

Supervised Commissioning Solutions

Cost and performance problems plague almost all building projects. Commissioning offers perhaps the best solution and a rapid return on investment. REHVA has partnered with COPILOT Building Commissioning Solutions to provide online solutions to supervise and certify the commissioning process. These solutions are delivered by local commissioning engineers.



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Buildings underperform

Construction quality problems cost about 10% of sector turnover according to *Agence Qualité Construction* [1]. In France alone, this represents an annual cost of over €11 Billion.

Quality costs = **10%**

While building remains a “bricks and mortar” industry, construction process & performance requirements are becoming increasingly sophisticated (**Figure 1**).

Listing a random sample of elements in the ecosystem, **Figure 1** illustrates the complexity of the environment in which we operate. Accelerating demands have not, so far, been matched by step improvements in building

and construction technology and quality. Construction suffers from a mismatch between expectations and results (**Figure 2**).



Figure 2. Construction suffers from a mismatch between expectations and results.

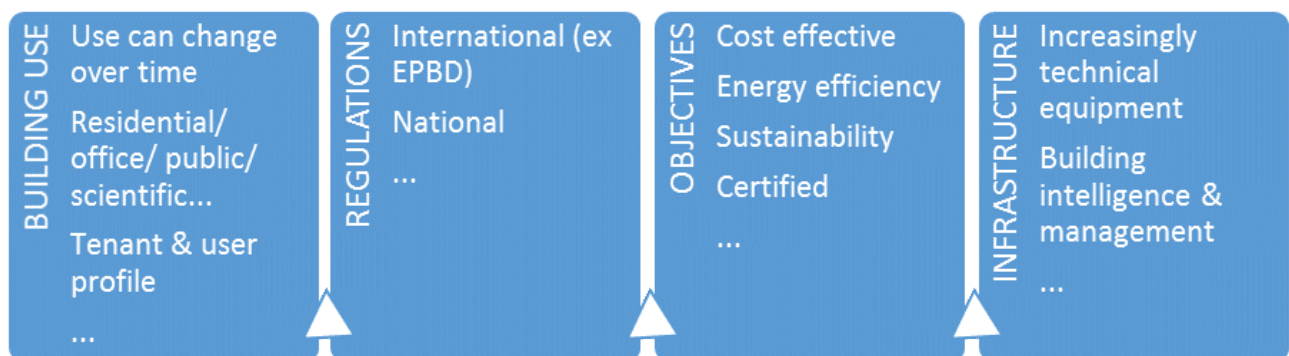


Figure 1. The complexity of the environment in which we operate.

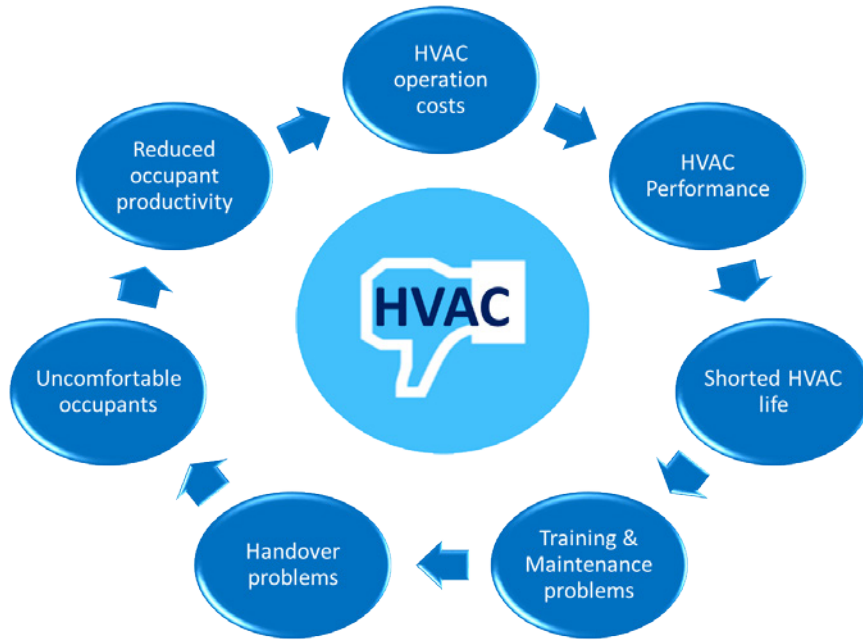


Figure 3. HVAC is among the biggest causes of owner and user dissatisfaction.

This mismatch can clearly be observed in owner and occupant dissatisfaction. Rather than theorise, think of where you work or live. Does the building satisfy your expectations?

- Is it functional / fit-for-purpose?
- Are you and your colleagues happy with the temperature all year around?
- Does it get stuffy or draughty?

Many buildings fail to satisfy these simple questions. And I have not listed critical issues like return on investment, operational costs, energy performance etc.

Two of the questions I listed pertain to Heating, Ventilation and Air Conditioning (HVAC). This is no accident, as HVAC is among the biggest causes of owner and user dissatisfaction (**Figure 3**).

Improve building performance via “Commissioning”

If we simplify the construction ecosystem as shown in **Figure 4**, we observe that successful execution of a building project depends on a number of actors.

The problem of coordination of multiple actors is complicated by the fact that certain actors may have diametrically opposed interests. Owners, for example, may want to ensure minimal investment costs and rapid delivery. Facility Managers privilege easy maintenance while Occupants tends to prioritise functionality and comfort.

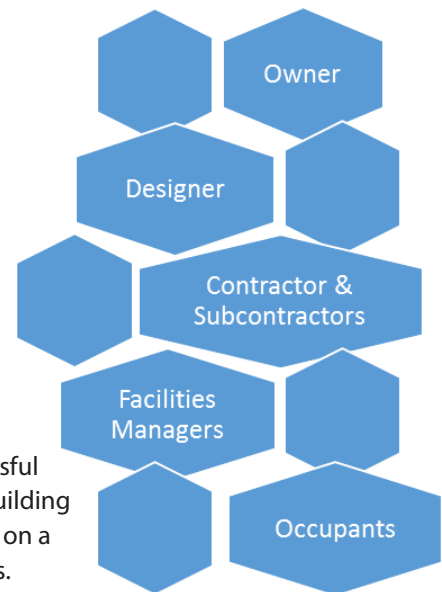


Figure 4. Successful execution of a building project depends on a number of actors.

Similarly, Designer and Contractor interests are not always aligned. The complexity of this bricks and mortar ecosystem is one of the prime reasons for quality problems.

There is a solution to manage problems arising from multiple actors, conflicting interests, unsatisfactory quality control and coordination: Commissioning. This is a quality-focused process for enhancing the delivery of a project. The process focuses upon **verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the Owner’s Project Requirements (OPR).**

Commissioning is undertaken by qualified engineers who have extensive practical experience. Their role could be compared to a referee who verifies the work flow to ensure it complies to the rules of the game (i.e. the owner's project requirements).

The reference [2] return on investment research undertaken on commissioning proves its cost effectiveness. On a pure financial basis, median return on investment is a single year for retro-commissioning of existing buildings and four years for commissioning of new buildings.

1 year payback
for existing
buildings



4 years
payback for
new building

If one takes comfort and associated occupant productivity improvements into account, it seems likely that we are looking at payback in a matter of months

The interest of commissioning is evident; all the more if you subscribe to the theory that “a stitch in time saves nine”. Investment in commissioning, which is estimated to add only about 0.5% to a building project, has a knock-on impact throughout the building's life cycle. The importance of this becomes particularly clear when one considers about three-quarters of life cycle costs occur after construction is completed!

Reassure your clients with world class commissioning

Supervision and certification of the commissioning process offer additional reassurance. That is why **COPILOT Building Commissioning Solutions** entered into partnership with **REHVA** to develop solutions to satisfy this gap in the market.

COPILOT has developed a cradle-to-grave solution to avoid typical HVAC problems and deliver quality buildings. **We deliver online supervision to commissioning engineers and certify their work. COPILOT commissioning solutions can be used on new or existing buildings.**

COPILOT's solution is based on test and control commissioning protocols developed by international REHVA experts. These standardized protocols will be

adapted to local regulatory and language requirements of different markets in collaboration with national HVAC engineer associations.

Professionalise HVAC Commissioning



COPILOT accredits qualified and experienced commissioning engineers to deliver its online solutions. In this manner, COPILOT proposes a unique and independent commissioning supervision service. On successful completion of a project, COPILOT certifies the commissioning process.

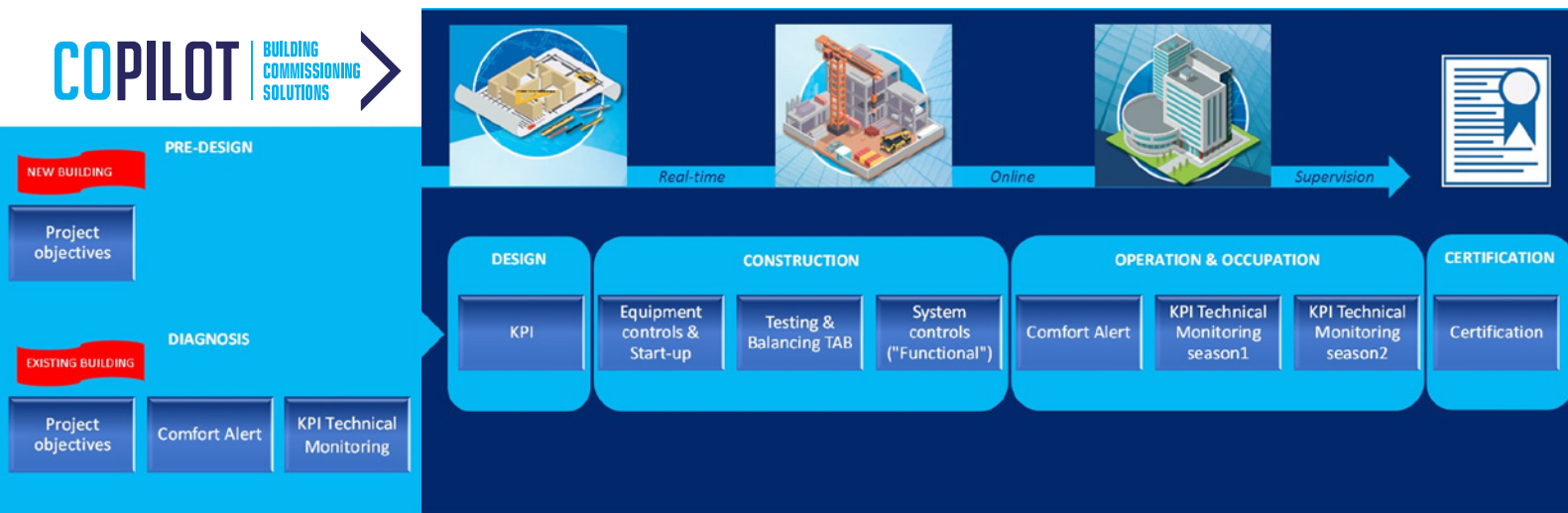
Key role of Commissioning Engineer (CxA)



Avail of COPILOT supervision and certification of the commissioning process

Ideally COPILOT joins the project during the Pre-design phase when the owner formalizes his objectives. Follow-up during the Design phase will include reviewing designer plans, their conformity to owner requirements and the definition of measurable key performance indicators (KPIs).

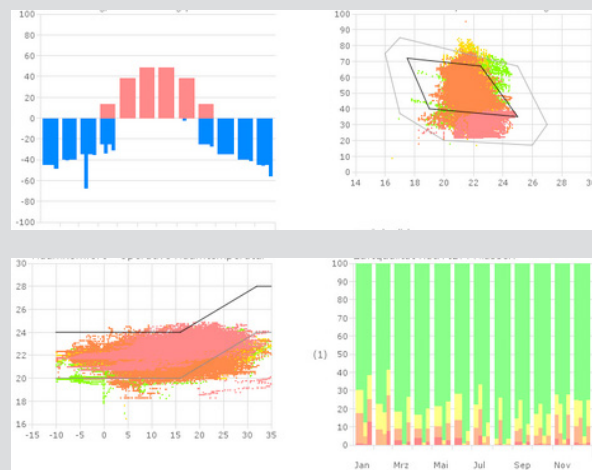
Sometimes COPILOT becomes involved during the Construction phase. In this case, we ensure that Pre-design and Design requirements are available and documented before supervising equipment and system balancing and testing. We seek confirmation that equipment works correctly on its own and as part of



Zoom: Technical Monitoring

COPILOT offers a stand-alone technical monitoring or trouble-shooting solution. In this case, the Construction phase may not exist. We will work with partners to identify objectives (equivalent to Pre-design phase) and KPIs (equivalent to Design phase). We will then monitor performance, analyse it against KPI requirements and prepare graphic report for easy interpretation.

We will certify successful projects that follow the COPILOT process.



the HVAC and building management systems, that all issues are resolved and documented as appropriate and that sufficient training is undertaken.

Once construction has been completed and the building is occupied and operational, COPILOT provides a Comfort Alert to generate qualitative occupant feedback on comfort performance. In parallel, COPILOT undertakes technical monitoring of HVAC performance compared to KPIs.

On successful completion, COPILOT certifies the commissioning process. COPILOT certification can also feed into credits for LEED and other building certifications.

Conclusion

Commissioning engineers have a key role to play in improving building quality, notably HVAC quality. COPILOT Building Commissioning Solutions has allied with REHVA to develop online cradle-to-grave commissioning supervision solutions. We work with

local commissioning engineers and certify the commissioning process on successful completion of new or existing buildings. ■

References

- [1] Agence Qualité Construction, http://www.qualiteconstruction.com/uploads/tx_commerceaddons/tbs10_01.pdf.
- [2] Mills, E. «Building Commissioning: A Golden Opportunity for Reducing Energy Costs and Greenhouse-Gas Emissions», Lawrence Berkeley National Laboratory (LBNL), 2009.

JOBS

We are looking for commissioning engineers who want to work with us. Please contact c.ryan@copilot-building.com for further information.