

ANNEX 3-B

Case study

MJÄRDEVI CENTER

Linköping, Sweden

Mjärdevi Center is an example of how traditional building techniques with prefabricated framing can be used in new inspiring ways creating new ideas for steel in the building industry.

MJÄRDEVI CENTER



Mjärdevi Science Park's vision is that it should be the "right environment for the establishment and growth of developing and knowledge-intensive companies." Mjärdevi Center is the centre and symbol of the Science Park and thus the building should, with boldness, express beliefs in the future.

The building consists of two bodies, one 12-storey body and a lower body forming a foundation to the higher building. The higher part of the building expands by leaning façades divided into two half circles. The architect has used classical geometrical figures. A slim, curved form was desired, like a vase or a sculpture. A simple beautiful shape, timeless and at the same time new, as it is leaning.

Application Benefits:

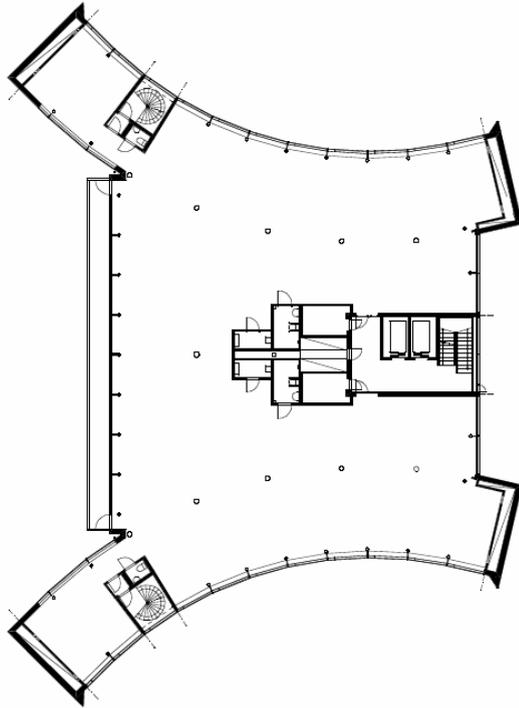
- By using columns filled with reinforced concrete using composite action columns in all building can be left exposed.
- The steel structure, with relatively slim dimensions, is well exposed through a leaning, curved glass façade.
- Prize winning architecture

Quoting the architect: "You could say that the building is like an giant Alvar Alto vase."

An exterior material is Zink, where the dark colour forms an outer framing for the transparent building. The building is given a sharp silhouette as a contrast to the flat surrounding countryside. In the higher body the vertical structure is exposed with exposed columns indented into the room. In the lower body the steel structure is fully exposed and thus the exterior of the building is also the interior.

Project Team:

Client:	Sankt Kors Fastighets AB
Architect:	Lund&Valentin arkitekter
Project manager:	Hifab Byggprojektledaren AB
Contractor, framing:	Strängbetong
Contractor, steel:	PPTH-Norden Oy
Structural Engineer:	CSE projekt AB, PPTH Engineering



Lay out of the building, floor 7



Mjärdevi Center under construction. Main framing and light gauge steel in exterior walls (Photo: PPTH)

Construction Details:

Steel columns (circular profiles) are used in combination with steel beams and hollow core slabs.

The steel columns (in the range of 200 mm) are continuous in three storeys and were filled with reinforced concrete for composite action and fire protection. This solution was chosen, as the architect wanted an exposed surface of the steel. All steel columns are exposed except for the leaning columns in the façades on the gables.

Beams used are HEA-profiles in façade (typically 240 mm) and omega profiles in the interior of the building. The leaning columns are VKR profiles, which are welded together and mounted as a gigantic ladder. The horizontal beams hold these columns in place horizontally.

The floor consists of 270 mm HDF-planks. The span varies between 4 and 11 m, dependant on geometry.

The building is stabilised by three staircases in precast concrete with post-tensioned bars to half the height. One of the staircases is centrally located in the building and the other two in the gables. The central staircase uses a light coloured concrete with exposed surfaces.

The exterior walls are light gauge steel profiles combined with glass façades. A crucial issue was the small tolerances of prefabricated façade and glass elements.

The building is an excellent example of how a traditional prefabricated framing can be used to create an advanced architectural expression. The slim dimensions of the framing are well exposed through a light, leaning and curved glass façade.