



LEAN EPCM approach

Know your CAPEX from the beginning and have it controlled

CEE Automotive Forum 2019

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Bilfinger Tebodin in Central & Eastern Europe



Managed the development of **over 150** Automotive plants in last 10 years in CEE
Greenfield projects / extensions



Total turnover in 2018 CEE region **> 37 M€**
Automotive is one of our key market sectors in CEE:
Automotive (18%); Commercial buildings (12%);
Food (26%); Chemicals (11%); Oil & Gas (10%)



Competences in the Automotive industry **over the last 60 years all over the world**

BUILD TO OWN

RENTED BUILDINGS

PROJECT MANAGEMENT

SAFETY & RISK
MANAGEMENT

LEED and BREEAM

**PERMITTING
CONSULTANCY**

DESIGN / ENGINEERING

ENERGY

LOGISTICS

BIM 3D to 6D

PROCUREMENT

PAINTSHOPS
PRESS-SHOPS

INJECTION MOLDING
METAL CASTING

CONSTRUCTION MANAGEMENT

CIVIL / ARCH

ELECTRICAL

MECHANICAL

Automotive clients in Central & Eastern Europe



Cost Management Service to support your investment decisions

We help our clients worldwide deal with cost challenges.
A professional management of your project costs and high-level consultancy service for your investment decisions.

Sector breakdown

Sector breakdown			
Sector	EUR/m ²	EUR/m ²	EUR/m ²
	Min	Average	Max
Automotive	560	890	1310
Food & Beverage	920	1390	2210
Warehouses	430	600	1060
Retail	980	1070	1350
Offices (shell & core)	690	870	1080

The Automotive sector shows lower average costs than Food & Beverage. Here the main cost drivers are technology requirements e.g.: high floor loads, underground channels, heavy crane runways, acidity resistant screeds etc.

Element Cost Analysis

Project cost for automotive production plant

	EUR/m ² of building	% of building	% of project
Project cost	1 027	–	100%
Main building	820	–	80%
Civil part	560	68%	55%
Load bearing structure	260	32%	25%
Floor structure	90	11%	9%
Envelope of the building	85	10%	8%
Interior structures	50	6%	5%
Steel structures	75	9%	7%
Mechanical part	140	17%	14%
Electrical part	120	15%	12%
Small objects	30	–	3%
Infrastructure:	152	–	15%
Grading works	40	–	4%
Roads	45	–	4%
Water management	50	–	5%
Exterior electrical distribution	15	–	1%
Gas distribution	2	–	0%
Other works	25	–	2%



BILFINGER

FRIDAY

04:32 PM

THURSDAY

10:12 AM

TUESDAY

03:33 PM

FRIDAY

09:38 AM

MONDAY

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WEDNESDAY

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LEAN EPCM:
fixed CAPEX from
concept design till commissioning

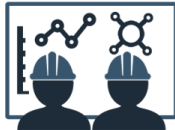
Save the time. Keep the money.

EPCM as it often goes

Business case



Engineering



Cost optimization



Construction



LEAN EPCM you benefit from

Business case



 = CAPEX fixed

Engineering

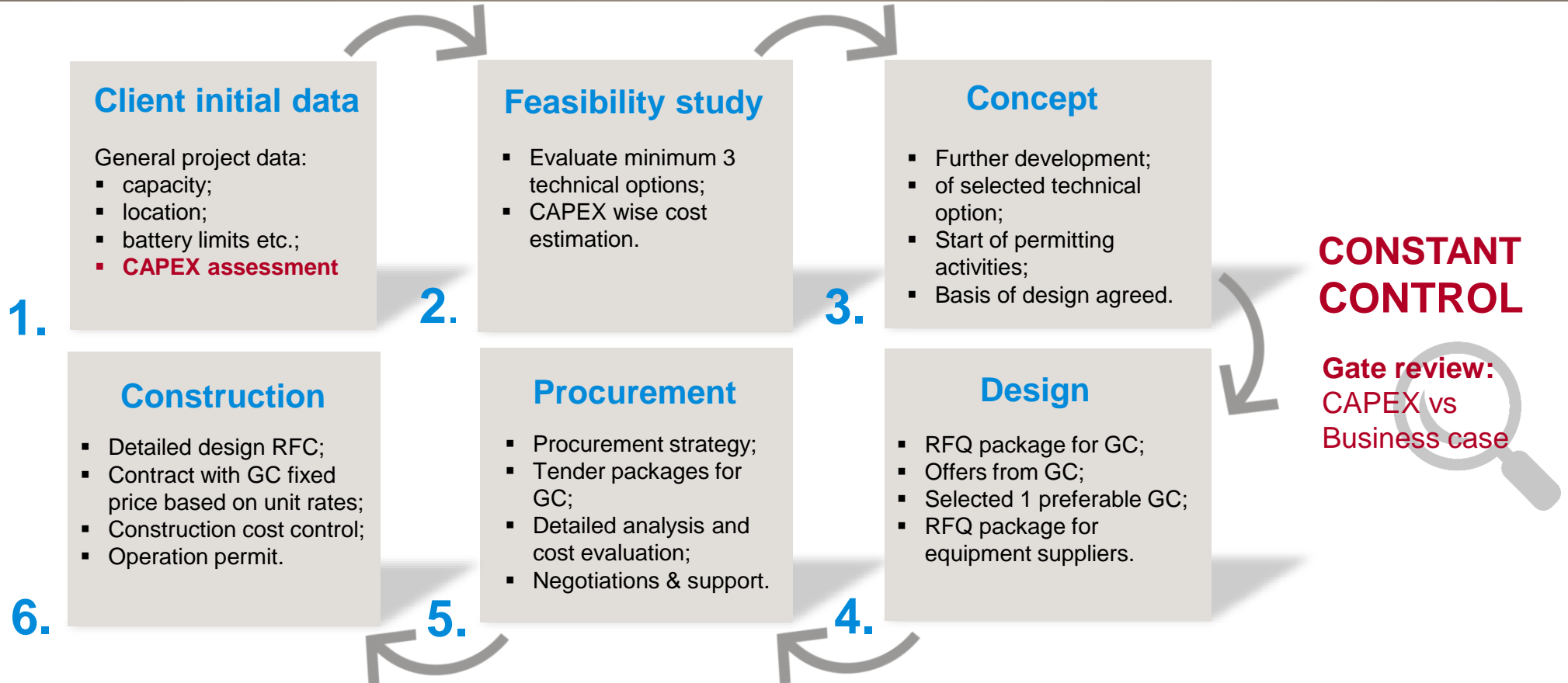


+ constant CAPEX control

Construction



Cost control & management for sticking to initial CAPEX



IV.

Construction stage

Start with the end in mind: Lean construction management for smooth workflow on site

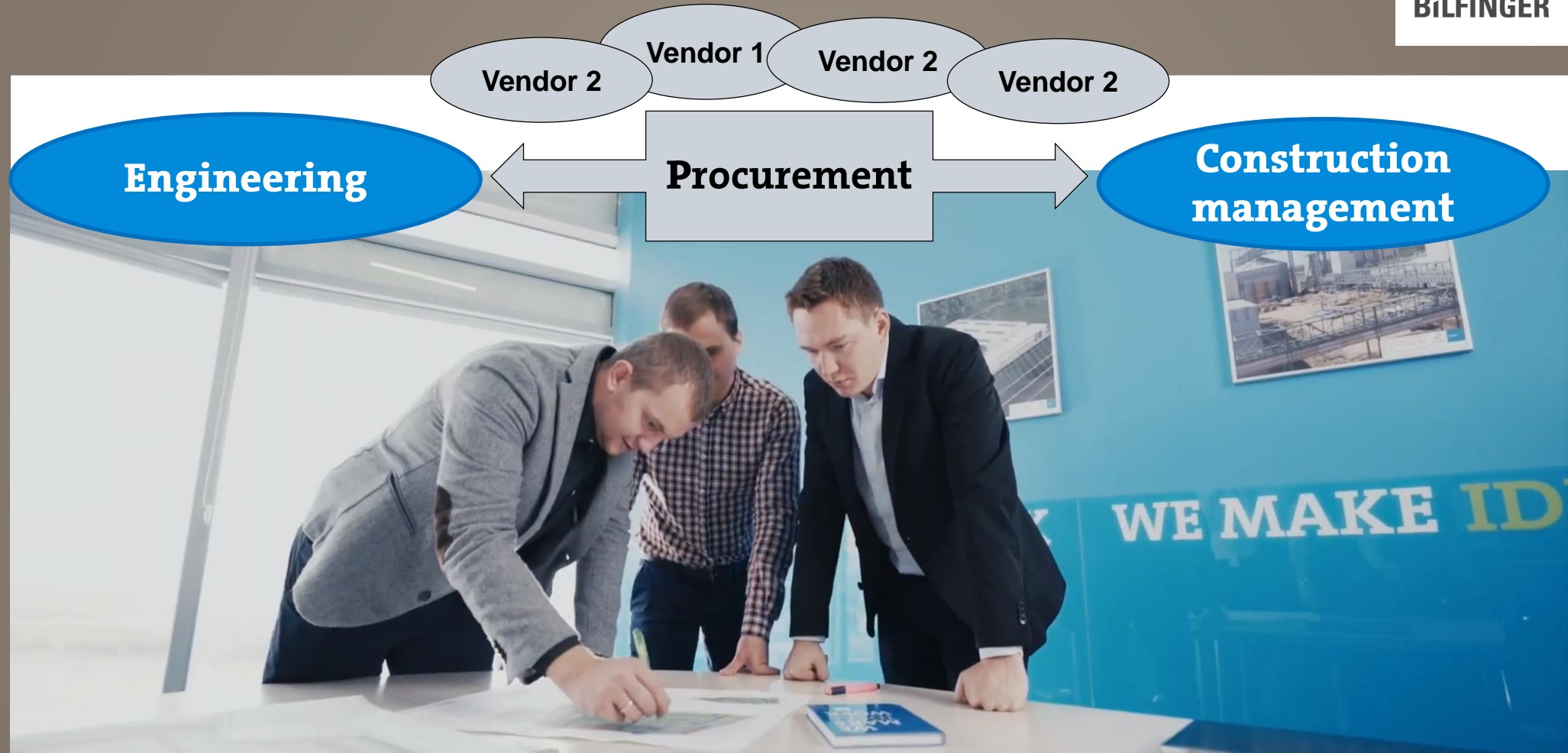


- ▶ **Visual PM**
- ▶ **Safety**
- ▶ **Quality**
- ▶ **Cost targets**
- ▶ **Cost control**
- ▶ **Cost optimization**

III.

Procurement stage

Procurement focused to initial CAPEX



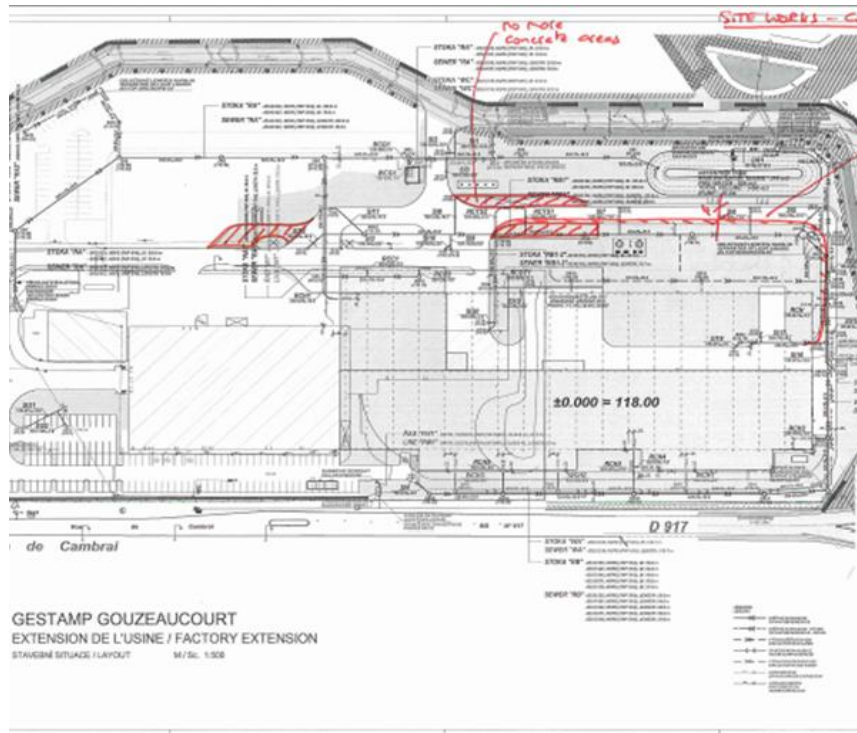
II.

Design stage

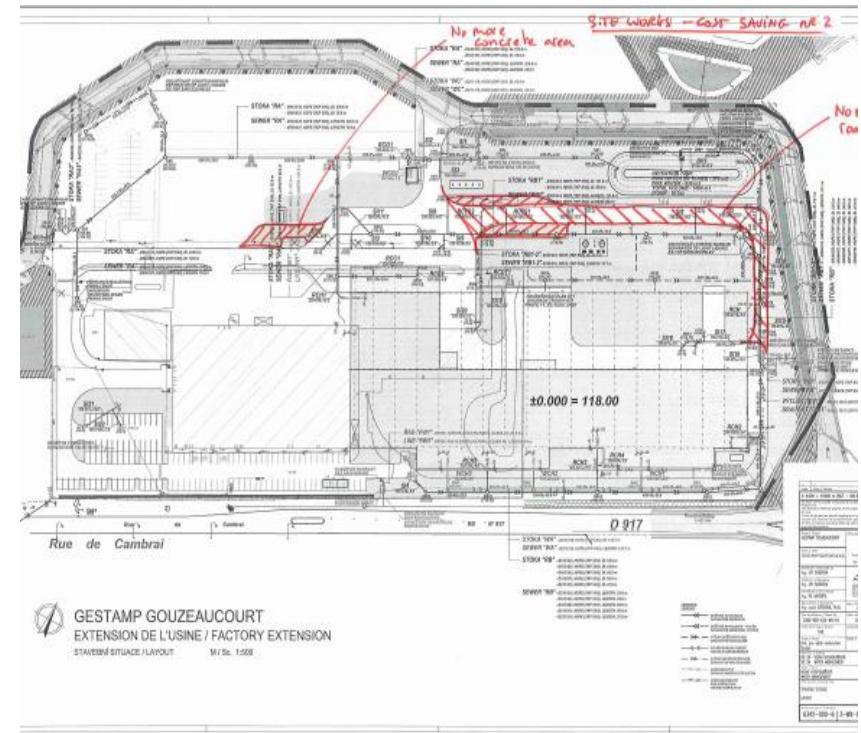
Case 1.

Cost-effective consultancy for Gestamp project

- Site works cost savings: Option 1



- Site works cost savings: Option 2



Case 2.

Cost-optimized design & construction solutions for automotive project

1. Planning changes & technical optimizations

Westfassade - Minimierung Umbau	50.000
Lufttechnik	250.000
Bodenerneuerung minimieren	650.000
Elektroinstallationen	150.000
Reduzierung Verwaltungsgebäude 20% in der Länge	300.000
Optimierung Heizung	360.000
Reduzierung Fläche mit Stelconplatten	150.000
Alternative Boden	500.000
Reduzierung Raster 2. Himmel auf 5x5m	350.000
Optimierung Dachkonstruktion	2.000.000
Optimierung Stützen und Fundamente	500.000
Optimierung der Architektur	50.000
Verlegung Kompressoren	35.000
Verlegung Transformatoren	1.200.000
Verlegung Technische Gase	60.000
Kesselraum / Heizung	250.000
Kühlsystem-Optimierung	200.000
Minimierung Energiezentrale	450.000
Allgemein - Alternative Ausstattungslieferanten	600.000
Allgemein – Änderungen aufgrund Optimierungen der Erdarbeiten	130.000

Total savings 8.235.000

2. Challenging the scope of construction

Reduzierung Asphaltfläche	100.000
Reduzierung Parkplatz	50.000
Reduzierung Frischwassertank	300.000
Entfall Verwaltungsanbau	450.000
Entfall Überdachung Süd	50.000
Entfall Anbau für Ladestation	120.000
Beibehalten Vordach West	20.000
Entfall Serverraum	30.000
Entfall Brücke zu SO 40	70.000
Entfall Anbau für Ladestation	100.000
Entfall Anbau für Büro und Pausenräume	270.000
Entfall 5 Tore	100.000
Geänderte Gebäudegestaltung SO 50 Nord	10.000
Entfall 3 Container	150.000
Reduzierung Asphaltfläche	100.000

Total savings 1.820.000

Total savings

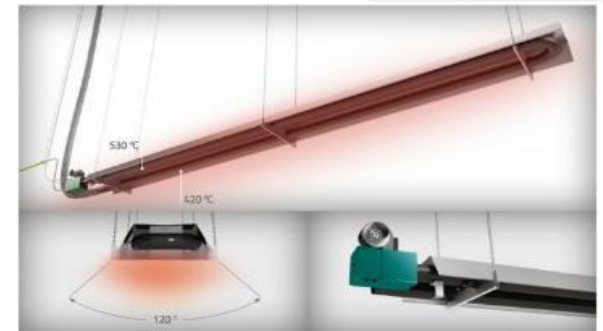
10.055.000

Details



Saving

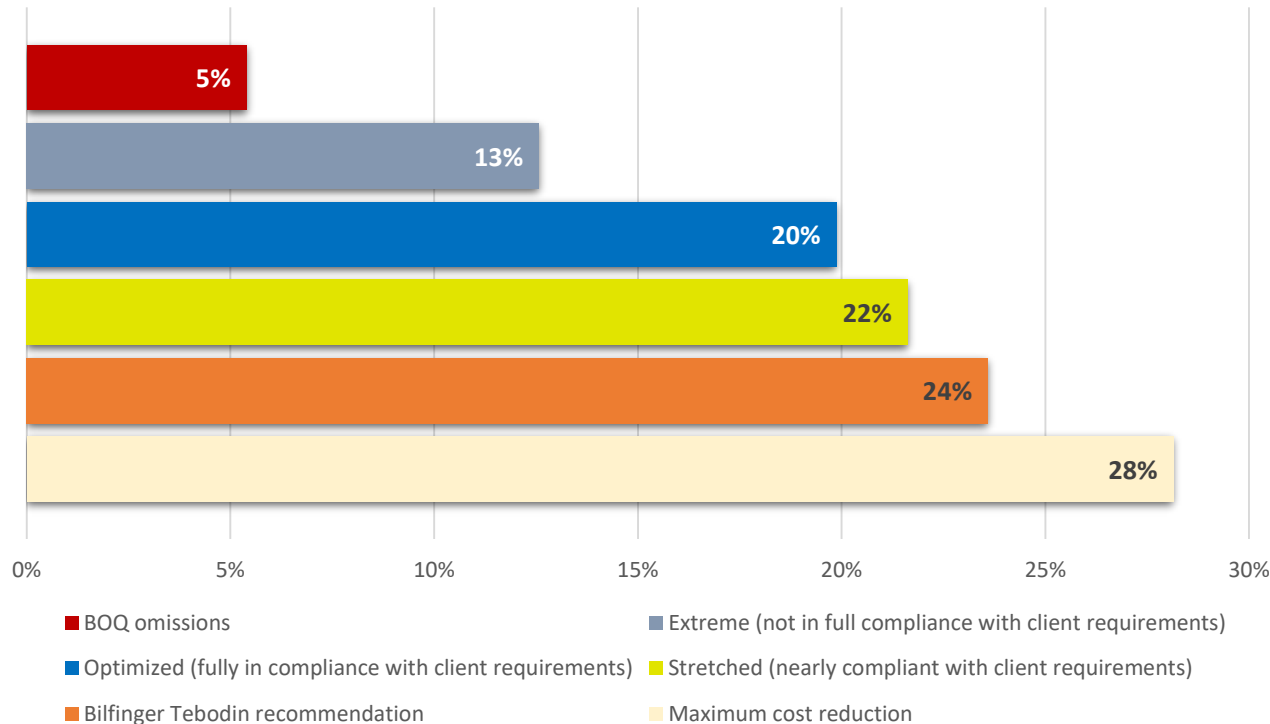
360.000 €



Case 3.

Value engineering for food production factory in Russia

Cost reduction



The initial BOQ price 3 500 000 €

BOQ reviewed

Extreme
450 000 €

Stretched
772 300 €

Optimized
light
715 000 €

Max 1 358 400 €

Bilfinger Tebodin recommendation
842 500 €

I.

Business case stage

New level of partnership for engineering and construction

1. Cost-effective consultancy

- > **Consultants:** CAPEX-focused concept design as a new level of partnership at the very early stage of your business ideas
- > **Process engineers:** process solutions advisory at the start
- > **Cost experts:** constant control and management
- > **Logistics consultants:** optimization of supply chain processes

**Crucial part
for success**

2. Cost-optimized design solutions

- > Value engineering with consultancy approach
- > BIM for control of clashes, costs and schedule

3. Cost-oriented procurement

- > Cost control & management for sticking to initial CAPEX

4. Cost & time effective Lean construction management

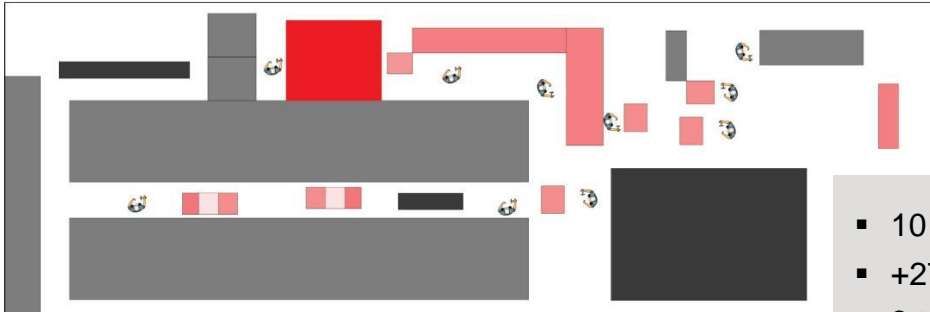
- > Involve last-planners to avoid waiting times



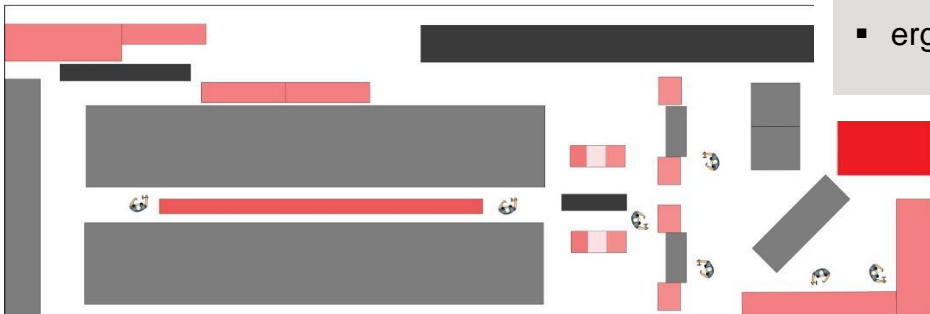
CAPEX UNDER CONTROL AT ALL STAGES

Redesign a production flow and Value Stream Map

SHOP FLOOR LAYOUT (BEFORE)



SHOP FLOOR LAYOUT (AFTER)



- 10 to 7 HC reduction
- +27% of output
- 3 to 2 shifts work pattern
- better work balance (TCT)
- ergonomic design

INBOUND

PRODUCTION

WAREHOUSE

INTERNAL LOGISTICS

OUTBOUND





Maja Vrcelj
Automotive Market Leader CEE



Mikhail Senichev
Engineering Director CEE



Kinga Kurta
Business Development Manager
in Hungary



Jaromir Kriz
Area Director CEE

**We start with the
end in mind:
lean EPCM for
your fixed CAPEX**