

# FESTO Academy

Industrial Management School



Program

## Product re-design to cost

Methods and tools to innovate the products' portfolio and reducing costs with a Lean perspective

Ready for **INDUSTRY i4.0**



Innovation and Product  
Development Area



### MODULE 1

#### Lean target costing

- The functional analysis
- Define the target cost for the functionalities
- Verification of functionality/cost ratio
- Parametric techniques for estimating potential savings
- The “4P” mode: Product, Production, Preparation, Process

### MODULE 2

#### Solutions for re-design

- Product simplification
- DFA - Design For Assembly
- DFM - Design For Manufacturing
- Conducting a Tear down analysis
- VRP and Standardization Techniques

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### To whom it is addressed

- Head of design and engineering department
- Designers and Professionals in the Engineering area
- Purchasing and Innovation departments
- Va-Ve (Value analysis - Value engineering) team leader

### Goals

- Conducting a functional analysis
- Identify functions with unfavorable functionality/cost ratio
- Organize the process of product cost reduction
- Reduce costs through multiple techniques
- Identify opportunities detailed analysis (Tear down) of competitors' products
- Analyze and identify opportunities for standardization
- Assess and manage the risks induced by a cost reduction

### Features

- Interactive and engaging teaching with simulations, hands-on exercises, and contextualization moments on participants' products/processes
- Comparison and sharing of experiences to ensure maximum integration between theoretical contributions and experience in business reality
- Operational project work on corporate self-case
- Web sessions for project coaching



**MODULE 1**      **Lean target costing**

2 days

## Goals

- Developing an effective value analysis to identify critical areas of functionality/cost ratio
- Carrying out a functional macro analysis
- Being able to organize a team and cost reduction activities, different phases, roles and managing the related risks
- Using parametric techniques and known data, estimating key cost drivers and potential savings
- Assessing and managing the risks induced by a cost reduction initiative
- Introducing the Lean approach into the production process to seize opportunities in the shopfloor

## Contents

### ■ Introduction

The origins of target costing

Traditional cost management vs. Target costing Steps to implementing Design To Cost

The definition of value

Organization of cost reduction activities

### ■ The functional analysis

Introduction to different methodologies

The Functional Analysis System Technique (FAST) for value analysis

The prioritization of functions with the Analytical Hierarchy Process (AHP)

The calculation of the consistency of evaluations

### ■ Defining the target cost for the product functionalities

Identifying the measurable parameters of functions

The assessment of the adequacy

Defining the cost target

### ■ Verification of functionality/cost ratio

The classification of business costs (outline)

Product cost decomposition between the functions

Creating the value map

Analysis of results and strategies for action

### ■ Parametric techniques for estimating potential savings

Introduction to regression analysis

Identification of significant factors

How to obtain the parametric relationship, limits and errors in estimates

■ **The “4P” mode: Product&Production, Preparation, Process Introducing Lean manufacturing into manufacturing**

Prerequisite: recognizing waste in processes

The Lean approach and the principles of the Lean production system

- Production at Takt time
- “One Piece Flow” Production
- “Pull” Production

Getting Takt time into the project

The breakdown of the product into components in the current assembly sequence

The 7 ideas

The evaluation of the 7 ideas Simulations and product prototyping Simulations and process review

The plan of actions for building the new product



**MODULE 2**      **Solutions for re-design**

3 days

**Goals**

- Reduce cost through part number reduction techniques (Boothroyd - Trimming)
- Use FAST (Functional Analysis System Technique) to identify non-value areas, in the characteristics of individual parts
- Learn to identify design changes, capable of improving economic impact, on fabrication and assembly
- Organize and conduct detailed analysis of competitors' products
- Apply variety reduction and standardization techniques to increase volume and seize cost reduction opportunities

**Contents**

■ **Product simplification**

Fewer components, fewer connections

Product design and DFA

The 3 key questions to reduce the number of parts

Trimming component aggregation by shifting functions

■ **DFA Design For Assembly**

The role of product symmetry, how to calculate it

Estimate the ideal manual assembly time and associated costs from geometric characteristics of the components

Calculation of DFA index

How to reduce assembly time by acting on part geometry

Automatic assembly, tricks and peculiarities

Estimating the cost of automatic assembly, from the geometric characteristics of the parts

Reduce the variety of parts and processes - Standardize

Simplify assemblies Facilitating movement

The role of gravity and "top down" assemblies What makes a part difficult to assemble

Simplifying fastening methods

DFA analysis procedure

### ■ DFM Design For Manufacturing

General principles

Choosing the optimal combination of material and production process; the selection matrices

Parametric cost estimation techniques

Producibility analysis

Tolerance allocation: the cost advantages of the statistical approach

### ■ Conducting a Tear down analysis

Organization of the activity

Analysis of functions and performance

Static Tear down

Dynamic tear down

Tear down of costs

Tear down of materials

Tear down of processes

### ■ VRP and Standardization Techniques

Product management: variety vs. standardization

Cost analysis using the Variety Reduction Program approach

Calculation of the Part index and Process index

Standardization and process sequencing

The 5 techniques of complexity reduction Product modularity, advantages and disadvantages

Setting up a Variety Reduction Program

Design rules analysis: creating a design standard





## Teaching materials and supporting site

Readings and business cases will be provided for further study prior to the classroom meeting. A support site will be available to participants where they can find additional information, course materials and other services: [www.digital.festoacademy.it](http://www.digital.festoacademy.it)  
Some materials and company testimonials will be in English.

## Initiatives for insights

Based on one's personal skill profile, corporate and business context, it is possible to deepen certain topics and tools by following programs and seminars offered by Festo Academy.

### You may also be interested in:

Executive Master Design For Six Sigma  
Program Product Development Excellence  
Program Design for life cycle cost





## Quick re-design to cost workshop

### On the Job

#### Initiatives for insights

In real life, cost reduction activity is often relegated to a single business function with meager results, in terms of percentage reduction, as it cannot act simultaneously on design, product, manufacturing techniques and assembly methods.

In one week, we propose, with a cross-functional approach, the reduction of the cost of a product, machine or part of it by making use of the different methodologies applicable to the project and process.

#### Where

- On the job
- At the Festo Academy headquarters

#### To whom it is addressed

Through a workshop where practicality and concreteness are the common thread, participants experience how it is possible to minimize time while increasing results and reducing costs.

Operated by a cross-functional team (Commercial, R&D, Engineering, Supply-Chain, Operations) made of managers, the work will get support by consultants and facilitators experienced in product development, creativity, and teamworking.

At the contact stage, the congruence between the proposed business project and the timing and modalities of the Workshop will be assessed.

#### Goals

- Experiment with a different cost-reduction approach geared toward the practical implementation of ideas
- Learning not to deplete the product in the areas of greatest customer value
- Learn how to use all the different methodologies of design to cost... and beyond
- Reduce with you the cost of a product, machine or part of it
- Working and experimenting with cross-functional teams

#### Immediate and visible results





## We practice what we teach

Innovation and Product Development Best Practice at Festo

### We pioneer innovations that endure

100 new patented products per year and more than 2,900 worldwide patents: those impressive numbers closely correlate with the 8 percent of our revenue we invest in research and development.

**Innovation at Festo translates into growth and competitiveness because it starts with understanding the customer's needs: understanding them and going beyond them, that is our strategy.**

Our research looks at mega-trends such as energy efficiency, globalization, digitization, Industry 4.0 and life sciences.

At Festo we see Industry 4.0 as a highly interdisciplinary project of the future on which we are constantly working with various partners from science and industry.

Innovation then spreads in all areas with a strong partnership involving more than 300,000 customers worldwide.

### Innovation at Festo AG

Festo ranked second, after Apple, in the ranking of multinational corporations with respect to revenue growth related to R&D investment.

(from independent research by the Fraunhofer Institute)

**Festo ha vinto negli ultimi 5 anni più di 70 Product & Design awards a livello internazionale tra cui:**

- Red Dot Award
- iF Award
- Ecology Award
- iF Design Award China

**Scopri di più sul progetto Bionic Workplace**



## Innovation programs

### Smart Product & Services 4.0

The new Festo Motion Terminal VTEM valve system allows, through a set of Apps, more than 50 individual components to be replaced using piezoelectric technology and software. Components and Systems 4.0 enable management of critical KPIs with dedicated dashboards and services for predictive maintenance, energy saving, and many other critical functions. Smart capabilities are ready to be integrated into larger systems such as Siemens Mindsphere, Rockwell's Factory talk and many others.

### Bionic learning network

One of the main sources of inspiration for our innovation is nature.

In the Bionic learning network, a collaborative network of Festo, universities, research institutes and companies, work is being done on developing new solutions, studying the principles of nature that provide ideas for new applications and industrial methods.

### Design thinking

Being interdisciplinary, decision-making-savvy, iterative and innovative.

Festo globally promotes design thinking programs for development teams and throughout rest of the organization.

Design thinking is a method for developing new ideas and innovative concepts.

At Festo it supports programs related to innovation, cross-functional cooperation and customer orientation.

On-demand moderators are available to support your work teams.

### Open innovation

Complexity requires a network of differentiated expertise.

At Festo we foster open innovation as an exchange and network inside and outside the company.



**Festo is among the members of several research groups such as Manufuture Europe and Germany, Microtec, Wesdt and is part of the Falling Walls innovation network.**

	
<p><b>Guarda il video Festo Motion Terminal: HoloLens</b></p>	<p><b>Guarda il video Festo 3D Cocooner</b></p>
	
<p><b>Guarda il video Festo BionicANTS</b></p>	<p><b>Guarda il video Festo BionicCobot</b></p>



## Faculty

### Nicola Lippi

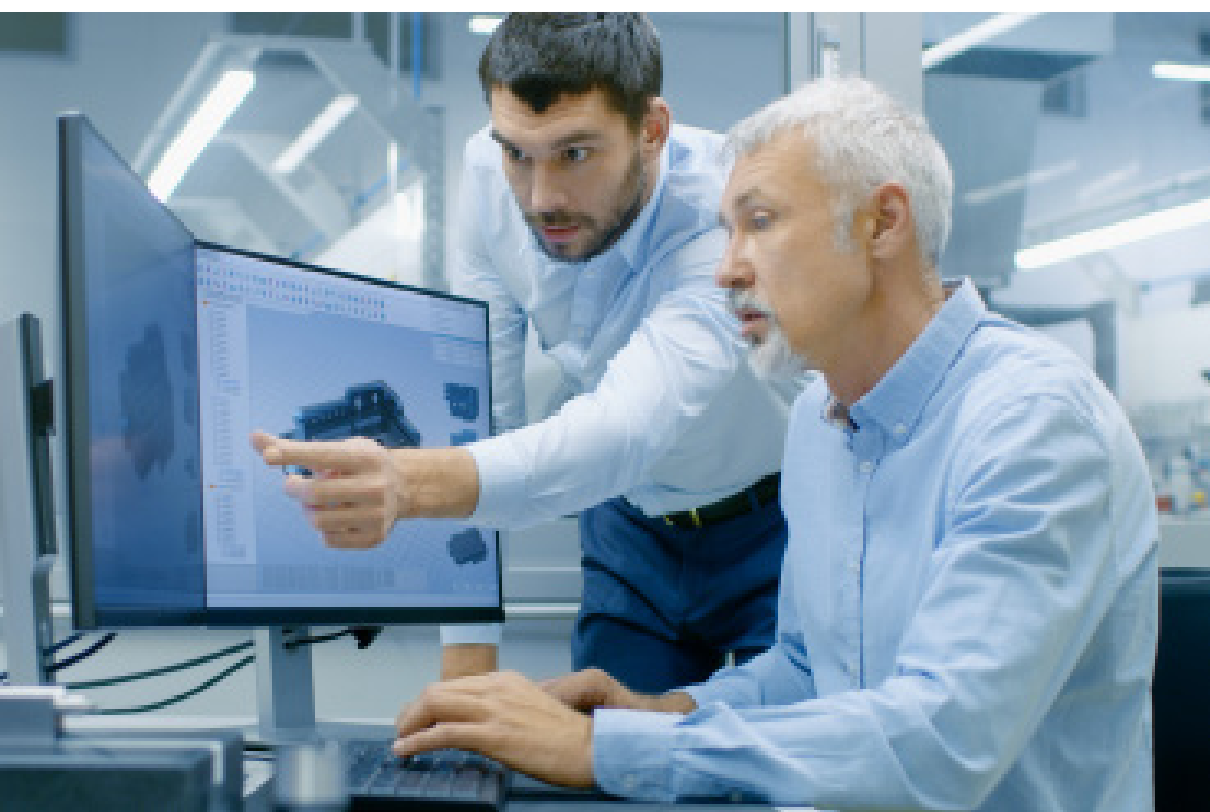
Senior Consultant Festo, expert on the topics of Innovation and Product Development and DFSS. A mechanical engineer, expert in design and the new product development process, he has held positions as Technical and Design Director in leading national companies. Supports companies in developing new products by helping to increase their content in terms of innovation, cost-performance ratio, and in strict adherence schedule. Develops Lean product development projects and related supporting methodologies such as TRIZ, QFD, Lean project management, DFMA, FMEA, Risk management, Design To Cost, DFSS (Design For Six Sigma), statistical methods for design. Experienced industrial machinery designer.

### Festo Academy

Festo Academy is the Industrial Management School working on the topics of business organization and management.

Its mission is to support companies in expressing their fullest potential expanding and developing the skills of their Human Resources.

Together with Festo Consulting, it is part of the multinational industrial group Festo A.G., a leader in the field of industrial automation, constantly focused on innovation and people empowerment.



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Program

## Product re-design to cost



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**Innovation and Product  
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