

Caverion

**Leveraging project execution towards
life cycle solutions**

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Project Excellence

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Leveraging project execution towards life cycle solutions

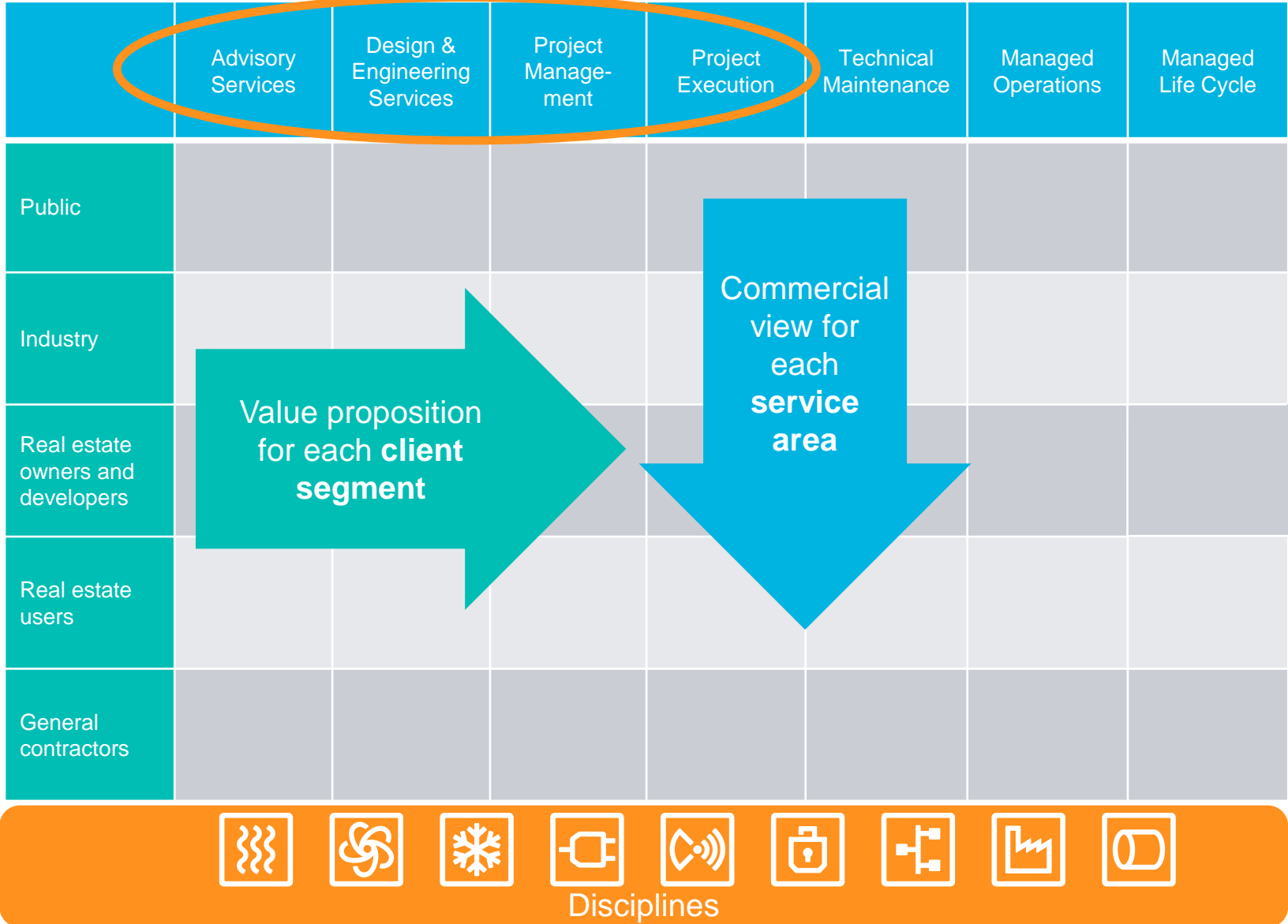
1. Caverion is able to run big and complex projects with profitability

2. Our offering covers the entire life cycle of projects

3. We efficiently manage working capital



Projects in our integrated offering for life cycle solutions



Advisory Services: Providing expertise and technology to improve clients' operations

Advisory
Services

Design &
Engineering
Services

Project
Management

Project
Execution

Technical
Maintenance

Managed
Operations

Managed
Life Cycle

We provide expertise in building technologies and industrial processes. We develop functional, safe, energy- and cost-efficient technology and solutions to optimise our clients' operations.



- System development and analysis
- Energy efficiency advisory
- Advisory for Green Building certificates (LEED; BREEAM, DGNB)
- Own R&D centre provides tailor-made components and solutions to meet clients' individual needs.

Client benefits

- Special expertise in technologies for demanding properties, such as clean rooms, hospitals and laboratories.
- Arrowhead competencies in cooling, building automation and remote monitoring, security and fire safety systems.
- Thorough expertise in all technical disciplines ensures an efficient assembly of compatible systems.
- Energy efficiency incorporated in all services and solutions. Own solutions related to renewables.
- Continuous product development, own products (LuxCool, ClimaCeil) and brands (Krantz).



Case study: Telekom call centres, Germany



New ventilation and air conditioning systems in Telekom's call centers are equipped with Caverion's own solutions, developed based on thorough tests, measurements and simulations on site and in Caverion's R&D research center in Aachen.

Challenge:

- The client's existing ventilation and air conditioning systems needed upgrading as inefficient ventilation and air flow started to have an impact on the call centre employees well-being and productivity.

Solution:

- Ventilation and air conditioning technology was modernised and tailored to the client's needs with Caverion's own solutions.
- 10 different investigations were carried out, including tests, measurements and simulations on site and in laboratory.
- The properties were equipped with Caverion's own products, including Opticlean ventilation systems
 - A ceiling air outlet with radial, horizontal jet spread at high level of thermal comfort
- Disciplines: Ventilation and air conditioning
- Lifespan: 2009 - 2014
- Size: 12 call centre properties, total of 120.000 m²
- Contract value: 100.000 EUR

Design & Engineering: Involved at every stage of project planning and design

Advisory
Services

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Project
Management

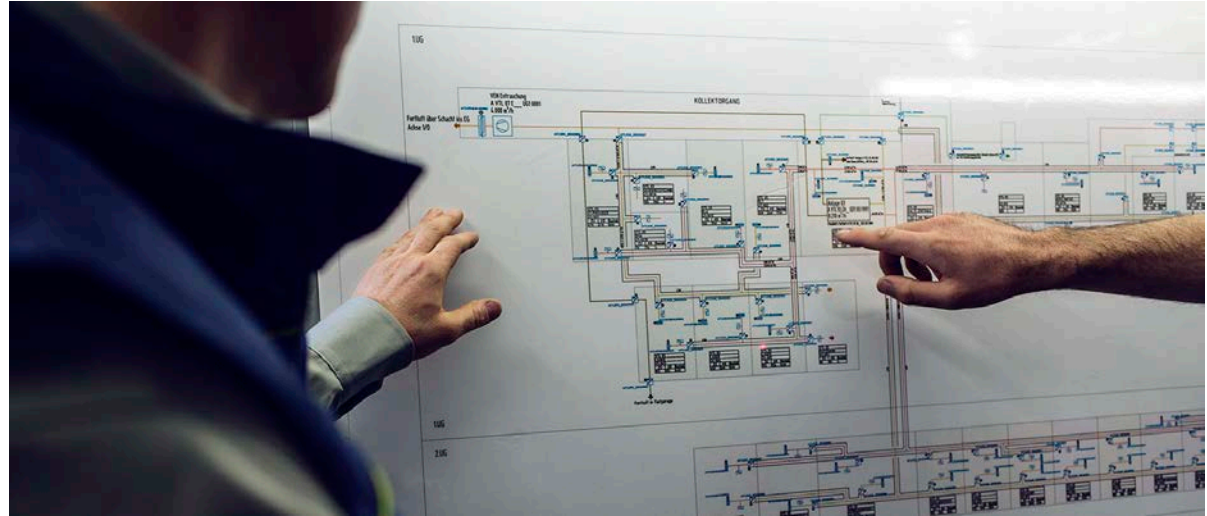
Project
Execution

Technical
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Life Cycle

Caverion provides project design from the concept to the planning of the execution of the project.



- Our design is optimised for the later operation phase.
- We can also take the position of a system integrator for large scale and sophisticated projects.
- Through our own R&D, we are able to review client's needs and offer customised concepts.
- Building Simulations and Building Information Modelling (BIM)

Client benefits

- Project-related risks are being reduced by being involved in the process from the very beginning.
- High quality and improved efficiency of the final delivery
- Less interphases - no need for replanning in later project phases
- Partially simultaneous planning and installation reduces the duration of the implementation.
- Competence in special client segments and customised concepts based on client needs.
- The right balance between energy efficiency and comfortable conditions in the property.



Case study: Wälderhaus, Hamburg, Germany



Caverion provided Wälderhaus with advanced sprinkler systems to meet strict requirements related to the wooden building. The solution provided by Caverion was awarded with Sprinkler Protected quality seal by the German National Association of Technical Fire Protection.

Challenge:

- The Wälderhaus is a forest-themed science center with venue, hotel and restaurant in one property.
- The building is mainly made of solid wood, which emphasises the need for reliable and efficient sprinkler system. Strict regulations and guidelines from authorities and the architect added challenge to the project.

Solution:

- Caverion was responsible for the Design & Engineering of the sprinkler systems for the entire property.
- The fire extinguishing system was tailor-made specifically for wooden house.
- Caverion's own product, low-pressure water vapor fire-extinguishing system EconAqua was used:
 - Energy efficient through reduced water supply and consumption
 - Optimised sprinkler system for windows
- Disciplines: Security & Safety
- Lifespan: 2012 - 2013
- Size: 6.000 m², about 700 sprinklers
- Contract value: not disclosed



Project Management: Ensuring success on site

Professional project management enables successful execution of the project with optimised balance between quality, costs and schedule.



- Balanced risks and profitable outcome
- Synchronised processes and common capabilities throughout the group ensure quality:
 - Project management handbook
 - Process handbook
 - Knowledge transfer across countries

Client benefits

- Long history in project management business for all types of projects.
- With common tools, our employees handle projects efficiently.
- Changes in quality, costs, and schedule are known instantly and can be corrected as soon as possible.
- Comprehensive documentation of all actions in the entire value chain, easily available for clients.

Case study: Outokumpu, Finland



Caverion was responsible for the project management and industrial installations in Outokumpu's ferrochrome production plant in Tornio, Finland. With its strong project management capabilities and high rate of prefabrication, Caverion was able to execute the project in schedule, at the same time ensuring high quality.

Challenge:

- With the new plant, Outokumpu aims to double its ferrochrome production by 2015. Therefore, it was critical to find a partner that was able to deliver the project in a restricted time.
- The high-rise building and narrow pathways added challenge for moving equipment and materials.

Solution:

- Caverion delivered process piping, electricity and instrumentation installations to the new ferrochrome plant.
- With its professional project management and careful planning for logistics, materials and personnel, Caverion was able to deliver the project in schedule.
- Prefabrication of components in own workshops ensured high quality, shortened lead-times as well as reduced manpower and supervision needed on site.
- Additional own employees were flexibly employed to meet the increased need.
- Disciplines: Industrial Installations, Process Piping, Electricity
- Lifespan: 2011-2012
- Size: 16 kilometers pipes and ducts, 130 000 of total working hours, up to 150 people on site.
- Contract value: Not disclosed



Project Execution: Installations according to clients' needs

We provide installation of technical systems according to clients' needs: ranging from a single discipline to the total delivery of all technologies in the property.



- Our qualified personnel on site ensures quality and safety.
- Project execution is cost and time-efficient due to prefabrication, just-in-time sourcing and detailed planning of work.

Client benefits

- One stop shop to all technical disciplines with only one point of contact.
- Regular training of our own on-site personnel ensures quality of work, compliance with regulations and high level of work safety.
- Prefabrication of components in own workshops:
 - Shorter fitting time on site
 - Reduced costs for clients
 - Less interference on site

Case study: Vattenfall nuclear power plant, Forsmark, Sweden



Caverion successfully installed new security systems to the nuclear power plant while all of its operations were ongoing.

Challenge:

- Installing security systems in any facility with all operations ongoing is always a challenge, and even more so when the facility is a nuclear power plant. Both the client and the Swedish Radiation Safety Authorities placed great demands on the project.

Solution:

- Caverion provided new security system for the plant, including design, commissioning and installation of the systems.
- The new system covers functions such as access control, biometric access control, administration of access control, intrusion alarm, IP-based video surveillance, central alarm station and security network in the area.
 - 300 door environments with card readers
 - 50 biometric readers
 - 400 cameras
 - 2,000 alarm sensors
 - 650 connections in safety network
 - 10,000 access cards
- Caverion's integrated security platform enables integration with existing and future facilities and systems.
- Disciplines: Security and safety
- Lifespan: 2005-2012
- Contract value: Not disclosed



Striving for excellence in the project business

Structure

- Centralised project offices will be established in all divisions to manage large-scale projects.
- Design & Engineering competence centers two already established in Finland and Germany
- Enhance sales organisations
- Common procurement process and efficient organisation, increasing international procurement
- Increasing the use of prefabrication
- Increasing the number of blue collar apprenticeships

Governance

- Selectiveness in project business through structured project selection process.
- Renewed project approval limits
 - > EUR 100 million approved by the Board of Directors
 - EUR 20-100 million approved by President and CEO
 - EUR 5-20 million by head of Business Area
- Steering committees for large projects to be established
- KPI's for standard reporting
- Project audits carried out in larger projects.

Processes

- Ensuring that common processes and decision gates are used in every project.
- Common project management and process handbook in all divisions
- Common purchasing plan principles
- Right competence ensured for each project



Adding value to clients

Long experience

Competence in project business with impressive track record in all major industries.

International presence

Caverion operates in 13 countries, and is able to move with its clients across the borders.

One stop shopping

All relevant technical disciplines in-house.

Reduced interfaces, less communication problems and easier handling of the project.



Customised solutions

We can offer customised solutions developed in our own R&D centre, tailored to meet our clients' individual needs.

Own products

We provide specialised products for technically demanding properties, such as laboratories, but at the same time offer also standard HVAC solutions – all based on our clients' needs.



Using our own R&D to support client solutions

- Our own research and development centre in Aachen, Germany, with over 1,000 m² of laboratory space.
- During the last 12 months more than 10 patent proposals and filings have been registered including PCM chilled sail and PCM cooling fin.

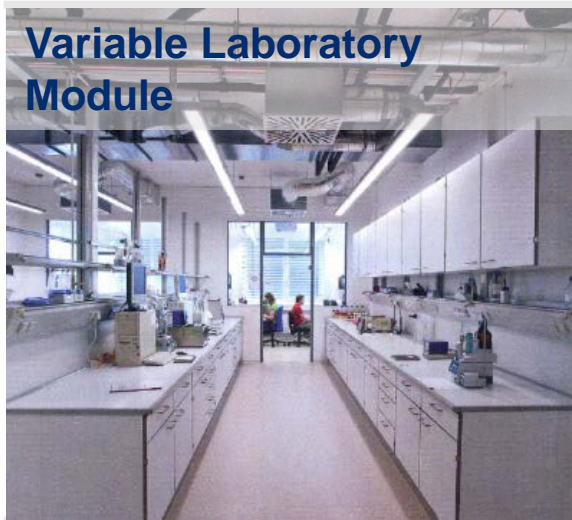


Client driven products and solutions

CleanPlus® Products



Variable Laboratory Module



Dampers



Phase Change Materials



ClimaCeil



E-drift



Reaching the 2016 targets

Improving procurement

- Professional and efficient purchasing in all divisions.
- Reduced number of suppliers
- Common procurement processes
- International procurement

Changing the business mix

- Increasing the share of Design & Build projects, with potential for significantly better margins.
- Ability to assume responsibility for the maintenance throughout the life cycle of a property.

Reaching negative working capital

- Continuous invoicing for services rendered
- Pre-payments, lump sum contracts, back to back contract terms
- Payment plans and terms
- Quality of work, complete and accurate service delivery



Developing own unique solutions

- Increasing the share of own products and solutions
- Promoting cross-selling
- Differentiating ourselves from our competitors

Ensuring high quality on and offsite

- Ensuring highly skilled personnel from engineers to design teams and blue collar workers
- Providing continuous training





**Life Cycle Solutions for
Buildings and Industries**