Integrated Consulting Group

Your Partner in Change.

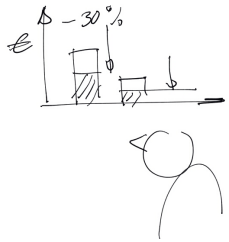
Design for Assembly Online

Unique training programme to improve assembly performance + online case studies from the industry

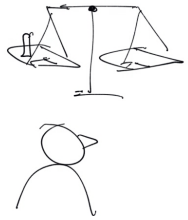
THE NEEDS OF COMPANIES IN ASSEMBLY AND OUR APPROACH

Voice of the assembly

"We are doing a PFMEA risk analysis on the assembly during development, but we are not satisfied with the results."



"By using Lean techniques we can reduce assembly time and assembly costs by about 10 %, we would need 30-40 %."



"In the assembly process we need to achieve target times, target assembly costs, target assembly quality at the same time. We can only do this at the cost of compromises."

Our approach - systemic

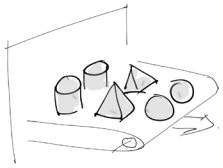
We offer a systematic approach of what the right assembly-oriented knowledge to implement in the assembled product and assembly system to achieve the target assembly performance. Process and design FMEA cannot do that.

We make targeted changes to the product, assembly process and assembly system to achieve savings of 30-40% in assembly performance.

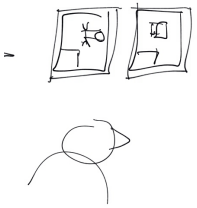
By simultaneously designing the assembled product and the assembly system, thinking in terms of the entire product life cycle, we achieve synergy of objectives without compromise.

CORPORATE NEEDS AND OUR APPROACH

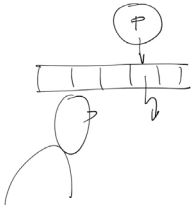
Voice of the assembly



"We are increasingly facing a shortage of people in assembly. We're being pushed into flipping manual assembly to robotic assembly or machine assembly, but it's difficult."



"The voice of the assembly will only be accepted when it is put into production. By then, the project is already under time pressure and there is little room for the assemblers to make a solution. How to avoid this?"



"We need a structured approach on how to implement the right assembly knowledge, at the right time, at the right place in the development process into the product under development and the related assembly system to achieve the target performance in series assembly."

Our approach - systematic

Simplifying assembly leads directly to saving people. We offer an engineering and management approach to switch from manual assembly to robotic assembly.

We offer assembly expertise broken down by efficiency for the stages of the development process to achieve effective and early prevention during development.„

Firstly, we solve the systemic assemblability of the product with a specific assembly system and only then do we optimize the assembly performance to the target values. We offer structured algorithms, forms, assembly knowledge catalogues, case studies.

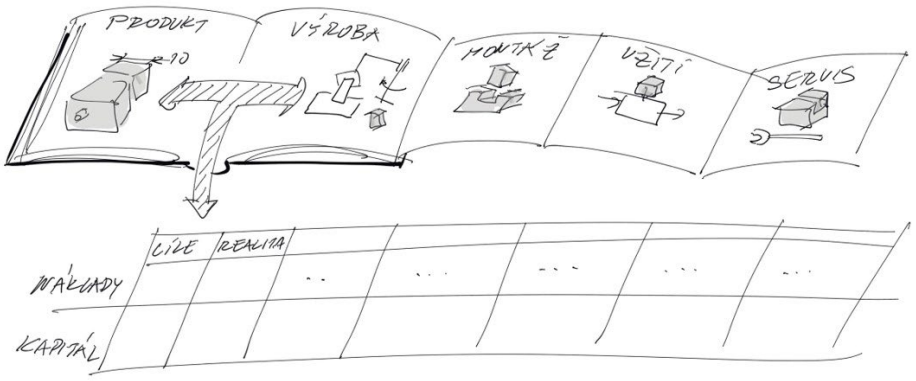
DESIGN FOR ASSEMBLY

The method,

1. Full title : Assembled product & assembly system design to assembly costs, assembly time, assembly quality.
2. A proven approach to radically improve assembly performance
3. Methods and tools for analysing assemblability and assembly performance
4. Methods and tools for redesigning an assembled product to achieve full assemblability and target performance
5. Methods and tools for redesigning the assembly system for full assemblability and target performance

...that brings radical savings:

1. Assembly times
2. Assembly costs
3. Assembly inefficiencies
4. Assembly tools
5. Assembly techniques



SYSTEM ASSEMBLY KNOWLEDGE

You get the "right" assembly knowledge

Assembly systém
Designing a prefabricated product and assembly system for:
- Manual assembly
- Machine assembly
- Robotic assembly

Assembled product
Product and assembly system design at the level of :
- Families and assembly lines, nests
- Product and system structures
- Joints and joining technology
- Assembly system components and elements

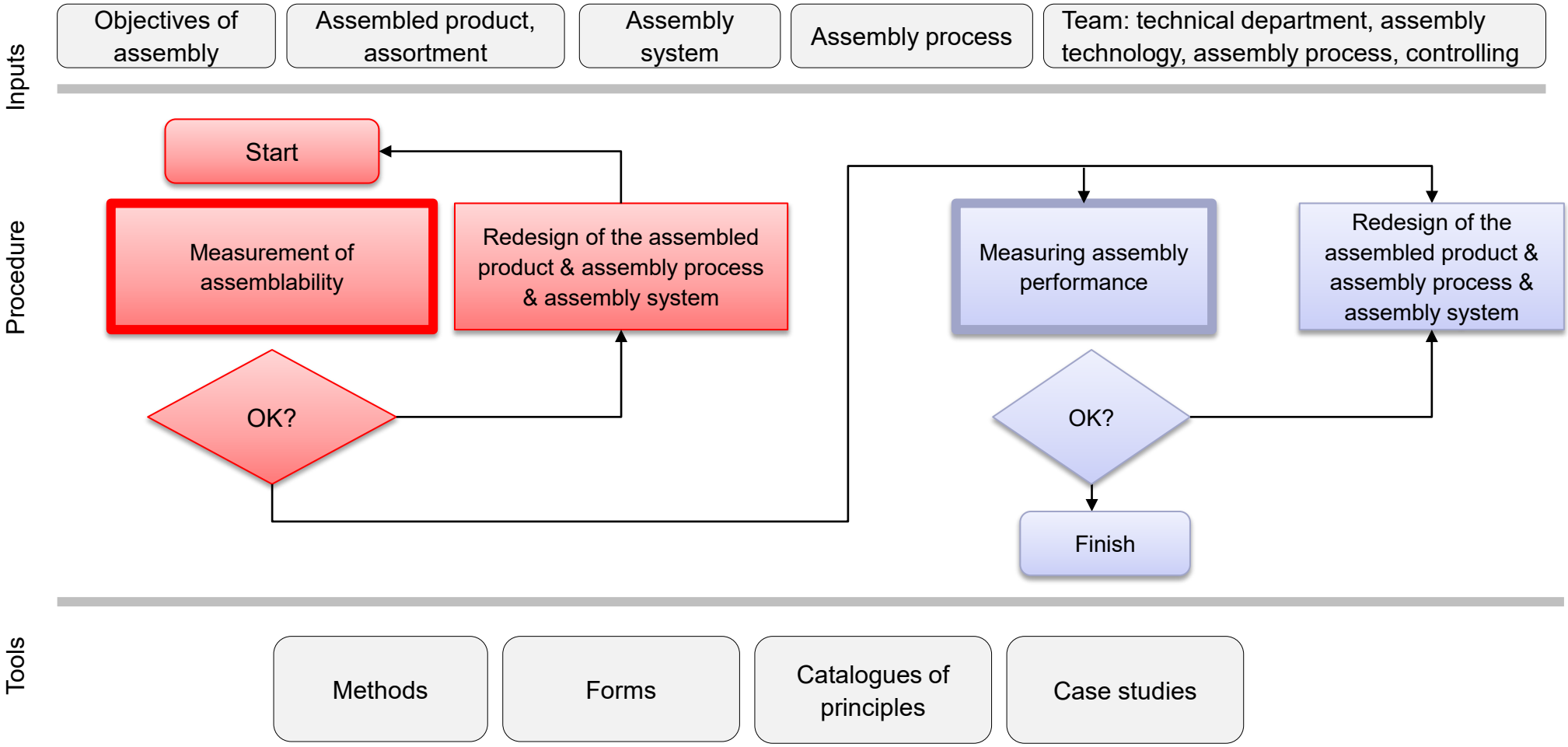
Assembly process
Product and assembly system design for assembly operations :
- storage, handling, orientation
- setting up adjustments
- joining
- assembly quality control

Assembly performance
Product and assembly system design for reduction :
- Assembly costs
- Assembly times
- Assembly inefficiencies
- Assembly rebuilds

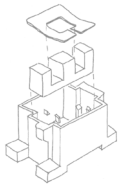
Design principles for assembled products and assembly systems in terms of assembly performance (productivity, cost, quality, flexibility, yield)

SYSTEMATIC APPROACH

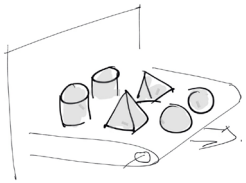
You get our proven Design for Assembly algorithm



TRAINING TOPICS



MODUL 1 – **Design for Assemblability** - or "achieving full product assemblability with the assembly system"



MODUL 2 – **Design to Assembly Costs** or "achieving target assembly performance"

MODUL 1 - ASSEMBLABILITY

1.Day - Agenda 8:30 – 12:00 15.12.2022

A system view of assemblies

- Assembly technology - basic characteristics, differences to other technologies
- Session: assembled product + assembly process + assembly system
- Assembly performance metrics and influencing factors
- How to increase assembly performance by 40%?

A systematic view of assembly

- Application of the DFA approach (Product & assembly system design for Assembly)
- DFA in the product development process - when, where and how to apply it correctly
- Achieving product assemblability
- 4 types of assemblability
- How to achieve full product assemblability - algorithm, knowledge

Study – Česká Zbrojovka (13:00 – 15:00)

- CZ is the world's leading manufacturer of handguns
- Systematic approach to assembly
- Introducing several projects

Guest

- Ing. Michal Andrýsek
- Engineering manager
- Česká Zbrojovka
- Uherský Brod

MODUL 2 - ASSEMBLY PERFORMANCE

2.Day - Agenda (8:30 – 12:00) 16.12.2022

Designing products for assembly performance

- Designing the product family in terms of assembly costs, times, assembly quality
- Designing the assembly structure of products in terms of assembly costs, assembly times, assembly quality
- Designing connections in terms of assembly costs, times, assembly quality
- Designing assembled components in terms of assembly costs, times, assembly quality

Simultaneous product and assembly system design

- Product family vs. assembly system flexibility, lines
- Product structure vs correct assembly system layout
- Joints vs joining technology
- Components vs assembly operations (storage, handling, orientation) and assembly system elements (tray, hand, tools, ...)

Study – ACO industries 12:30 – 15:00

- Reduction of siphon installation costs
- Product design for robotic assembly
- Transition from manual to machine and robotic welding
- Robotic assembly

Guest

- Ing. Ján Grznár.
- Product manager
- ACO Industries

DEDICATED TO

Constructors

Assembly technologist

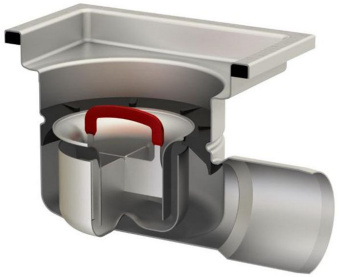
Assembly managers

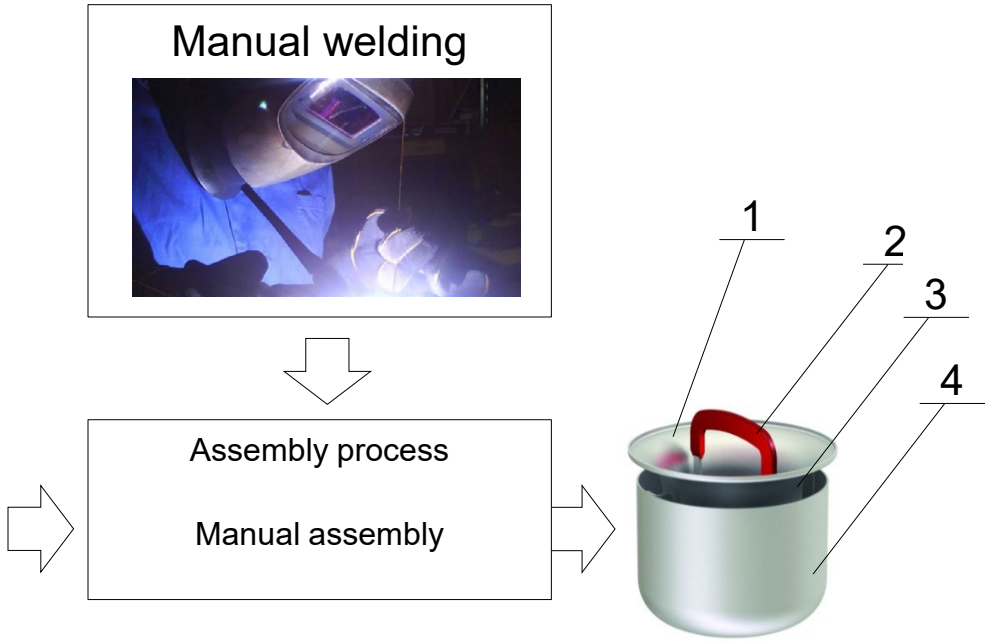
Lean managers

WHAT DESIGN FOR ASSEMBLY BROUGHT – ACO INDUSTRIES

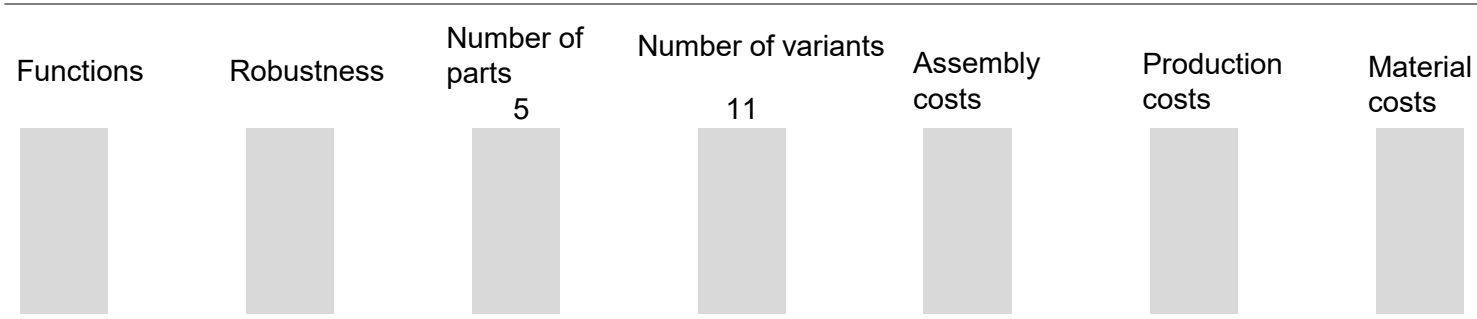
Default state

Aco Industries is the market leader in drainage systems. We have been instrumental in reducing sanitary sewer costs. The sanitary trap was a significant part of the cost of the entire product, with hand welding installation times being particularly high. The wide range of sizes and even the variety of mounting structures was also a problem, as were the high material costs.





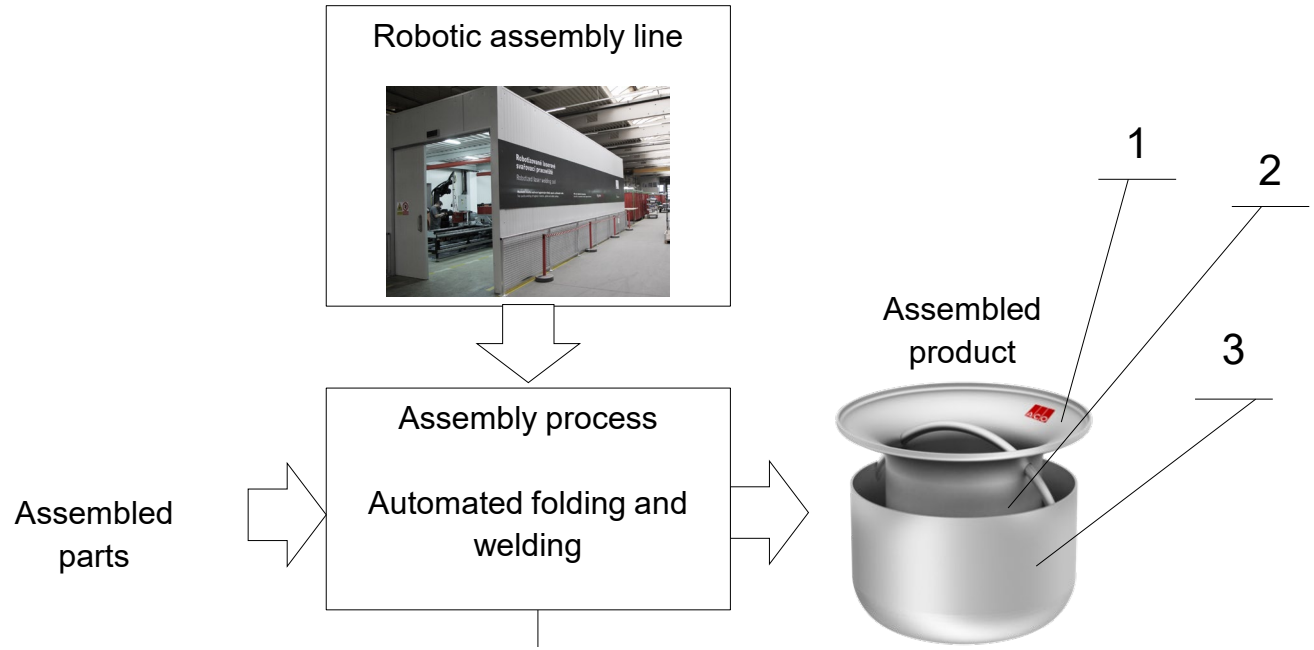
Default mounting performance

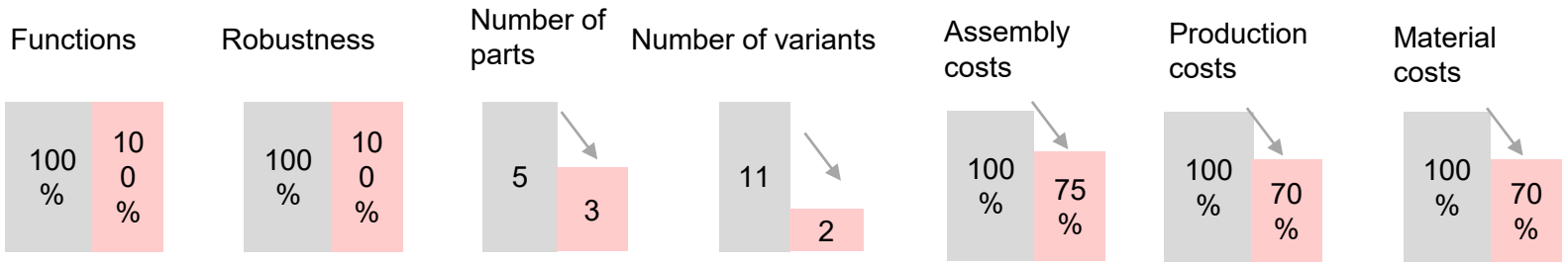


WHAT DESIGN FOR ASSEMBLY BROUGHT – ACO INDUSTRIES

Target achieved state

In order to achieve the target assembly performance, the Design for Assembly method was deployed, whereby the product was simplified from 5 parts to 3, while the welding workload was significantly reduced. The assembly design was modified in line with robotic welding, which resulted in a significant reduction in the number of operators. In parallel with the new assembly structure, a significant reduction in the number of variants from 11 to 2, a robotic line was introduced with acceptable returns. The new design is protected by an international patent.





Ing. Ján Chaľ

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SERVICES / COMPETENCES

- Product and service innovation – projects
- Company innovation systems– projects
- New product development - projects
- Design for Cost - projects
- Design for Cost academy – training
- Product Innovation academy – training
- Design to Assembly – training

POSITION

Senior consultant ICG-Capability

PROJECTS / TRAINING

Borcad, Ammann, Česká Zbrojovka, ACO, Meopta, Preciosa, Raiffeisenbank, Česká spořitelna, PSL (SK), Sauer Danfoss (SK), Panasonic (SK,) SOLIDpower (IT), TESA (DE), Bruker (DE), Linet (CZ)

Jan's main focuses are product innovation, improving the performance of the new product development process, introducing the innovation process into companies, reducing direct product costs, designing product portfolios in terms of customisation, reducing costs through platformisation and modularity.

Jan also provides training in Design for Cost.Studoval Strojní fakultu STU Bratislava. Absolvoval studijní pobyty:

- Salford University (UK) – Design for Assembly
- TU of Denmark - Design to X, Design to Cost
- FH Coburg – Radical innovation.

He worked at the WOIS Institute in Coburg as a project manager.

He is co-author of 5 international patents, 2 books on Design for Assembly and Innovation.

TRAINING PRICE AND PRICE REDUCTIONS

- Design for Assembly:
  - 2 days of training (excl. VAT)
    - 1 participant 650 EUR
    - 2 participants 500 EUR
    - 3 participants 410 EUR

  - The price includes methodology and know-how, study materials.
  - The price does not include accommodation, lunches, dinners and transport for participants.

ICG INTEGRATED CONSULTING GROUP

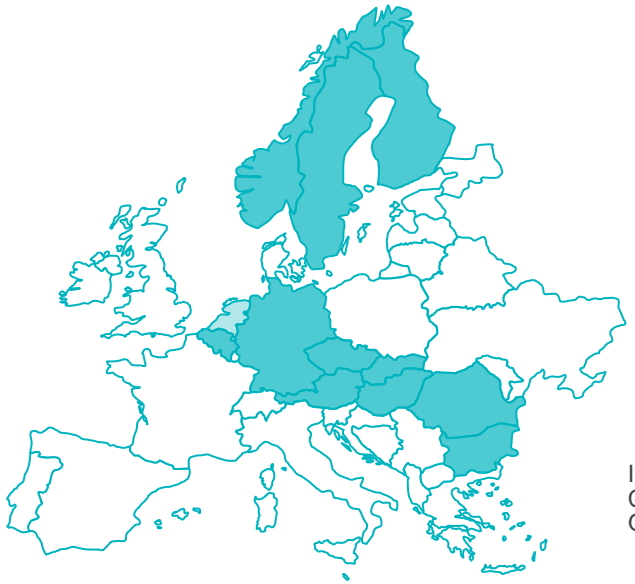
ABOUT US

We are a consulting company operating in 12 European countries with more than 35 years of experience. We focus on process improvement using methodology of Lean Six Sigma, business innovations and change management. We deliver particular projects, trainings and combined programs to our clients in both service and manufacturing organizations.

140
CONSULTANTS

12
COUNTRIES

35
YEARS



Integrated Consulting Group

7 values of our company

1. The customer is always our top priority. We build long-term relationship based on trust.
2. We deliver more than the customer expects.
3. We are committed to results. We are rewarded for the supplied value.
4. We fully adapt to specific needs and requirements of the client.
5. Positive feedback from the customer is the main indicator of success for us.
6. Whatever we do, we want to do it as the best one in our field.
7. We do, what we enjoy, and we want you to enjoy it as well.

Global Partnerships

innova management institute
CHINA

SCHAFFER CONSULTING
USA

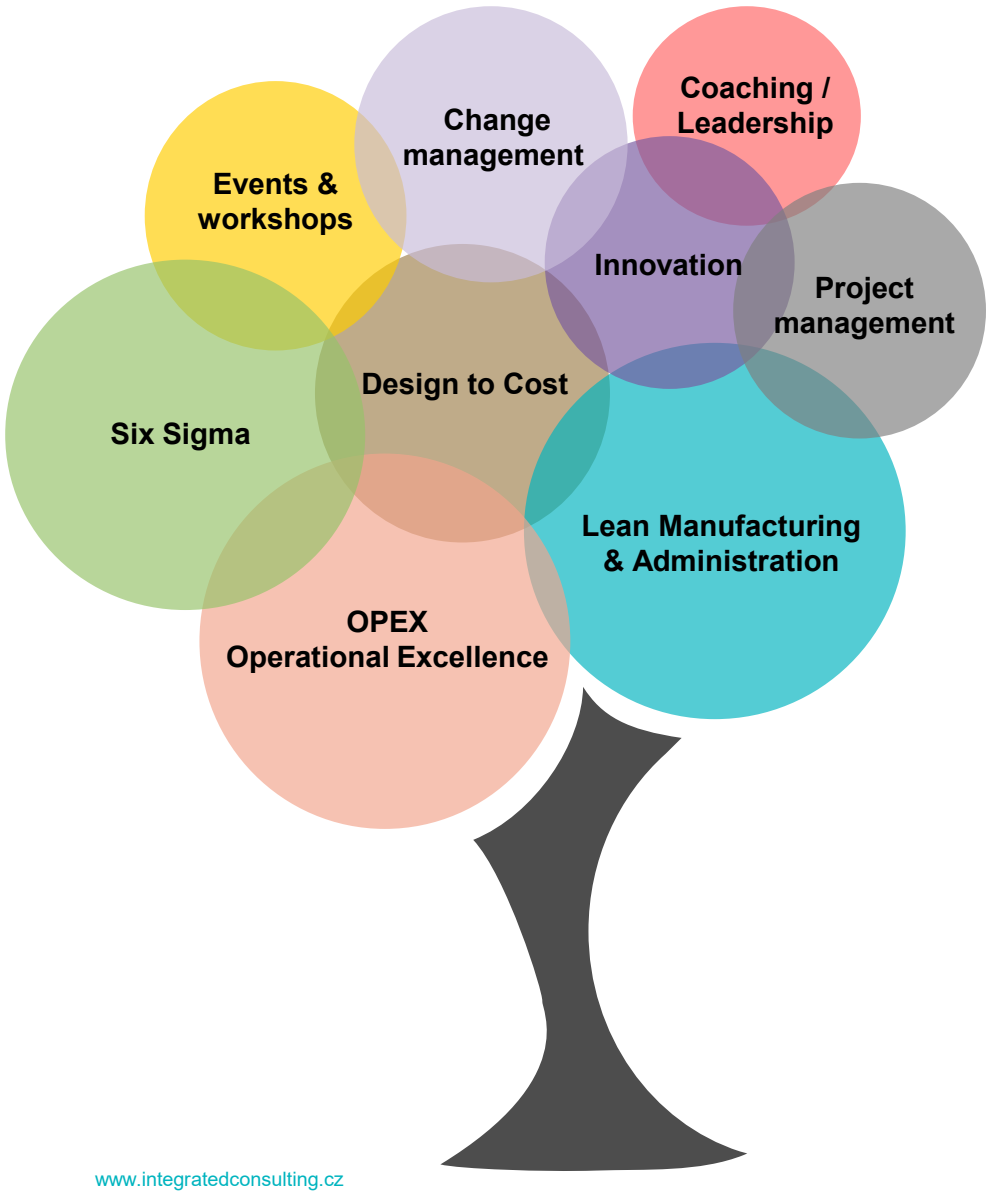
change factory
EUROPE

WAY OF OUR WORK: CO-CREATION

- In our work, we effectively combine expert project knowledge with soft techniques to work with people and develop people. We offer and combine tutorials, training and coaching.
- Our work is based on engaging people and using innovative approaches. Consultations and analyzes are combined with group workshops to ensure the necessary commitment to change.
- We implement the projects together with the client. This will make it easier to accept the proposed changes and help transfer knowledge and methodology to the organization of the client.
- In case of interest from the client we provide detailed certified internal staff training for selected methods and procedures for process management, improvement or change management.

We transfer our know-how to your employees so that you stay in your company after the project is over

OUR SERVICES



Operational Excellence
Process optimization | Identify opportunities - Process Audits | Process mapping | Process design | Cost reduction | Business process management

Six Sigma
Certified Lean and Six Sigma | Training | Six Sigma coaching | Implementing Lean Six Sigma into an organization | Interim Six Sigma Black Belt | Data analysis

Lean
Training of Lean techniques and tools | Value Stream Mapping | SMED optimization | Lean Culture | Simulation for Lean Tools Exercise | KAIZEN workshops | Lean Administration

Change Management
Change management | Changes with rapid results | Culture Diagnosis| Communication of changes | Change management training | Motivation and goal setting training

Project Management
Project support | Project management | Strategy of PMO Project office | Project management training

Innovation & Creativity
Innovation of products and services | Innovation workout | Strategic innovation | Innovation trainings | Creative problem solving | TRIZ | Design Thinking

Workshops & Events
Increase the efficiency of internal workshops | Mobilizing Large Groups | Specific problems solving | Training of workshop facilitation | Outdoor Training Programs

Design / Design to Cost
Design for X | Design to Cost Academy | Development of new products and services | Developing new „Business Model“| Total Costs Management

Leadership / Coaching
Coaching | Presentation skills | Right communication | Conflicts and how to deal| Sales skills| Mentoring | Trainings

A TEAM OF PROFESSIONAL PERSONALITIES

- Our team consists mainly of experienced consultants and some high potential junior consultants
- Our ambition is to have a good mix of different personalities, women and men, old and young, with different nationalities and academic backgrounds
- Every consultant has strong process competences and appropriate social skills
- Every consultant has know-how in at least one of our key competences: strategy, innovation, organization, controlling or leadership
- We all enjoy our work and engage ourselves fully in our projects – there are no strict management functions, all consultants are key persons
- For each core competence we have at least 5 in-house top professionals with a strongly established market position
- It is important to maintain the variety of different personalities in preferably hierarchy-free environment – we are all vivid personalities of different age

Integrated Consulting Group

Make an impact.

Your Partner in Change.