effective for:

- Small/medium-sized companies to test the method and create a task force for specific critical issues
- Multinational groups to carry out "Certified" Green Belt and Black Belt training in Italy

Goals

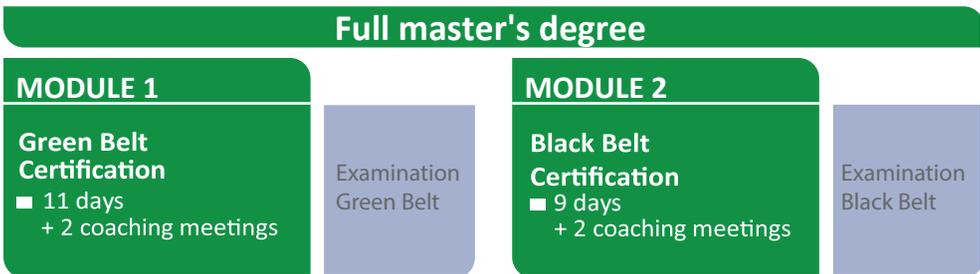
The Master's program focuses on acquiring Six Sigma and Lean analysis and improvement

tools to be tested operationally in one's own company.

By the end of the Master's program, participants will have learned:

- An operational and highly effective program for managing improvement in business
- How to define goals and work plans for conducting a Lean Six Sigma project
- How to map processes at the right level of detail (flow chart - SIPOC - Value Stream Mapping)
- How to choose the appropriate analysis and improvement tools from those provided by Lean and Six Sigma
- How to represent a complex problem using the function $y=f(x)$ and structuring appropriate data collection and analysis
- The use of statistical methodologies for problem solving through the use of Minitab™ software.
- Management of improvement teams, leadership aspects needed to guide and engage team members
- Manage implementation actions by evaluating their economic impact and performance
- How to manage the dissemination and sustainability of the method
- How to understand the financial implications of a Lean Six Sigma project and its impact on the corporate income statement





The options

Full Master's degree (Module 1 + Module 2)

Lean Six Sigma Green Belt and Black Belt Certification

20 days + 4 coaching meetings + GB and BB exam

N.B. At least 6 days of back office exercises are scheduled for each Certification.

Module 1

Green Belt Certification

11 days + 2 coaching meetings + Green Belt exam

N.B. At least 6 days of back office exercises are planned.

Module 2

Upgrade Black Belt Certification - change from Green Belt to Black Belt

9 days + 2 coaching meetings + Black Belt exam

N.B. At least 6 days of back office exercises are planned.

Green Belt Certification is a pre-requisite; in case of coming from Green Belt training at other training institutions, entry requirements will be verified by a Festo Black Belt Master.

Green Belt or Black Belt examination only

It is also possible to enter the examination if training programs have been attended at other facilities and if operational projects have been completed (upon verification of entry requirements with Festo Master Black Belt)

Green and Black Belt in the company

The program can also be implemented entirely within an individual company and customized according to the needs and level of knowledge, development and dissemination of continuous improvement methodologies and tools.

Green Belt and Black Belt roles

Black Belt is an agent of continuous improvement in terms of process and know-how within the company or one of its divisions. He is in charge of coordinating projects defined on the basis of the company's strategic objectives following Lean Six Sigma methodologies and tools and training internal Green Belts. He is the tools expert, leads relevant projects with high economic, strategic and cross-functional impact. Supports Green Belts and, in general, team members regarding the conduct of projects and methods of analysis and improvement.

Green Belt is the team leader of individual improvement projects with impact normally limited to his own work area. He is familiar with much of the Six Sigma tools and is able to address an issue by following the approach and coordinating the assigned team.

Certification

The Master Lean Six Sigma Festo Academy is consistent with the guidance given by ISO 13053-1 and 13053-2 Quantitative methods in process improvement "Six Sigma" and the most demanding international standards.

The training course is among the most effective because of its focus on operational projects and teaching choices.

It also has significant space reserved for Lean, team management and transactional aspects.

The depth of methodological content and Green Belt tools is superior to corresponding Green Belt courses generally offered in Italy.

This is so as not to immediately force the company, particularly if it is small to medium-sized, to make a fixed investment on Black figures and yet give adequate operational training to the trained figures.

To achieve Six Sigma Green and Black Belt Certification at Festo Academy, the participant must:

- Attend at least 80% of the days in the program
- Pass the tests related to the chosen Belt with at least 80% positive results
- Complete individual project work for each Belt, including the proper application of the DMAIC model appropriate for the required certification, including economic evaluation of the benefits achieved by the company through the project itself.

To enter the Black Belt Upgrade Module, candidates will need to produce documentation on training conducted at other facilities and submit their Green Belt certification projects. At the discretion of an experienced Festo Master Black Belt may be required to pass a supplementary test and/or an individual interview.

Visit the [Lean Six Sigma Certification hall of fame](#) to see who has already certified in the Master Lean Six Sigma - Certified People section.



Master's degree features and teaching methodology

The Master's program includes:

- Entrance test for defining the most suitable educational pathway
- Final test for validation of the training course
- Project work for field application of methodology and achievement of business savings
- Exercises and in-depth readings to be conducted remotely
- Final certificate

Classroom training is characterized by:

- Lecturers with operational experience from corporate backgrounds, experts in Six Sigma and Lean methodologies and implementations
- Interactive teaching using simulations, exercises and role playing
- Hands-on exercises with Minitab™ to facilitate learning
- Integrated case history to capture method use, roadmap, and choice of tools
- Coaching, qualified classroom and remote support
- Extensive bibliography and web resources

Minitab™

Festo Academy provides, for classroom use, a PC with Minitab™ installed. For in-house development of project work and individual exercises, however, we recommend the use of a personal notebook and the purchase of a Minitab™ license.

Supporting teaching materials

Participants are provided with GB and BB texts for further study of the topics covered in the classroom. Participants can also access the Festo Academy site dedicated to the Master's program (digital.festoacademy.it) where they can find:

- Training materials available for download
- Selection of GB and BB projects from previous editions
- Exercises and in-depth readings to be conducted remotely
- Specialized articles
- Calendar of training days
- Other relevant information for participants

Operational project work

Participants, in order to achieve certification, will carry out a project work aimed at improving the performance of a significant process in their company, achieving a saving. The project will be developed during the Master's program following the DMAIC method with progress checks at each training session by the teachers. The result of the project will be the subject of presentation and evaluation during the final exam by Master Black Belt Festo.

In the case of participation in both the Green Belt Module and the Black Belt Module, two project works meeting the requirements of method time and value will be required.

Project work support

Festo Academy:

- Ensures the availability of a Master Black Belt expert to support candidates and companies in selecting the most appropriate project for Certification and to give back office support to participants during breaks between Modules
- Makes available, at the request of participants, optional additional coaching support over and above that provided as a base in the Master's program

Some project work and their results

Some examples of business projects developed

The total savings achieved in the Green and Black projects from 2010 to 2024 was €50 ML

BNP Paribas Lease Group

Lead time reduction of lease contract management.
Final savings: 30,000 €/year

Chiesi

Increased product quality.
Final savings: €127,000/year

Colorobbia

Solving granulation quality problems on ceramic powders.
Final savings: 250,000 €/year

Corporate culture

Reduced recruiting time.
Final savings: €12,000/year

Guala Closures

Optimization of capsule packing management.
Final savings: 153,000 €/year

Mikron

Improved parts order management process.
Final savings: €25,000

Motovario

DOE for reducing nonconformities on gearbox angular clearance.
Final savings: 175,000 €/year

Nexans

Reduction in product defects.
Final savings: 895,000 €/year

Pastificio Rummo

Shrinkage reduction.
Final saving: 28,000 €/year

Renolit

Reduction in component waste.
Final savings: 61,000 €/year

Stevanato Group

Reduction of leakage waste.
Final saving: 64,000 €/year

Explore project work at: www.festoacademy.it

In the Master Lean Six Sigma Project work Cases and Examples section.

Green Belt Certification**MODULE 1**

11 days + 2 coaching meetings + Green Belt exam

- Define Green
- Manage improvement teams
- Define Lean Six Sigma Green

Online Coaching

- Measure Green
- Analyse Green
- Lean tools for DMAIC
- Improve Green

Online Coaching

- Control Green

Online examination and classroom presentation of Green Belt project work

Each Module includes:

- Exercises and readings to be conducted in the back office with a minimum commitment of 1 day each module. (6 days minimum)
- Project progress check
- Test and review

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1.1 Define Green**Duration 1 day**

- Choosing Lean Six Sigma
- Integration between the two approaches, when and how together
- The Six Sigma revolution, potential and organizational architecture in manufacturing processes and services
- The DMAIC process
- Applications and results in industry and services
- Set up the project: choose the process or product to be improved
- How to interpret customer needs and turn them into requirements
- Defining the objectives of a project
- Mapping industrial and service processes: SIPOC
- Focus on the problem: Pareto + 5W2H
- Introduction to Minitab™

1.2 Team Management**Duration 1 day**

- Basic elements of leading a team
- The definition of the objectives of a working group
- Processes of clarification, goal sharing, and team motivation
- Methodological aspects of group work
- Organizational roles and group dynamics
- The role of the team leader: task and relationship orientation
- Communication in group work
- The Kaizen team

1.3 Define Lean Six Sigma Green**Duration 1 day**

- Lean Organization and Lean Production
- Continuous Improvement - Kaizen and Kaikaku
- Getting the flow driven by demand
- Mapping industrial and service processes: VSM and Makigami for services
- Calculate Takt time

Coaching Session

Individual meetings to support the setting of project work and project review

1.4 Measure Green Duration 2 days

- How to collect meaningful data in industrial and service settings
- How to set up proper data collection for variable and attribute data
- The importance of normality
- Concepts of normal and binomial distribution
- Sampling methodologies
- How and what graphical methods to use for descriptive data analysis: Graphical summary, Boxplot, Runchart
- Assessing the capability of manufacturing and service processes: SIGMA and DPMO level
- How to check the validity of measurement systems for variable and attribute data: GAGE R&R and Attribute Agreement Analysis

1.5 Analyse Green Duration 2 days

- How and when to use qualitative analysis and quantitative analysis
- Tools for qualitative analysis: the Ishikawa diagram, the 5 whys.
- Tools for graphical data analysis: Scatter diagram and Matrix plot
- The tools for quantitative analysis: hypothesis testing and regression
- Confidence intervals and roadmaps for parametric tests
- One- and two-factor ANOVA (Analysis of Variance)
- Simple regression

1.6 Lean tools for DMAIC Duration 1 day

- Using Push and Pull - Kanban methods: when and how to use them?
- The potential of Just in Time
- How to set up rapid set-up improvement (SMED)
- Standard work in manufacturing and service processes
- The potential of 5S and visual management
- Managing a Kaizen Event

1.7 Improve Green Duration 2 days

- How to generate solution ideas: creative thinking techniques
- FMEA analysis to optimize processes and products
- How to understand and weigh risks with FMEA
- How to generate intervention solutions - examples for DOE planning
- Full and Fractional factorial
- Putting improvements into practice after understanding the causes of defects

Coaching Session

Session to review the progress of Green Belt project work.

1.8 Control Green Duration 1 day

- The importance of Statistical Process Control (SPC)
- The difference between control limits and specification limits
- Roadmap for the use of control cards.
- The control charts for variables: I-MR, Xbar-R chart
- Attribute control charts: P, NP chart
- How to set up a quality control plan



**Online examination and
classroom presentation of
Green Belt project work**

Black Belt Certification**MODULE 2**

9 days + 2 coaching meetings + Black Belt exam

- Economics and COPQ in Six-Sigma Projects
- Measure Black

Online Coaching

- Analyse Black
- The Black Belt-Agent of Change
- Improve Black
- TRIZ Problem solving

Online Coaching

- Control Black

Online examination and classroom presentation of Black Belt project work

Each Module includes:

- Exercises and readings to be conducted in the back office with a minimum commitment of 1 day each module. (6 days minimum)
- Project progress check
- Test and review

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2.1 Economics and COPQ in Six Sigma Projects**Duration 1 day**

- Fundamentals of economics: budgeting reveals wastefulness
- Industrial costs vs. total costs: calculation models
- Enhancing the COPQ in projects
- Evaluate and monitor project economics
- Accounting for savings
- Sustainability impact

2.2 Measure Black**Duration 1 day**

- Advanced measurement tools and methods
- Advantages and disadvantages of sampling
- Simple and multiple sampling
- Gage R&R for destructive testing
- Central limit theorem
- The capability for non-normal data
- How to normalize non-normal data: the Box-Cox and Johnson transformations

Coaching Session

Individual meetings for setting up Project work Black Belt

2.3 Analyse Black**Duration 2 days**

- Measuring and modeling relationships between variables
- Advanced tools for data analysis: multivariate analysis (Multi-vary chart)
- Statistical and field significance: hypothesis testing
- How to develop and test hypotheses: alfa α - or beta β -level error
- Nonparametric tests
- Multiple regression and logistics
- Predictive analytics - CART

2.4 The Black Belt - Agent of Change**Duration 2 days**

- What is the role of a Black Belt (skills, framing, and responsibilities)
- The use of the Priority Matrix for project selection.
- How to implement Lean Six Sigma according to the company context and culture

Team leadership

- The stages of team development: stages and diagnosis
- The role of the leader in different situations
- Identify the most effective team management styles
- How to compose a good team: attitudes, skills and differences
- Working with functional barriers

Process change management

- Change management models
- The hard aspects of change and the soft aspects
- The strategy and goals of change: bridging the gaps between expected and existing
- Implementation: planning, "day by day" management and monitoring of results
- The organization for effective implementation

Train the trainer (online module)

- Attitude/behavior: the differences
- How to guide behaviors
- The role and skills of the trainer
- Agreeing on learning plans
- Conducting the master training
- Learning and styles - the learning cycle
- Classroom management

2.5 Improve Black

- Advanced DOE
- Reduced factorial and screening plans
- Response surfaces

Duration 1 day

2.6 TRIZ Problem solving

- Creative problem solving and systematic innovation
- The ideal end result
- The functional language and functional modeling
- Technical (engineering) contradictions and physical contradictions.
- Analysis of resources and contradictions
- 40 inventive principles and principles of separation
- Matrix of contradictions
- Introduction to DFSS

Duration 1 day

Coaching Session

Black Belt project work progress review session.

2.7 Control Black

- Stabilize the improvement after the project
- Advanced control cards
- Laney's chart, EWMA papers, CUSUM, moving average

Duration 1 day



Online examination and
classroom presentation of
Green Belt project work

Method of admission

The Master's program has a limited number of places to ensure optimal teaching and interaction.

Before confirmation of enrollment in the Master's program, interested parties will be asked to submit their resumes.

An analysis of resumes will be conducted, giving prevalence to operational experience gained in the field. Personnel holding a Bachelor's degree or Diploma may enter the Master's program.

Modalities of participation

Curriculum and application form must be submitted no later than the date on the updated schedule available online.

Confirmation of enrollment in the Master's program will be communicated to interested parties no later than 10 days before the start.

Master's days are divided into sessions of 2 to 3 days per month.

Attendance is mandatory.

Calendar dates

Check the calendar for the next edition at www.festoacademy.it

They have already participated, among others:



Festo Academy

Festo Academy is the Industrial Management School that works on the topics of organization and management of industrial enterprises.

Its goal is to support companies in improving their performance through the growth and development of the skills of their human resources.

Together with Festo Consulting, it is part of Festo AG, a leading international automation group that has always been characterized by experimentation and implementation of new organizational solutions in industry and is constantly focused on innovation and people empowerment.

Festo is ISO 9001 EA 37 certified

We practice what we teach

Operations & Supply-Chain Management Best Practices at Festo

Festo Operational Excellence

A comprehensive program that involves all people and processes in a real learning organization. Festo is ISO 9001 EA 37 certified

Continuous improvement

Festo Value Production System: is the pillar of the program that focuses improvement on manufacturing methods, integrating different methodologies, such as Lean, Theory of Constraints, Six Sigma, DFSS and Design thinking.

The Festo Group has won the Best Factory Award for Lean implementations in some of its plants and has been pursuing Lean, Six Sigma and TOC policies for many years.

Our principles

- Live the standard daily and optimize processes
- Try something new
- Begin improvement activities with enthusiasm and proper analysis
- We can only achieve results by working as a team
- The type of problem guides the choice of method to be used

Some pillars:

- Creating cross functional teams
- Transparent communication
- Continuous development of skills
- Personal responsibility

Extended Supply-Chain

- Reconfiguring the industrial and logistics network from a regional perspective
- More than 80 national warehouses replaced by 5 Regional Service Centers
- Organization of production hubs: Continental Global Production Centers (GPCs) and subcomponent centers in emerging areas
- Receiving orders in each country integrated in real time with the scheduling of production and service centers

Lean Organization Best Practice in Festo

Organizational solutions

- Integration of process improvement, quality management and information technology
- IT as a support for organizational and performance improvement
- Organizational change resulting in the development of IT tools for continuous improvement and becoming Best Practice in all group entities

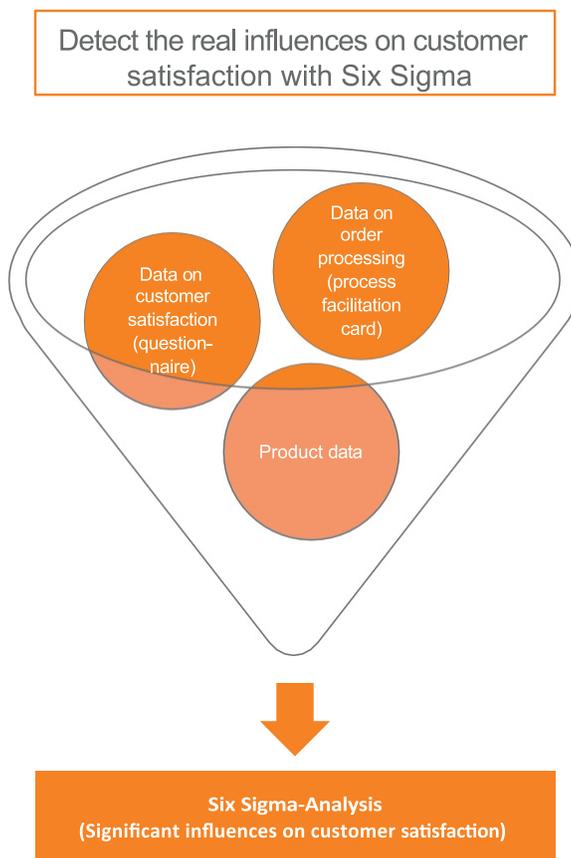
Lean Office

- Redefining office layouts for workflows and workgroups with ergonomic and exchangeable workstations
- Visual management on process performance that drives polyvalence and task switching based on need/urgency/flexibility
- Equipment and facilities to foster collaboration and improve the efficiency of individual operators
- Standard work driven by computer applications that promote continuity and quality of the process

Marketing & Sales Best Practices at Festo

Festo Lean Six Sigma Sales

Festo has active an innovative Lean Six Sigma project in the Marketing & Sales area with the aim of developing operational models of "agile" sales process management.



Faculty

Cinzia Coppini - Master's Degree Coordinator

Senior Consultant and Master Black Belt integrates Lean Six Sigma methodological knowledge with the pragmatic approach related to in-depth knowledge of management issues of business realities. She has worked for almost 10 years in multinational companies holding the positions of European Supply-Chain coordinator, Supply-Chain Black Belt, Service Strategic Key Account manager. She obtained Green Belt certification in 2003 and Black Belt certification in 2005 performing project management, training, mentoring and coaching in several European production and distribution sites. She has applied Lean Six Sigma methodologies to various business areas, from logistics-production to transactional and commercial processes.

Elizabetta Borrini

A Senior Consultant, she designs and implements consulting and training interventions in industrial and management support services in the areas of Corporate Governance (organization, processes, management control). She has worked as Finance manager and CFO with major industrial and service companies.

Gianpaolo Negri

Senior Consultant Festo in Human Resources area and management of negotiation relations in purchasing and sales. In Festo Academy he is in charge of coordinating the Management Training area. He has previously served as operations manager and education project manager. He follows performance and career development projects for national and multinational companies. Graduate in Adult education and specialized in anthropology of education. NLP trainer, affiliated with the NLP Association of excellence. Certified trainer in the use of the DiSC® Personal profile and the use of the Belbin® Team role report.

Mario Regina

Senior Consultant Festo, has held management positions in R&D and Quality in the aerospace and automotive industries. Six Sigma Black Belt, and quality systems auditor, expert in Lean Six Sigma process improvement, industrial statistics and SPC. He particularly follows projects in certification, quality process review and continuous improvement. He has worked with, among others: Acciaierie Valbruna, Saiwa, Agfa, Agrati Fasteners, Riri, Kone.

Massimo Torcello

Senior Festo consultant in the Operations area, working with several companies including: ABS, Acciaierie Valbruna, Alcoa, Barilla, Euroclima, Indesit, Industrie Technik, Politex. He has worked for more than 10 years in several national and international companies in the electromechanical and automotive fields, holding the position of manufacturing manager managing projects for the revision of production flows and plant lay-out.

Amalia Zampelli

Senior Consultant at Festo, she has held managerial roles in various fields for over 20 years, working in different national and international companies in the automotive, airborne, and food sectors. A Six Sigma Black Belt and expert in the main tools and methods of continuous improvement, she has participated in projects involving the integration and innovation of production processes, world-class transformations, and lean initiatives in various contexts, applying Lean Six Sigma improvement methodologies.

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Certifications Green Belt and Black Belt



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We are training. We are consulting. We are industry.
WE ARE THE ENGINEERS OF PRODUCTIVITY

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**Operations & Supply Chain
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