



Town Hall Burgkunstadt

Vogtei 5
96224
Burgkunstadt, Germany

Architect

Architekturbüro Huth
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User

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Other Information

Visits opening hours:
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13:00-16:00, Thu
08:00-12:00 and
14:00-18:00, Fri
08:00-12:00

On the site of the former "Altenburg ob Kunstadt", the Burgkunstädter town hall, one of the most beautiful half-timbered houses in Franconia, has formed the town's skyline for over 300 years. In 1689/90, the master of baroque half-timbered construction, Jörg Hoffmann constructed the impressive decorative half-timbered structure on the early medieval masonry base together with master builder Hans Gebelein . After an inadequate restoration in the 1970s, considerable damage was found on the entire building in 2000. The aim of the overall renovation of the old building was to preserve and emphasise the historical value of this important monument and to equip it for the demands of the present day. All structural measures were implemented in close cooperation with the client and the Bavarian State Office for the Preservation of Historical Monuments.

Energy performance

51,222 kWh/y

- **Climate Zone:** cfb
- **Altitude:** 306 m a.s.l.
- **HDD:** 2682
- **CDD:** 464

Protection level Listed

- **Conservation Area:** Yes
- **Level of Protection:**

Building age before 1600

- **Year of last renovation:** 2009
- **Year of previous renovation:** 1979

Building use town hall

- **Secondary use:** Offices
- **Building occupancy:**
Permanently occupied

Building area Net floor area [m²]: 797,0

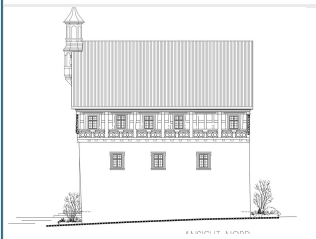
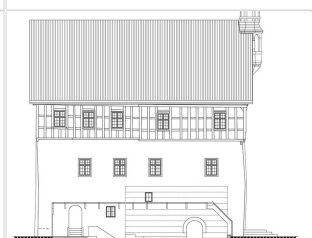
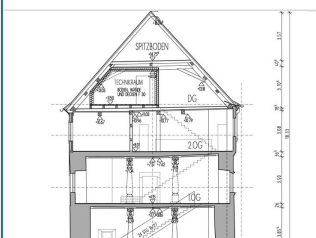
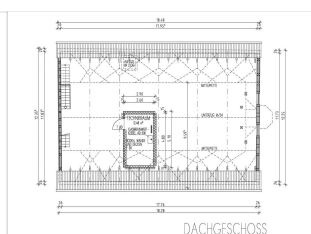
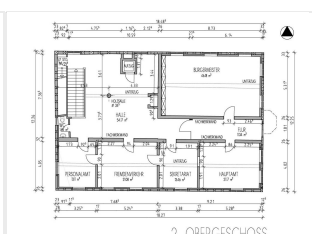
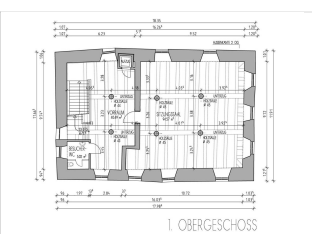
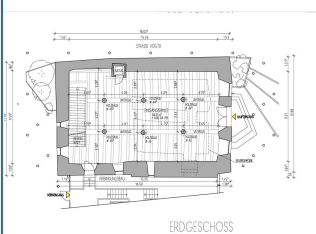
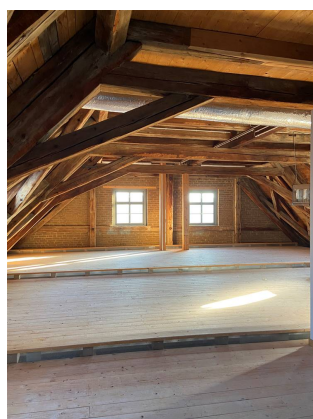
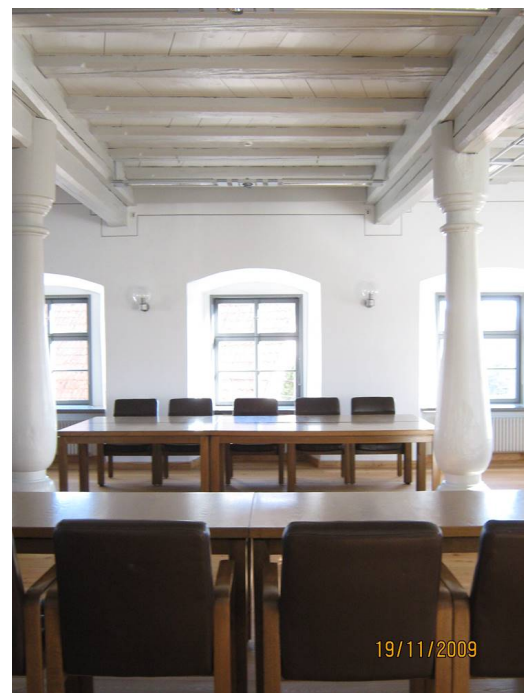
- **Building typology:** Detached house
- **Number of floors:** 6
- **Basement yes/no:** Yes
- **Number of heated floors:** 3
- **Gross floor area [m²]:** 1006,0
- **Thermal envelope area [m²]:** 679,0
- **Volume [m³]:** 1641,0
- **NFA calculation method:** NGF (de)

Construction type

double-shell sandstone masonry (ground floor + 1st floor), half-timbered building (2nd floor + two-storey roof)

- **External finish:** Rendered
- **Internal finish:** Plastered (on hard)
- **Roof type:** Pitched Roof





RENOVATION PROCESS

Architecture

BUILDING DESCRIPTION

The town hall in Burgkunstadt has a typical structure for its age. The basic structure of these city halls is usually based on an elongated rectangular building with a gable roof. They stand freely on the market place and extend over two or three floors. As it was usual at that time, the market hall (today: entrance hall) and the boardroom each take up a whole floor. In Burgkunstadt both the entrance hall on the ground floor and the conference room on the first floor are located in the massive sandstone base. Some of the administrative rooms of the town hall, such as the mayor's office, are located in the half-timbered structure of the 2nd floor. Further office rooms of the administration are located in the annex. The building is particularly characterized by its impressive ornamental half-timbered construction on the east side and the slate panelling on the west side.

Urban context

The town hall is centrally located in the listed „Oberstadt“ of Burgkunstadt. There is a direct neighbourhood to the Regens-Wagner-Foundation Dillingen Josefheim. Together with the market place buildings, the town hall is under ensemble protection.

State of repair

Conditions of the envelope

After the city hall had been fundamentally renovated in 1978-1980, one already noticed in 2000 that the infill of the framework was partially loose. For that reason detailed examination were carried. The result was frightening. Since the wrong materials were used in some cases during the first renovation, such as bricks for the infill, as well as paint and plaster that was not open to diffusion, moisture and rot, damage occurred especially on the half-timbered construction and the roof. In addition, the connections of the ceilings and the roof

were partially poorly executed; so that the result was a reduction in stiffening. Furthermore, the investigations revealed a pollution burden in the wooden components, which were so drastic especially in the extension, that it was completely torn down and replaced. Another problem was the lack of airtightness, which meant that when it rained moisture could reach into the rooms. In winter, draughts in the rooms sometimes created room temperatures of 15°C.

Description of pre-intervention building services

The town hall was heated by an electric storage heating system. The individual rooms were equipped with radiators and the entrance hall had floor heating. Due to the high floor construction, however, it was very sluggish. A ventilation system was lacking.

HERITAGE SIGNIFICANCE

ELEMENTS WORTHY OF PRESERVATION

From the perspective of the market place the first thing that catches the eye is the half-timbered facade built in 1689/90 by carpenter Jörg Hoffmann. The half-timbered storey, designed with detailed woodcarving art, is built on a massive masonry base. It dates back to the early Middle Ages and was first mentioned as the seat of the Count's Office in 1059. In the basement, the town hall has a round-arched entrance to the barrel vaulted cellar. In its previous lifetime, the building has already accommodated several uses. For example, it served as the seat of the count (1059), as the seat of the castellan, and eventually a brewery with taproom was also housed in the vaulted cellar (1462). Finally, since 1689 the town hall of Burgkuntstadt has been located there.

Heritage Value Assessment

The town hall is listed for preservation. As Burgkunststadt identifies itself with the decorated half-timbered facade and as it is designed by a famous master builder, it is especially worth protecting. In contrast to that, the massive stone base is protected particularly because of its age.

Aim of retrofit

Renovation

The primary aim of the renovation was to repair the damage already done in order to make the room usable again and to prevent future damage. Particular attention was also paid to preserving the ornamental half-timbered facade.

Lessons learned

There was no special experience, as the renovation process itself has already been one. Every renovation of an old building brings its own challenges, some of which first arise on the construction site. For example, at Burgkunststadt Town Hall, despite extensive preliminary investigations, a considerable level of contamination was detected during the construction

phase, which resulted in the complete gutting of the ceilings.

Stakeholders Involvement

Public sector

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Research Development

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Services Engineer

Ingenieurbüro Reichenbach & Henkel

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Other

Institut für Gebäudeanalyse (Bauphysik)

München

Other

Restaurator Norbert Lenk

Langfeldstraße 23, 91077 Neunkirchen am Brand

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Tel.09134 / 909012

Tools used

Was the renovation process done following a specific methodology?: No

Energy calculation: Der Energieberater 5.10 - Hottgenroth Software

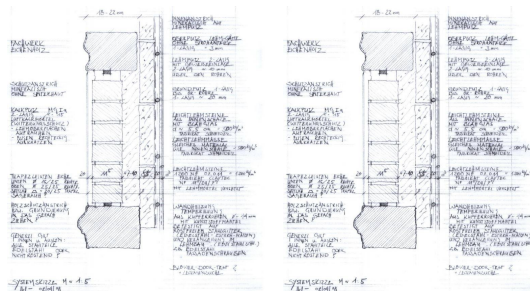
RETROFIT SOLUTIONS

External Walls

half-timbering 2nd floor

In the course of the renovation, the previous infill was completely removed. Afterwards, the timber-work was repaired. The new infill was lined with special lightweight clay bricks from Claytec. In addition, internal lightweight clay insulation boards were installed to improve the insulation performance. Today, the wall temperature control is achieved by means of a wall heating system embedded in clay plaster. The wood carvings were repaired in a manner appropriate to the monument by filling them with a special wood crack paste from the Caparol company. Then all wooden elements were painted with a linseed oil paint.

During the refurbishment in 1970, a colour scheme in brown tones had been chosen. However, since the non-diffusion-open paint had caused some damage, it was completely removed in the course of the current renovation. In close cooperation with the monument conservation authorities and after an extensive research and investigations on the building, it was possible to determine the original colour shade applied by Jörg Hoffmann



U-value (post-intervention) [W/m²K]:

0,77
W/m²K

Original wall build-up

:
0
mm

Retrofitted wall build-up

Plaster - Oberputz (Lehmglätte):

3mm

Plaster - Lehmputz mit Gewebe (zweilagig):

10 mm

Plaster - Grundputz (Lehm):

20 mm

Brick - Leichtlehmsteine mit Blähglas:

55 mm

Other - Leichtlehmmasse:

70 mm

Brick - Lehmsteine:

115 mm

Render - Putzmörtel (Kalk):

20 mm

massive masonry ground und first floor

In order to improve the statics of the massive basement floor, the affected components were needled and grouted on the one hand. On the other hand, the floor slabs were structurally integrated. There were no energy-saving measures carried out on the masonry walls. Since the building was divided into different temperature zones and the ground floor only has a low temperature, the temperature losses are limited due to the poor U-value of the wall. The savings could not be taken into account in the

standardized calculations according to the EneV, which is why the losses in the ground floor are relatively high in the verification. However, if one assumes that only a target temperature of 16° is reached there, the losses would be approx. 70% lower.

U-value (pre-intervention) [W/m²K]:

1,56

W/m²K**U-value (post-intervention) [W/m²K]:**

1,56

W/m²K**Original wall build-up****Plaster - Putzmörtel (Kalk):**

15 mm

Stone - Sandsteinmauerwerk:

1000 mm

Render - Putzmörtel (Kalk):

20 mm

Retrofitted wall build-up**Plaster - Putzmörtel (Kalk):**

15mm

Stone - Sandsteinmauerwerk:

1000 mm

Render - Putzmörtel (Kalk):

20 mm

:

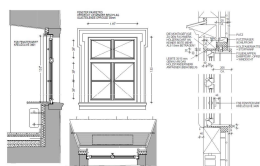
0 mm

Windows**box window**

The existing box-type windows were completely replaced in the renovation process. In

addition, they were equipped with sun protection.

From an energy point of view, insulating glazing was to be installed, although this did not comply with the guidelines of the heritage office. For this reason, a classic drawn glass from the Schott company was used for the exterior panes of the insulating glass windows. This is characterised by its uneven surface, which is created by using the Fourcault method in the manufacturing process. So the original appearance of the façade could be retained.



**Existing window
U-value Glass
[W/m²K]:**

3,0

**New window U-
value Glass[W/
m²K]:**

1,3

**Existing window
U-value Frame
[W/m²K]:**

0,0

**New window U-
value Frame [W/
m²K]:**

0,0

Existing window type

Box-type window

Existing glazing type

Single

Existing shading type

NA

Approximate installation year

1979

New window type

Casement window

New glazing type

Double

New shading type

Inner shutter

New window solar factor g [-]

62,2

Other interventions

Other - ruhende Luftschicht mit Konterlattung:

60 mm

Other - Mineralfaserdämmung:

120 mm

Other - BFU-Platte:

35 mm

Other - Dämmschüttung:

80 mm

Other - Dampfbremse:

2 mm

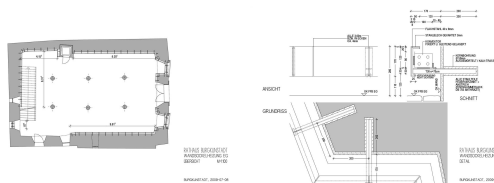
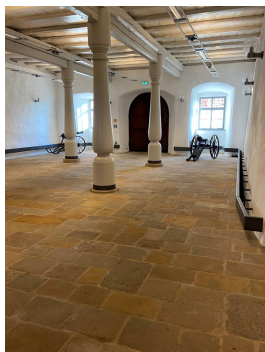
Other - Konstruktionsholz:

45 mm

GROUND FLOOR

The floor structure was retained. However, since the existing underfloor heating was very sluggish due to the high floor construction, the entrance hall was supplemented with a baseboard heating system.

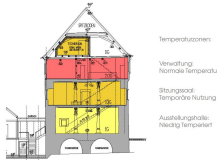
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**Original groundfloor build-up****Retrofitted groundfloor build-up**

OTHER

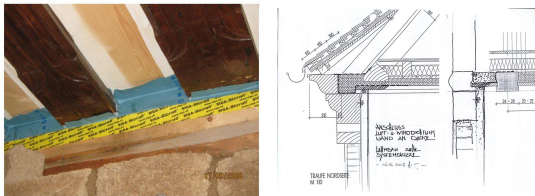
Another energy-saving measure was the differentiation of the building into its various usage zones. The individual areas, such as the entrance hall, conference room and administrative rooms, were divided into different temperature zones. This classification was then used to develop appropriate energy-related measures.

So unused areas, such as the roof truss and the vaulted cellar, could be preserved in their original form.



MEASURES TO INCREASE AIRTIGHTNESS

To ensure better airtightness, all new constructions were made airtight and the corresponding joints were specially sealed. The connections were sealed with sealing tapes.



Airtightness (pre-intervention)
[ach@50Pa]

0

Airtightness (post-intervention)
[ach@50Pa]

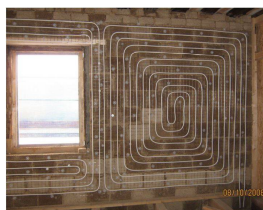
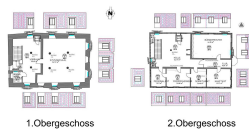
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HVAC

HEATING

Before the renovation, the town hall was supplied with electric storage heating. The two new gas condensing boilers heat both the historic old building and the new extension. The heating system is located in the technical room on the first floor together with the ventilation system.

-



	New primary heating system
New system type	Condensing
Fuel	Gas
Distribution system	Radiating wall
Nominal power	45 kW

VENTILATION

As a result of the renovation, the town hall received a ventilation system that supplies the administrative rooms on the 2nd floor.

-



Original roof build-up	New ventilation system
Type ventilation system	Centralized
Type flow regime	
Heat recovery	Yes
Humidity recovery	
Nominal power	kW
Electric power	kW
Control system	

DOMESTIC HOT WATER

Hot water is generated by decentralized instantaneous water heaters.

-

	New DHW system
Type	decentral boiler
Hot_water_tank	No
With heat recovery	No

Energy Efficiency

 ENERGY PERFORMANCE
Energy performance certificate: An energy saving certificate according to EnEV 2004 from 2008 is available. Voluntary certificates: No
 ENERGY USE
Heating Primary Energy 112,5 kWh/m2.y Consumption_estimation_After: 51,222 kWh/y

Primary Energy

Consumption_estimation_Calculation_method: NA

Consumption_estimation_Including_DHW: Yes

Consumption_estimation_After: 112,5 kWh/m².y

Costs

FINANCIAL ASPECTS

The renovation of the old building and the construction of the extension were financed with the help of various grants: Städtebauförderung: 200.000€ E-Fond (Denkmalpflege): 230.000€ Oberfrankenstiftung: 266.000€ Bayer. Landestiftung: 150.00€

INVESTMENT COSTS

Total investment costs

3 Mio. € (total)

Amount includes: The investment costs include both the €1.8 million for the renovation of the old building and the €1.2 million for the new building.

RUNNING COSTS

Lifecycle cost

No

a platform of

eurac
research

Developed thanks to



Co-funded by
the European Union



Co-funded by
the European Union

Interreg
Italia-Österreich
SUSMAT



Co-funded by
the European Union



Swedish
Energy Agency



TASK 59



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