



Hospital Frankfurt Höchst, Germany

Allplan Architecture in practice

FIRST EUROPEAN HOSPITAL COMPLIES WITH PASSIVE HOUSE STANDARD USING ALLPLAN

"The greatest challenge in the Frankfurt Höchst project was to merge data from various project members to form a central model. This was achieved by combining Allplan Architecture with Allplan Allfa."

Architects from the firm of wörner traxler richter used solutions from the ALLPLAN portfolio to design the first hospital which complies with the passive house standard.

By applying Allplan Architecture and Allplan Allfa, they succeeded in acquiring and integrating simulation data for all trade planners in the architecture model quickly and without loss. This allowed them to simulate the thermal behavior of the hospital over the period of an entire operating year and to optimize the design of the technical building equipment.



	0.05			1			S Raum				Hygieneantorderung	niont restgelegt
8 10 1	0.25	- 1-		1 BA_NF			Beschrei	bung		🗄 🗹 Oberf		
ktionen			7 ×			Algemeinpflege 27er		Raumnummer Planer	2.01.11.048		Bodenbelag	
Inktionen	Conne	ect Assis	stenten	£ 01.11.008		Sol 4 0 m	M Int	Raumnummer Bauwerk			Rutschfestigkeit	
Architektu	r		-0	E DE		382.00	Int Int	Raumnummer Nutzer			Ableitfähigkeit	
		_		Beltzimmer		2.01.11.010 05.E	W Int	Raumbezeichnung ist	Patienten-Suite		Estrichart	
eugen			1	Standardraum oli 24.0 m ²		discound of	M Int	Raumbezeichnung RFP			Boden Konstruktion Aufbau	
1 1			DWF	8.75 m ²		R00-11	M lest	Funktionsbereichsnummer	2.00		Deckenbelag	
P 1253			B	100		100 11	Int Int	Funktionsbereichsbezeichnung	Pflege		Decke Hygieneanforderung	
1 (7)	1 5	富	6	8			M Int	Funktionsstellennummer	2.01		Decke Schallschutzanforderung	
				2			Int Int	Funktionsstellenbezeichnung	Allgemeinpflege		Decke Weitspannträger	
0				201 11.005		ALE	M lot	Funktionstellstellennummer	2.01		Decke Verlegung	
		000		2 01.11.005 05.E 1-Bettzimmer		R00-12	Int Int	Funktionstellstellenbezeichnung	Allgemeinpflege 27er Unit Wahlleistung	🖻 🗹 Koster		
			IP	Algemeinpflege 27er R20-13		KUU-12	M lost	Nutzungsart_Din277	NF		Nutzungscode KFA	
c 123	3 🔳			8 R20-13 Sol 24.0 m ⁴		TRANS IN		Umschließungsart				0
		Lend		Soil 24.0 m ⁴ 19.30 m ²	/	1		Massnahme	Neubau			0
				5	D00 40-		E Geometr			🖻 🗹 Projek		
-	TE	inini			R20-13		Las		1.000000			05.E
						20111003		Fläche Soll	24.000000 m2	🖂 🗹 🛛 GTD I		
				8		05.E	E V Qualitate			42	Nutzungszeit Werktags Beginn	0
				2				Schallschutzanforderung	nicht festgelegt	121	Nutzungszeit Werktags Ende	2400
				8		A igemeinpflege 27e R20-132		Strahlenschutzanforderung	nicht festgelegt	120	Nutzungszeit Wochenende Beginn	0
				-2		Soli 4.0 m² 7.70 m²		Laserschutzanforderung	nicht festgelegt	121	Nutzungszeit Wochenende Ende	2400
								Verdunklungsschutzanforderung	nicht festgelegt	121	Wartungswert der Beleuchtungsstä	270
				and a state of the				Standardraum	kein Standardraum		Wartungswert der Beleucht, Em Na	
				8 01.11.002 5 E	5			Standardraum Temperatur_min	0.000000 °C	10	relative Abwesenheit CA.8	0.000000
				Beltzimmer gemeinpflege 27er		2.01.11.004		Temperatur_min Temperatur_max	0.000000 ℃	121	Anzahl Beleuchtung absolut	
				20-13	R20-13	06 E Nasszelie		Temperatur_max Beleuchtung	0.000000 %		relative Abwesenheit CA.P	0.000000
				ol 24.0 m²	R20-13	00000		Beleuchtung Feuchtraum			Aktivitätsgrad	1,200000
						R00-12		Feuchtraum	nicht festgelegt		Bekleidungsindex	0.700000
				2					0.%			20.000000
				2				Luftwechsel			Raumlufttemperatur Max. (Sommer)	
				2.01 11.048	-			Hygieneanforderung	nicht festgelegt		min. Temperatur Notbetrieb - Heizu	
				05 E Patienten-Suite		05 E	E 🗹 Oberfläc				relative Luftfeuchte Min.	0.000000
				Algemeinpflege 27er kein Standardraum		Nasszele		Bodenbelag			relative Luftfeuchte Max.	
						R00-11		Rutschfestigkeit			Gerätelasten in Betriebszeit	
				801 24.0 m ⁴ 39.16 m ²		1100-11		Ableitfähigkeit			Gerätelasten in Nachtbetrieb	0.000000
				12		In the second second		Estrichart			Beleuchtung - Tagbetrieb	7.000000
m								Boden Konstruktion Aufbau				0.000000
	xox	Abc						Deckenbelag			Beleuchtung - Nachtbetrieb Beleuchtungsstärke am Tag	270.00000
=	= *			7				Decke Hygieneanforderung			Anzahl Patienten im Raum	270.000000
	-	1400		2				Decke Schallschutzanforderung			Anzahl Patienten im Raum Anzahl Personen (Mitarbeiter + Per	
R	2	100		8				Decke Weitspannträger			Anzahl Personen (Mitarbeiter + Per Anzahl Personen absolut	
				18		1	M lot	Decke Verlegung			Anzahi Personen absolut Wärmelast IT	1 0.000000
	T	r		2			🗄 🔽 Kosten					6.000000
100	-			2				Nutzungscode KFA			Wärmelast Med. Tech. Vollast	
		-11		8		12	Man Ind		0		Wärmelast Beleuchtung Tag	7.000000
]	1		2		BRH=0.60	M Int	KFA12	0		Wärmelast Geräte Absolut	60
				2	VIIIIA	BRH+0.60	E V Projekt		ekili -		Total Heat Loss	598.600000
				BRH=0.60	ISIN	I ISMI	Int N	Sektor	05.E		Total Heat Gain	1492.000000
				BRHPOL	511					🖃 🖌 Alifa		

Highly detailed data for more precise simulation results

THE CHALLENGE

The Frankfurt Höchst hospital is presently under construction in Frankfurt am Main. It is the first hospital in Europe to comply with the requirements of the passive house standard – this was one of the main demands stipulated by the City of Frankfurt. The requirement was a challenge even for an established firm such as wörner traxler richter. The typical specifications in the passive house standard call for increased insulation in the walls, windows, and roof. At the same time, medical equipment such as MRI scanners and X-ray machines, as well as hundreds of people generate a significant amount of heat in a hospital. These thermal factors had to viewed over one year and must be taken into consideration at the planning stage. Therefore the architecture model in Allplan had to be supplemented with data from trade planners to complete the calculations and supply sufficient information for the energy simulation.

- > Re-integrate the simulation results in the planning process
- > Plan the first European hospital to comply with the passive house standard
- > Simulate the thermal behavior of the hospital over a period of a fictitious year
- Integrate all the relevant data in the architecture model before starting energy calculations



THE SOLUTION

To design the Frankfurt Höchst hospital based on the passive house standard, wörner traxler richter switched its work method over to BIM. The Planners used the Allplan Architecture solution to exchange data bidirectionally with the Allplan Allfa CAFM system. "The major advantage for the project was that we were able to run simulations based on the Allplan architecture model and not have to work with a separate simulation model," says Dirk Hennings. The facility management system Allplan Allfa compiled and transferred data from several specialist planners to Allplan Architecture. Since Allplan Allfa is web-based, it was no problem to send data over the Internet for integration in the Allfa database. Special input masks were created for each planning associate. The data acquired in this way was then transferred via the bidirectional interface to Allplan Architecture and integrated in the architecture model. The architects then forwarded the supplemented model to the Ida- ICE simulation software to conduct energy simulations. The results of this energy calculation were then returned to Allplan Architecture for use in the subsequent planning process. This made it possible to simulate the thermal behavior inside the building over a period of a fictitious year.

BENEFITS

"By combining Allplan Architecture and Allplan Allfa, we saved a great deal of effort in the Frankfurt Höchst project," explains Dirk Hennings. "Otherwise, we would have had to enter and manage huge amounts of data by hand to achieve a similar result. So the solutions offered by Allplan really saved us a great deal of time and money." Since the pioneering Frankfurt Höchst project, the Allplan Architecture and Allplan Allfa software programs have become established at wörner traxler richter, as well as with their specialist planners.

- > Loss-free data exchange with specialist planners through the use of Allplan Allfa
- Detailed architecture model forming the basis for meaningful energy simulations
- > Simple data transfer to the simulation program via the IFC interface



"The unique combination of CAD and CAFM from ALLPLAN is a decisive advantage. The two come from a single source. And this is the way to conduct a simulation based on the architecture model – instead of using a simulation model as base."

Dirk Hennings, BIMwelt GmbH

ABOUT THE CUSTOMER

The company wörner traxler richter planungsgesellschaft mbh is managed by architects and engineers Petra Wörner, Stefan Traxler, Martin Richter, Lutz Steernagel, Christian Strauss and Sven Nebgen, and by Petra Cleven, business economist.

With a work force of over 140 employees, the architects office specializes mainly in healthcare, university, and social buildings from its locations in Frankfurt, Dresden, Munich, and Hamburg. Since the company was set up in 1971, wörner traxler richter has gained a pan–European reputation. Dirk Hennings is Managing Director of BIMwelt GmbH and consultant at wörner traxler richter. wHe has many years of experience as consultant and product developer for software solutions for the civil engineering industry. He acts as advisor on matters concerning CAD and CAFM and has profound knowledge of the hospital construction sector.

wörner traxler richter

planungsgesellschaft mbh

ABOUT THE COMPANY

ALLPLAN is a leading European vendor of open solutions for BIM (Building Information Modeling). For more than 50 years, the company has supported the AECOM industry with a pioneering software portfolio and is playing a key role in

ALLPLAN UK LTD

5 Charter Point Way, Ashby Park Ashby de la Zouch LE65 1NF United Kingdom sales.uk@allplan.com allplan.com promoting the digitalization of the building industry: innovative, geared to the requirements of customers – and with best quality "Made in Germany".

