RECONSTRUCTION OF WAREHOUSES IN BUDAPEST IS THE BIRTH OF CET

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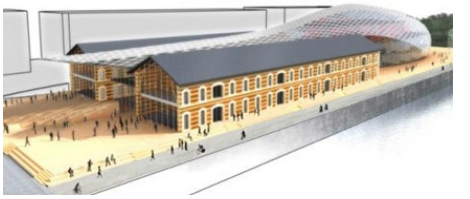
CET Budapest Warehouses

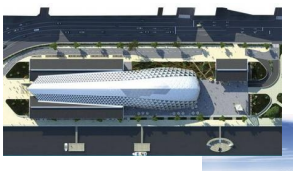


History:

- 1879 decision to build 4 building
- 1881 the plans were finished
- Second World War
- 1966 one of the four storage houses has been demolished

CET Budapest Warehouses

Architect designer: Kas Oosterhuis
General main contractor: WHB Építő Kft.



Smoke movement simulation

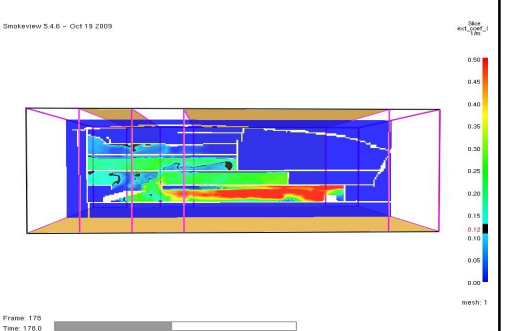
Two main parts:
Body
Head

Problem:

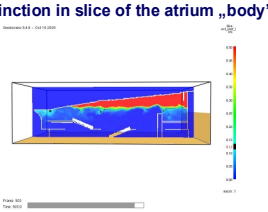
Body:
In the body according to the Hungarian fire code (OTSZ) 218700 m^3/h air exhaustion is required and 30,34m^2 free air inlet area.
The main structure has to be in the atrium (only non-combustible material with 0,75 hour fire resistance).

Head:
In the head according to the Hungarian fire code (OTSZ) 126500 m^3/h air exhaustion is needed and 17,56m^2 free air inlet area. If the fire alarm goes on the smoke exhaustion starts on two levels.
On the level where the fire broke out and on the level above the fire.
We were afraid that the smoke control system on the second level causes the smoke to flow up to the upper levels.

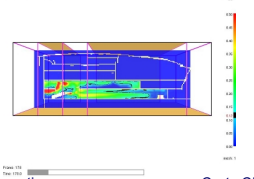
„Head":
When we designed the smoke control system according to the Hungarian fire code, and less air inlet area the smoke flew across all of the levels.



Smoke extinction in slice of the atrium „body"



Smoke extinction with the new system in slice of the atrium „head"



Fire resistance test of the ceiling structure

(according to MSZ EN 1363-1:2000 and MSZ EN 1365-2: 2000)

before

during

after the test

The shell structure (with pillars and wall structures) above the emergency exit has a fire resistance limit value of RE 30.
The steel structure that has been coated with fire protective paint has a fire resistance limit value of R 45.
The fire protection rating of the structure is: A2

Fire resistance test of the wall structure

(according to MSZ EN 1365-1:2000)

during

before

after the test

The shell structure above the emergency exit (that is a facade with a minor splay in it) with pillars and wall structures has a resistance limit value of RE 30
The steel structure, coated with fire-proof painting has a resistance limit value of R 45
The fire protection rating of the structure is: A2

Results

Body:
The exhaustion was 218700m³/h according to the OTSZ, but the air inlet areas were quite small, only 10,06 m².

Head:
The exhaustion was 126500 m³/h according to the OTSZ, but the air inlet areas were smaller, only 14,4m². Smoke barriers were used around the staircase.
The smoke exhaustion on one level only started when the smoke detector gave a sign on its own level.