

Extension to Continental building in Iasi

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Building construction



Factbox

Client: Continental Automotive Romania

Contractor: PORR Construct

Architect: Arcadia Engineering

Contract Type: Generalunternehmerin

Project Type: Building construction

Scope: Planning and building a seven-storey office building including annexes, linked to an existing building

Contract Volume: 24.7 million euros

Construction Start: 01/2019

Construction End: 03/2020

At the Continental research centre in Iasi, Romania, PORR is building a seven-storey extension and annexes onto the tyre manufacturer's existing R&D building.

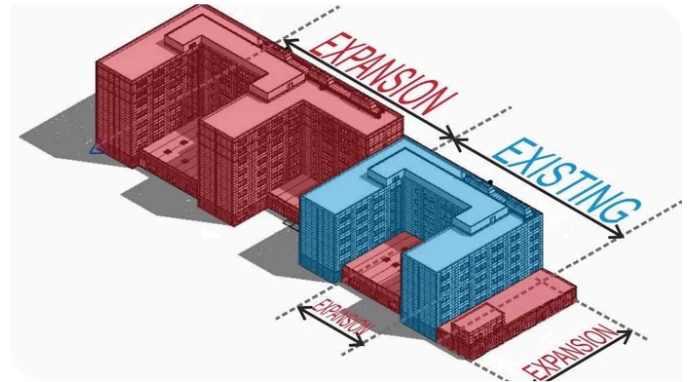
The seven-storey precast concrete structure is one of the first of its kind for Romania. Two major challenges were faced in the first phase of the project: tricky soil and weather conditions, and coordinating the subcontractors.

Tyre manufacturer Continental is planning to use the extension to its research centre in Iasi to centralise its local R&D activities. Employees currently scattered across numerous small offices in the city will relocate to the new centre in March 2020. The contract for the 24.7 million euro project was awarded to PORR Construct. Construction is being carried out almost exclusively by local workers and subcontractors.

Project details

The current research centre in Iasi consists of a five-storey office block and a small single-storey annex used as a test garage, waste area and substation. The extensions are being built on the west and east sides of this existing building and the inner courtyards of the two multi-storey buildings.

After the excavation, 400 concrete piles were drilled and the building foundation was concreted. Even at this early project stage, the PORR experts ran into significant challenges: Repeated heavy rains held up the displacement and sealing process and the 85 tonne drilling rig had to be supported by a work platform as the site turned into a bog. The building foundation was divided into two sections to minimise effects on the schedule. Work on the first half of the base plate to be concreted could then continue despite the difficult conditions.



The extensions are being built on the east and west sides of the existing building and in the inner courtyards. Source: Arcadia Engineering

New construction technique



The rebars had to be placed with a maximum deviation of 5mm, in order that the grout sleeves could be assembled precisely on the prefabricated columns. Source: PORR Construct

A particular highlight of the project is the use of precast concrete structures, a technique that has not yet found a foothold in Romania. A system comprising a stiff-jointed frame with precast reinforced concrete girders and columns minimised the effects of the construction work on the existing building and ensured faster installation.

The main component of the structure is a cross girder with precast columns that have corrugated pipe inserts. With this system, the reinforcement can be inserted from the lower level into the upper level. Grout sleeves connect the cross girders with the longitudinal supports. These are installed ex-works in the prefabricated columns and injected in-situ with a mortar.

To avoid problems, the prefabricated columns were not installed until the positioning of the starter bars had been carefully checked. The rebars protruding from the base plate had to be placed with a maximum deviation of 5mm, in order that the grout sleeves in the prefabricated columns could be assembled precisely on the rebar ends.

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A major challenge in the first stage of the project was coordinating the subcontractors carrying out precast concrete production and assembly with the subcontractors for the poured in-situ concrete.

Andrei Docan
Project manager, PORR CONSTRUCT S.R.L.

Summary

The biggest challenge in the first stage of the project was coordinating the subcontractors carrying out precast concrete production and assembly with the subcontractors for the poured in-situ concrete. The result of the cooperation is a sort of jigsaw of precast elements connected together with small in-situ concrete elements. Thanks to excellent cooperation between the individual teams, the way has been paved for completion on time in March 2020.

Technical data

Excavation volume	20,000m³
Drill piles	400
Gross floor area	2,200 m²
Site area	25,000 m²
Excavation depth	3.5 m
Parking spaces	150
Steel incorporated	50 t
Concrete incorporated	9,000 m³
Reinforced concrete incorporated	1,200 t