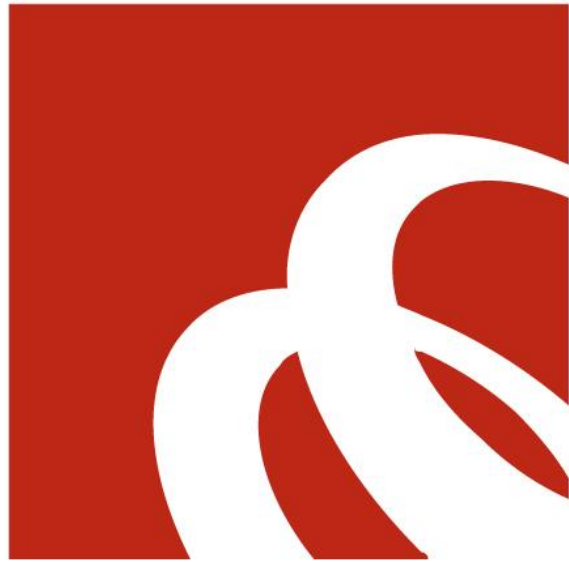


The role of pre-commercial procurement in co-innovation: lesson learnt and future perspectives



ELYTT ENERGY

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- Problems with regular tenders
- What is a PCP and how can it solve the problems above
- Our experience with a PCP
- Lessons learnt and recommendations

Disclaimer: I will, on purpose, deal with the subject from the viewpoint of a private company. Let others treat it from a more general perspective!

Problems with regular tenders

Tendering in the R&D field often requires to pre-design the items you are offering on a tight schedule and in most cases you will lose the time and money you have spent in the offer.

Because of standard rules, you have to offer on closed budget and schedule components that nobody, nowhere has ever made!

Because of strong concurrency, the pricing of the offer must be very competitive. Normally, there are few companies in any given field, but they are competing fiercely.

Problems with regular tenders

Because of the problems I mentioned before, a couple of projects going bad at the same time can put out of business a small or medium sized company.

Clearly a better procedure must be used for new and challenging projects.

What is a PCP?

I will start with the official definition:

*"Pre-Commercial Procurement (PCP) challenges industry **from the demand side** to develop innovative solutions for public sector needs and provides a first customer reference that enables companies to create competitive advantage on the market. PCP enables public procurers to compare alternative potential solution approaches and filter out the best possible solutions that the market can deliver to address the public need."*

<https://digital-strategy.ec.europa.eu/en/policies/pre-commercial-procurement>

My translation:

It is a competitive R&D project plus a prototyping project

Our PCP: QUACO

The QUACO buyers group was interested in the design and manufacturing of a 4-m long twin aperture quadrupole for the LHC HiLumi upgrade

QUACO Buyers group (BG)



Most superconducting magnet manufacturers in Europe

But how to build and how much costs such a magnet, if no design or prototype exists at the time of the call for interest?

Phases of a PCP

Phase I:

Solution design

Ideas
Research
Cost estimation
...

Phase II:

Detailed design and prototyping

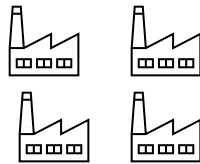
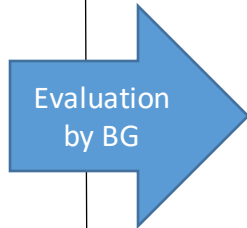
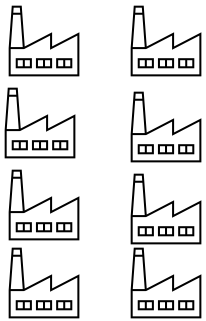
Drawings
Mock ups
Tooling preparation
...

Phase III:

Production of a small number of items

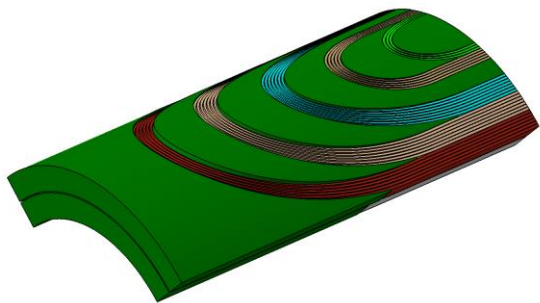
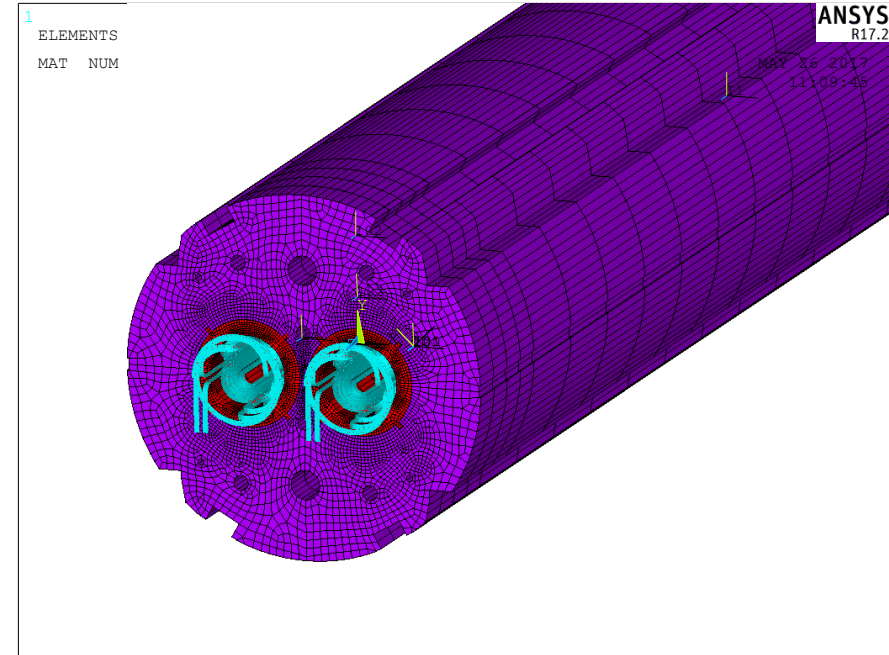
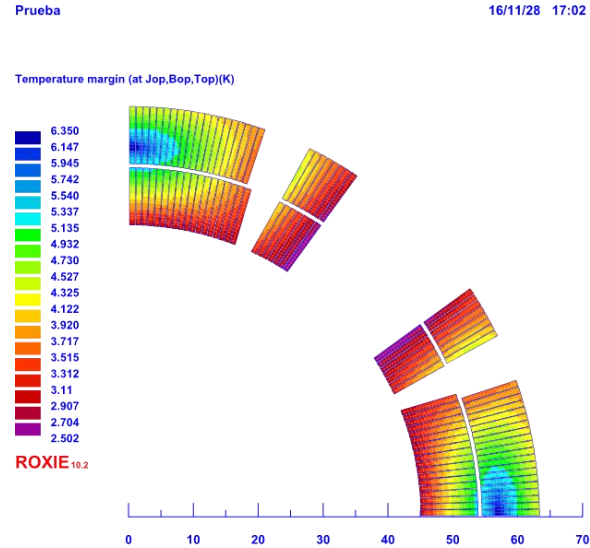
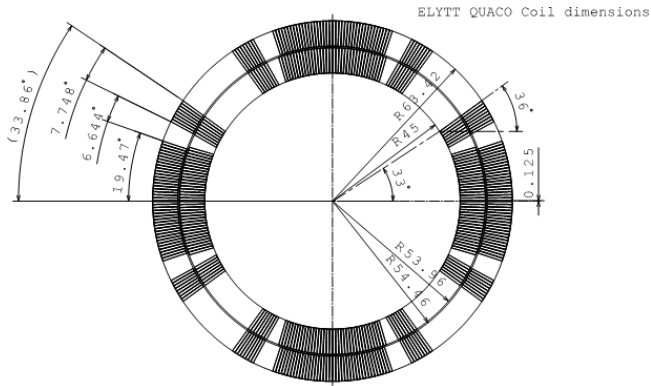
Non serial
production of the
items

Companies taking part



Our PCP: QUACO Phase I

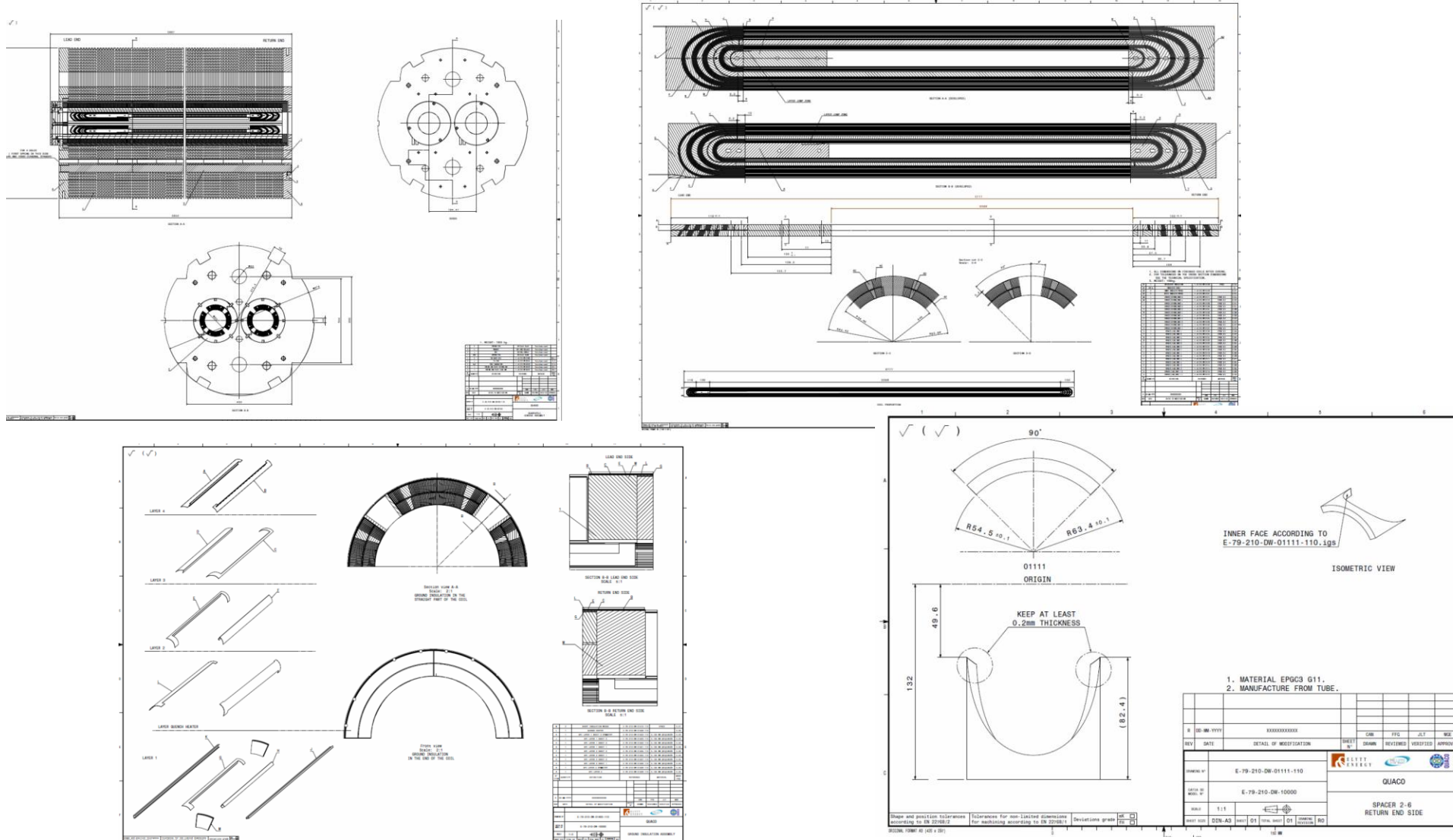
As expected, we produced a complete design of the magnet in phase I, satisfying (hopefully) the whole set of requirements from the buyers group.



Phase I ended with a complete design of the magnet except the detailed drawings of it.

Our PCP: QUACO Phase II: Manufacturing Drawings

The complete set of manufacturing drawings was finished in phase II.



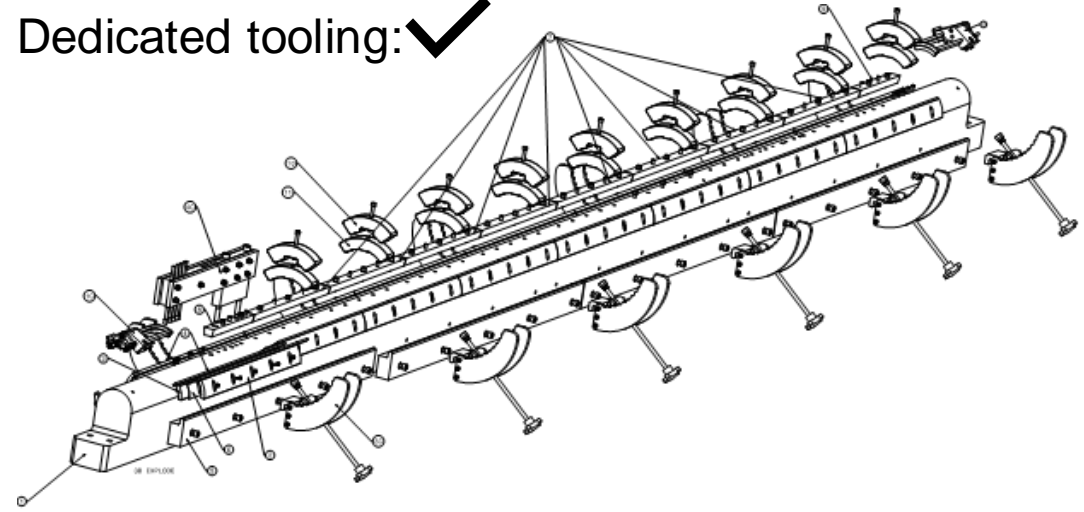
Our PCP: QUACO Phase II: Tooling

Only dedicated tooling was considered as part of the PCP.

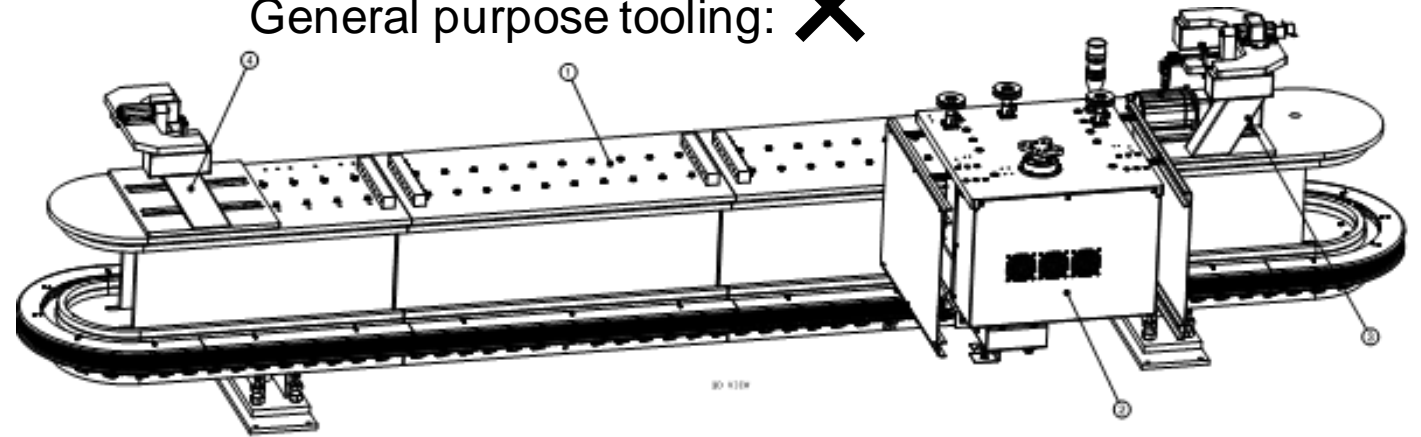
PCP is not the proper way of accessing to general purpose tooling!

We have to finance ourselves things like the winding table and the polymerization press

Dedicated tooling: ✓



General purpose tooling: ✗

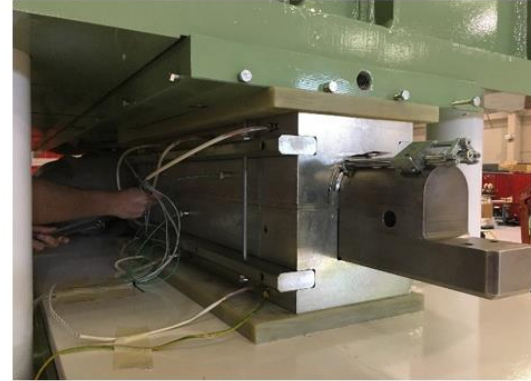


Our PCP: QUACO Phase II: Mock ups

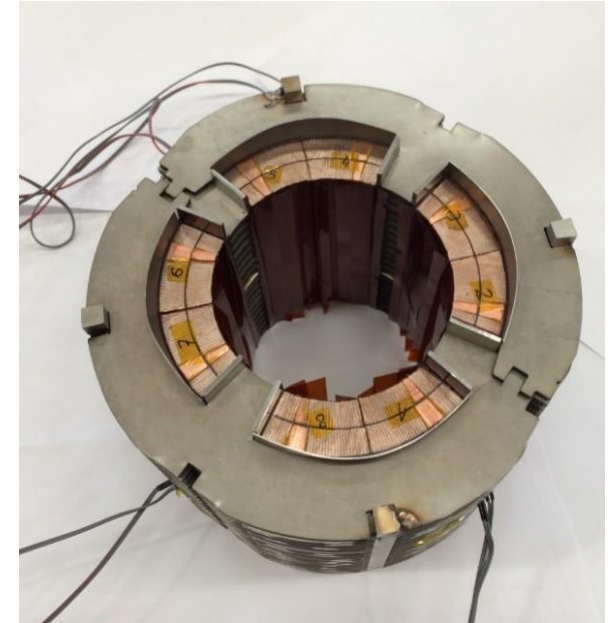
A complete coil of reduced length was manufactured



The press was not included in QUACO



Then the coil was cut in 8 blocks to perform a reduced length collaring



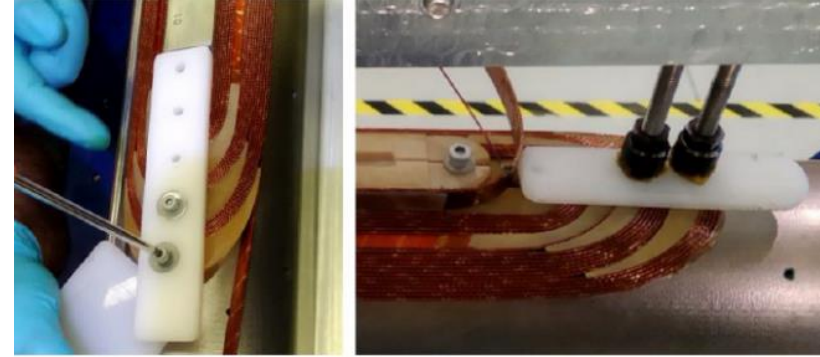
Our PCP: QUACO Phase III: Manufacturing

Thanks to the preparation of the previous phases, the actual manufacturing of the quadrupole was quite uneventful!

Coil polymerization



Winding



Elastic modulus measurement



Our PCP: QUACO Phase III: Manufacturing

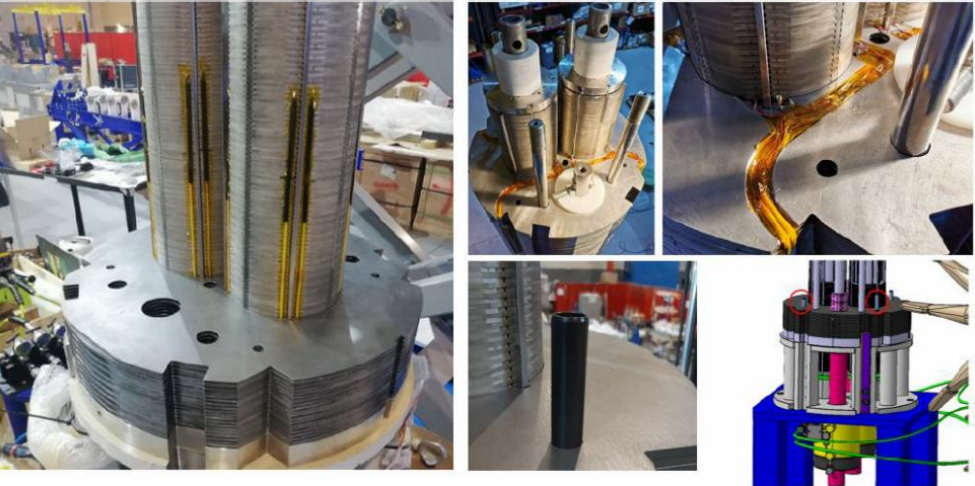
Ground insulation installation



Collaring



Yoking



Transport



Our PCP: QUACO Phase III: Manufacturing

Final magnet in the electrical and magnetic measurements bench



Conclusions: our experience

- ✓ We strongly appreciated the reduction in the technical and economic risks provided by the PCP scheme.
- ✓ Because of the PCP scheme, the follow up of the buyers group was closer than in most standard buying processes we have been involved.
- ✓ It is a good tool to introduce new companies in fields of grow.
- ✗ The multiphase approach of the PCP extends the project over a long time
- ✗ Requires strong support from the management to avoid getting blocked by other projects with a harder schedule