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How can the Zoetenlab ensemble transform into an appealing Spa/wellness centre for visitors from Arnhem and its wide region, without losing the characteristics and identity of the building and the cohesion and identity of Den Brink?
Value assessment
Master plan
Program
Design
Technology
Urban analysis

Fabric Arnhem
Urban analysis
Arnhems Buiten (former KEMA area)
Urban analysis
Den Brink
Urban analysis
Den Brink
Urban analysis
Den Brink
Shortcomings Den Brink
Flexibility

Businesses and economic activities are moving out of Den Brink because the area doesn't suit modern day demands.
Shortcomings Den Brink
Seclusion
Shortcomings Den Brink

Seclusion

The area still functions as an enclave within the city of Arnhem.
Shortcomings Den Brink
Problems that prevent interventions
Value assessment
Urban qualities Arnhem

Connections
Transition
Enclave
Water
Composition
Cohesion
The goal is to give Den Brink a new significance to the city of Arnhem without losing the characteristics and identity of the area.
Masterplan
Arnhems Buiten

Connect to external fabric
Optimize internal roads
Connect different parts by public roads
Masterplan
Den Brink

Parking along the edges
Optimize differentiation between urban and green
Revitalize old entrance
Connect to external fabric
Optimize internal roads
Masterplan
Zoetenlab ensemble
Program
Zoetenlab ensemble

Connections
(easily accessible)

Transition
(Green image)

Enclave
(Lots of Privacy)

Connections
(Regional catchment area)

Water
(Springs and creeks)

Composition
(Aesthetic qualities)

Cohesion
(coherent architecture ➔ coherent functions)
Program
Zoetenlab ensemble

Connections (easily accessible)
Transition (Green image)
Enclave (Lots of Privacy)
Connections (Regional catchment area)
Water (Springs and creeks)
Composition (Aesthetic qualities)
Cohesion (coherent architecture → coherent functions)

Wellness Park KEMA
Wellness is booming

Wellness is booming

Er liggen kansen voor day-spa-achtige formules in steden.

Er zal een grote kans liggen in het aanbieden van wellnessvakanties. Volgens onderzoek van NBTC-NIPO zal het aantal wellnessvakanties de komende jaren verdubbelen.

Onderzoeksbureau Iris van Rabobank en Robeco. 2008.

Geld verdienen? Ga in de wellness
(http://www.deondernemer.nl/economie/239800/Geld-verdienen-Ga-in-de-wellness.html)
Program
Spa/thermen/wellness
Program
Spa/thermen/wellness

Spa Arnhem
Functions
Zoetenlab ensemble
Functions
Zoetenlab ensemble

Spa / health resort
Research question
Zoetenlab ensemble

How can the Zoetenlab ensemble transform into an appealing Spa/wellness centre for visitors from Arnhem and its wide region, without losing the characteristics and identity of the building and the cohesion and identity of Den Brink?
Architectural analysis

Zoetenlab

Machinebuilding I & II (Zoetenlab)

Build: 1936

Architect: H. Fels / R.A.L. Schoemaker

Function: placement of generators with towers for holding oiltanks

Changes:
• 1946 expansion with one generator
• 1956 expansion with two generators
Architectural analysis
Zoetenlab
Architectural analysis

Building choice
Architectural analysis

Building choice
Architectural analysis

Building choice
Value assessment
Architectural

Elements

Spaces

Entrances

Zoning

- Transformators
- Generators
- Observation
Value assessment
Technical

Construction

Construction basement

Grid
What is a spa/wellness center and how should it function?
Caracalla (Rome)
5 pools
0 saunas

Széchenyi (Budapest)
18 pools
10 saunas

Therme Vals (Vals)
6 pools
12 saunas

Elysium (Bleiswijk)
30 pools?
25 saunas?

Zwaluwhoeve (Hardewijk)
10 pools
8 saunas

The Wellness Garden (Amsterdam)
1 pools
3 saunas
Program
City Spa Arnhem

3 pools
5 saunas
3 treatment rooms
Changing rooms
Changing chambers
Restaurant
Outdoor space
Function

References

Caracalla (Rome)
Very big
Public meeting place
Strong routing
Impressing

Széchenyi (Budapest)
Very big
Crowded
Meeting place
Classic

Therme Vals (Vals)
Medium size
Very enclosed
Intimate
Minimalistic

Elysium (Bleiswijk)
Big
Fragmentated
Wide range of program
Cluttered maze

Zwaluwhoeve (Hardewijk)
Big
Over crowded
Wide outdoor spaces
Cheap

The Wellness Garden (Amsterdam)
Small
Strange floorplan
Intimate
13 in a dozen
A wellness center should be more than an incoherent collection of pools, treatment rooms, and sauna's underneath the same roof. It should be a place where the experience of the building is already generating the desired relaxation and where the pools and saunas are just supportive to this feeling.
Function

References

Thermen Vals, 1996. Peter Zumthor
Function
Zoetenlab

Zoetenlab

<table>
<thead>
<tr>
<th>Description</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross floor space basement</td>
<td>2150m²</td>
</tr>
<tr>
<td>Gross floor space ground floor</td>
<td>2150m²</td>
</tr>
<tr>
<td>Gross floor space second floor</td>
<td>129m²</td>
</tr>
<tr>
<td>Floor space roof</td>
<td>2150m²</td>
</tr>
<tr>
<td>Total floor space (excluding the roof)</td>
<td>4400m²</td>
</tr>
<tr>
<td>Volume</td>
<td>30,000m³</td>
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</tbody>
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Design principles
Working with existing structures

The opportunities that existing structures offer should be **exploited** to the max, to be able to compensate for some of the worse features that most existing buildings have. This exploitation starts by finding the **right match** between an existing building and a new program.

The old building can then be used to structure the new design as much as possible. **Old elements** should be shown in the new design as references to the building's history. This helps to maintain the buildings **character and identity**. Careful conservation is most of the time not necessary to reach this goal.
Design

Design principles

Zoning

Transformators
Generators
Observation

public/private

Spa / health resort

Envelope

Routing

Hot
Warm
Cold
Design
Program regional spa

3 pools
5 saunas
3 treatment rooms
Changing rooms
Changing chambers
Restaurant
Outdoor space
Design concept

- Pools
- Sauna’s
- Rest rooms
- Treatment rooms
- Changing rooms
- Employees
- Restaurant
Design concept

Sauna's
Rest rooms
Treatment

52/98
Design concept

Entrance

Outdoor space
Design
Zoetenlab ground floor
Zoetenlab
Machine Hall
Design
Zoetenlab ground floor
Design
Zoetenlab second floor
Design
Zoetenlab basement
Zoetenlab
Materials

**KEMA brickwork**
- Human scale
- Familiar

**Concrete**
- Industrial look
- Cold
- Inhuman

**Steel**
- Industrial look
- Cold
- Declined by corrosion
**Zoetenlab**

**Materials**

- **KEMA brickwork**
  - Human scale
  - Familiar

- **Concrete**
  - Industrial look
  - Cold
  - Inhuman

- **Steel**
  - Industrial look
  - Cold
  - Declined by corrosion

- **Modified European softwood**
  - Warm appearance
  - Human scale
  - Good acoustics

- **Natural stone tiles**
  - Grandeur
  - Luxurious appearance

- **Stucco work**
  - Clean look
  - Absorbs unevenness
  - Creates coherence
Experience
Enter the building

The closed facade opens up towards the guest and reveals just a little of what's happening inside the building.

The guest has a clear view on the desk.
At the desk, the guest gets a first view on its destination, the main hall of the spa, but he or she cannot see the bathing people yet.
Experience
Towards the changing rooms.

Walking towards the changing rooms, the guest can still have a look outside but the narrow corridor makes him feel that this is already a more private space.
Towards the baths.

The guest now enters the wet area and is tempted by the looks through the wall into the building.
Experience

Showers

The guest can take a shower right before he enters the main hall.
Experience
Enter the main hall

The guest enters the main hall by walking downstairs through the old observation cabin. The display of the baths unfolds while he or she is descending.
Design
Sauna ritual

1. Hot foot bath
2. Sauna
3. Outside air
4. Cold shower or bath
5. Hot foot bath
6. Rest
Design

Thermal envelope

RC > 5
The view on the cassette roof remains intact.

The appearance of the south facade remains the same.

A second windowframe is installed behind the original windows.

Thermal resistance (Rc) of the facades, roofs and floors is bigger than 5.
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Detailing

All additions are made in wood.

The floor is a concrete pedal floor and is partly founded on the original foundations and partly on new foundations.

Everything is founded on sand.
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Central bath

Entire pool is refreshed every 2-3 hours.

Water circulates between the bottom of one long edge and the surface of the other long edge.

The existing column structure is accentuated to create more intimate places to sit and rest.

The gutters are concealed in the stairs and walls.
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Central bath

Bath is made out of poured concrete in permanent insulated shutterings.

The construction of the baths is detached from the walls and columns of the machine hall.

The weight of the bath is supported by the existing concrete foundations in the basement by the added support beams which rest on the foundation of the Hall.
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Detailing

The Tiles cover both the baths and the floor. There is no visible interuption.
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Instalations

Mechanical ventilation +
air heating +
underfloor heating

Offloading point trucks
Air outlet at 3 meters

Water treatment installations
107 m²

Air treatment installations
107 m²

Air inlet in tower

Vertical shaft

Heat pumps

Self-heated sauna's with underpressure

Insulated air shafts

Heat pumps

Solar panels
Solar boilers

28°
22°

Self-heated sauna's with underpressure

Insulated air shafts

Heat pumps

Solar panels
Solar boilers

28°
22°
Zoetenlab
Instalations

Mechanical ventilation +
air heating +
underfloor heating

75% off energy needs by re-use
from WTW and heat pumps

25% off energy needs by
solar panels and solar boilers.
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Lighting

Floodlighting behind the crane beams in the hall to accentuate the cassette roof.

Fabric lighting elements to illuminate the pools.