Research Institute and Data Center FRZ, Leoben

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Owner: *VOEST-Alpine AG, formerly Österreichische Alpine Montangesellschaft*

Planning: *Team Arch. E. Huth and G. Domenig, Graz*

Design: *VOEST-Alpine AG and Dipl. Ing. G. Deutschmann, Zeltweg*
Dipl. Ing. Haller and Dipl. Ing. Wendl, Graz

Steel structures: *VOEST-Alpine AG, Zeltweg, and Waagner-Biro AG, Graz*

Façades: *VOEST-Alpine AG, Main workshop Eisenerz.*

Main dimensions and weights:

Height of building: *28.5 m*

Dimensions of center building: *11.5×11.5 plus 11 m cantilevers on each side*

Dimensions of lower building wing: *33.5×42.5 m*

Built-up area: *approx. 1500 m²*

Built-up space: *approx. 27 m³*

Usable Area: *7250 m²*

of which *37% are taken up for office rooms*
approx. 27% for workshops and laboratories
approx. 17% for car parking lots
approx. 11% for traffic areas
and *approx. 8% for files, protection and side rooms.*

Material to be excavated: *approx. 12,7 m³*
Reinforced concrete: *approx. 1700 m³*
Reinforcing steel: *approx. 223 Mg*
Steel requirements for center and side building (lower wing): *approx. 460 Mg*
Koraldur for outer façade: *approx. 150 Mg*

Bearing floors of "ALPINE-Bohlen", that is, slabs made of "Hüpocrete Concrete" with Donawitz foamed slag used as aggregate.

Description of static system and of design

The steel structure comprises two principal groups: The tower-like central building with 7 floors, and the lower bay buildings for lab and computer rooms arranged around the tower.

The center building consists of 7 floor frames of a basic dimension of 11.5×11.4 m, with 4 columns welded together crosswise—torsionfree, and connected to the welded frame wall rails. The columns are connected with high-tensile bolts.

Within this prism, 2 pairs of inner columns are arranged orthogonally centric on each floor. They form the corridor proper on each floor.

The roof structure rests, statically determined, on the 4 column heads of the center frame so that it is free to move horizontally in 2 directions. On this plane, a fixed bearing holds the roof structure. This structure forms a spatial frame (lattice girder) whose system is made up by a grid which protrudes 11 m on all four sides and supports at the same time the suspended floors of the office wing.

The building elements of the roof, the suspensions, the floor beams, the façade and the office wing systems are of IPE sections–combined with wide flat steels–and bolted together. The steel structure in the rooms is visible and without sheeting.

Steel grade used: St 37 T and St 52 T
Total steel weight: approx. 390 Mg

The lower bay wing arranged around the center building (dimensions: 33.5×42.5 m, width 11 m and 15.5 m) has one floor. This bay wing is articulated to the 2 basement floors of reinforced concrete. The structure consists of a welded steel frame, composed of IPE sections. In one of the wings a craneway and a working platform have been provided.

This structure arranged around the center building is self-supporting and not connected to the center building. The construction is of bolted design.

Steel grade used: St 37 T
Total steel weight: approx. 70 Mg

Calculation of the statically undetermined systems was made by a computer.

The outer facing was made of stain-resisting Koraldur steel plates and pipes.

Total weight of façade: approx. 150 Mg

The ground breaking was in October 1970, and the construction period lasted for three years.

(G. Deutschmann)