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VST VERBUNDSCHALUNGSTECHNIK



### A YOUNG COMPANY WITH EXPERIENCE OF MANY YEARS

The development of the patented VS composite formwork system began back in the early 1980ies. Up to this day we have implemented hundreds of housing projects, hotels, restaurants, business and industrial buildings, leisure facilities and social institutions using this technology.

A COMPANY REORGANISATION WAS THE IMPULSE FOR OUR EXPERIENCED ENGINEERS AND SKILLED WORKERS TO ESTABLISH THIS INNOVATIVE FORMWORK TECHNOLOGY MORE FIRMLY ON THE MARKET.

#### COMPANY STRUCTURE VST/VPG GROUP



## THE PATENTED PREFABRICATED COMPOSITE FORMWORK SYSTEM – "VS-SYSTEM"

The VS-System is a solid construction method using concrete encasements. The formwork consists of cement-bonded particle boards (CBPB), which later remain in the building. The prefabricated elements form the composite formwork, which is filled out on-site with fluid concrete or self-compacting concrete (SCC) to gain stability.

### VS-SYSTEM PRODUCTION

In our factory the formwork ist prefabricated from cement-bound flat pressboards and equipped with an additional reinforcement, which is necessary due to static-constructive reasons. The prefabricated formwork elements are complete in form and geometry, including all openings etc. Taking on-site measurements for finishing crafts is not necessary anymore.



The industrial prefabrication of the VS-System offers several important advantages. The low weight of the formwork elements ensures low costs for transportation and assembly. Furthermore, the elements and the necessary tools can be space-savingly stored on-site. Due to the exact prefabrication there is hardly any waste on the construction site.

Once the VS-System is assembled and concreted, the highquality shell construction is finished and ready for surface treatment. This extremely short construction time allows an early utilization of the building and the profitability can be increased due to the low time-dependent costs.



The VS-System is an all-purpose system for loadbearing and non-loadbearing structures, a patented formwork system for walls, slabs, staircases, columns and beams.

The most important advantages of the VS-System are: extremely short construction time, low overall costs, high quality and the healthy room climate resulting from the intensive humidity compensation.

The concrete core ensures stability, high sound insulation and optimum heat accumulation. The heat is "stored" due to the cement-bound press boards on both sides of the concrete core and the thermal protection fixed on the

EXTERNAL WALL. AS A RESULT, THE ARISING HEATING COSTS ARE VERY LOW.



#### BRENNER'S

# PARKHOTEL

The LARGESCALE EXTENSION OF THE WORLD FAMOUS "BRENNER'S PARKHOTEL" IN DOWNTOWN BADEN-BADEN (GERMANY) WAS AN ESPECIALLY INTERESTING CHALLENGE. THE LUXURIOUS HOTEL WHICH IS SITUATED AT THE LICHTENTALER ALLEE DIRECTLY AT THE RIVER OOS IS COUNTED AMONG THE "SELECTION OF GERMAN LUXURY HOTELS" AND IS ONE OF THE "LEADING HOTELS OF THE WORLD". IF OFFERS ITS GUESTS 1 10 EXCLUSIVELY FURNISHED ROOMS AS WELL AS RESTAURANTS AND A BEAUTY SPA.



VPG'S ENGINEERS WERE RESPONSIBLE FOR WORKING DRAWINGS, STRUCTURAL ANALYSIS AND PROJECT MANAGEMENT, VST'S FACTORIES SUPPLIED ALL VS-SYSTEM ELEMENTS. DUE TO THE HIGH GROUND WATER LEVEL A TRUNCATED BORE PILE WALL AND AN ANCHORED GROUND SLAB WERE USED TO SECURE THE BUILDING PIT.

> VS-System construction components: 2-STORIED UNDERGROUND GARAGE FOR 240 CARS 6-STORIED ADMINSTRATIVE WING "HAUS ANSTETT" 5-STORIED "VILLA TURGENJEW" INCLUDING FOUR BOUTIQUES AND 41 APARTMENTS 3-STORIED "VILLA VIARDOT" INCLUDING TWO BOUTIQUES

> > BUILDING VOLUME: 52.000M3

CONSTRUCTION TIME: April 2, 1990 to April 30, 1991



The historic Grand Hotel Zell am See (Salzburg/Austria) is situated on a peninsula in LAKE ZELL AND WAS ENTIRELY REBUILT IN ITS ORIGINAL SHAPE FROM 1896. IT OFFERS 115 ROOMS, APARTMENTS AND SUITES ALS WELL AS RESTAURANTS, A CONVENTION CENTER AND A PANORAMIC INDOOR SWIMMING POOL WITH SAUNA, WHIRLPOOL ETC. AFTER A CONSTRUCTION TIME OF ONLY TEN MONTHS THE HOTEL WAS PUT IN OPERATION. THE BASEMENT FLOORS ARE SITUATED UNDER THE WATER SURFACE OF LAKE ZELL. THE HOTEL'S FACADE STANDS OUT DUE TO ITS BEAUTIFUL CLASSICISTIC ELEMENTS.



BUILDING VOLUME: 33.000M3

CONSTRUCTION TIME: FEBRUARY 10, 1984 TO DECEMBER 23, 1984





AND FIVE LUXURY APARTMENTS



#### MAXX

## STEIGENBERGER JENA

This charming four-star hotel in Jena (Germany) offers 208 fashionable rooms, 12 stylish suites, restaurants, sauna, solarium, steam bath, exercise room as well as an indoor water park and a convention center. During the construction VPG's engineers were responsible for site management, working drawings and structural analysis.

# AN DER MESSE KÖLN-DEUTZ

The exclusive four-star hotel Dorint An Der Messe Köln-Deutz (Germany), which is situated on the area of Cologne's convention center, was built in 2001. The hotel offers 313 elegantly furnished rooms, a beauty and wellness department and 13 conference rooms für up to 550 persons.



For the construction of the Dorint An Der Messe Köln-Deutz special loadbearing systems had to be developed due to the requested column-free areas. Furthermore, the construction components had to be firmly stabilized because of the strong seismic activities in this region (Rhine lowlands). In order to support the loads of the upper floors, composite beams and plate girders, partly 18 meters long, were successfully used in combination with the VS-System.

> VS-System construction components: Underground garage Two basements Six upper floors Large patio

> > Building volume: 95.000M<sup>3</sup>







Both, slipform construction methods as well as VS-System elements were used for the Maxx Steigenberger Jena.

Construction components: 11-storied building Underground garage with 200 parking lots

Building volume:

1992

CONSTRUCTION PERIOD:

VST VERBUNDSCHALLINGSTECHNIK

#### DORINT

# AM NÜRBURGRING

For the Dorint Hotel am Nürburgring (Germany) VPG's engineers were responsible for THE CONSTRUCTION OF AN ANNEX AS WELL AS AN EXTENSION OF THE EXISTING HOTEL. THE HOTEL IS SITUATED DIRECTLY AT THE FORMULA I GRAND PRIX CIRCUIT NÜRBURGRING AND OFFERS 207 MODERN ROOMS, SAUNA, INDOOR SWIMMING POOL, STEAM BATH, SOLARIUM, BEAUTY CENTER AND CONVENTION ROOMS FOR UP TO 1.000 PERSONS.

## DORINT **KÖLN-JUNKERSDORF**

This business hotel is situated at Cologne's Aachener Strasse (Germany) and offers 145 COMFORTABLE ROOMS, A RESTAURANT AND SIX CONFERENCE ROOMS. VPG'S ENGINEERS WERE RESPONSIBLE FOR WORKING DRAWINGS, STRUCTURAL ANALYSIS AND SITE MANAGEMENT.



DUE TO THE HOTEL'S LOCATION IN THE CITY CENTER THERE WAS ONLY LITTLE STORAGE SPACE DURING THE CONSTRUCTION OF THE HOTEL. IN ADDITION, THE HOTEL IS SITUATED AT THE BUSY AACHENER STASSE WHICH REQUIRED VERY GOOD SOUND INSULATION

> BUILDING COMPONENTS: UNDERGROUND GARAGE WITH 82 PARKING LOTS **18** APARTMENTS

> > BUILDING VOLUME:

30.300M3

1999

YEAR OF COMPLETION:



THE WHOLE CONVENTION AREA IS COLUMN-FREE, THE LOADS OF THE UPPER FLOORS ARE SUPPORTED WITH A COMPOSITE BEAM CONSTRUCTION (SPAN: 19,50M). THE WHOLE BUILDING IS SITUATED IN A GEOLOGICALLY CRITICAL ZONE AND THUS REQUIRED A PILE FOUNDATION, A WIDE-SPAN STEEL CONSTRUCTION WAS USED FOR THE EXTENSIONS OF THE EXISTING HOTEL.

> BUILDING COMPONENTS: UNDERGROUND GARAGE FIVE UPPER FLOORS Convention area with 950m<sup>2</sup> floor space

> > BUILDING VOLUME: 24.100M3

YEAR OF COMPLETION:







# DORINT SÖL'RING HOF/SYLT

This picturesque hotel is located in the middle of the romantic dunes of the North Sea RESORT RANTUM ON THE SYLT ISLAND (GERMANY). IT OFFERS 15 LUXURIOUS ROOMS AND SUITES, A GOURMET RESTAURANT, A WINE CELLAR, SALON WITH FIRESIDE, WELLNESS DEPARTMENT AND A LARGE TERRACE OVERLOOKING THE DUNES AND THE SEA.



THE CONSTRUCTION TIME FOR EACH HOTEL WAS ABOUT SIX MONTHS.

This hotel type was developed for the three-star segment by VPG's engineers and their

CLIENTS, THE MAIN FEATURE ARE COST-EFFECTIVE ROOM TYPES WITH SPECIAL BATHROOM UNITS,

#### TRYP CENTRO OBERHAUSEN

Like for all hotels of the Tryp chain, VPG's engineers took care of the working drawings, structural analysis and SITE MANAGEMENT FOR THE TRYP CENTRO OBERHAUSEN (GERMANY). THE THREE-STAR CONFERENCE VENUE OFFERS 136 ROOMS, THREE SUITES AND THREE CONFERENCE ROOMS FOR A TOTAL OF 125 PERSONS.

Year of completion: 1996

#### Tryp Hotel Düsseldorf Krefeld

The three-star hotel stands out because of its excellent location in the middle of the business park Europapark Fichtenhain in Düsseldorf (Germany). It is only ten minutes away from the International Airport Düsseldorf, the Convention Center and the city center. The hotel itself is surrounded by a large park, a pond and forests.

BUILDING VOLUME:

13.000M3

#### TRYP HOTEL POTSDAM MICHENDORF

The hotel has 125 comfortable rooms, sauna, fitness studio and free parking lots in front of the building. The spanish restaurant "Bodega del Sol" offers culinary delights in a typically spanish atmosphere.

YEAR OF COMPLETION: 1997



THE VS COMPOSITE FORMWORK SYSTEM WAS USED FOR THE LOAD-BEARING ELEMENTS. FURTHERMORE, THE FIVE-STAR HOTEL WAS PROVIDED WITH A THATCHED ROOF WHICH IS TYPICAL FOR THIS REGION.

> BUILDING VOLUME: ζ.000M3

CONSTRUCTION TIME (BUILDING SHELL): 9 WEEKS





TRYP

HOTELS

TRYP

HOTELS

# HALLE WESTFALEN SPORTPARKHOTEL

The exclusive four-star hotel in Halle/Westphalia (Germany) offers 186 beds, an italian restaurant, a sauna, a park and a large and modernly equipped convention and conference center.







Tryp Hotel Dortmund

The fashionable three-star hotel is quietly situated on the university campus of Dortmund (Germany), close to the "Technologischer Park" and the city center. If offers 90 comfortable rooms, a restaurant, sauna and solarium.

> Building volume: 13.000M<sup>3</sup>

Year of completion: 1996

Thyp Kongresshotel Münster The elegant Kongresshotel is situated at the river Halle Münsterland (Germany). It offers 127 rooms, sauna, restaurants and four conference rooms.

> Building volume: 18.000M<sup>3</sup>

Construction time:

Year of completion: 2000

6 MONTHS



VPG's engineers took care of the design, working drawings, site management and structural analysis.

> Building volume: 31.000M<sup>3</sup>

Year of completion: 1994

# HOUSING PROJECTS

In three Vienna city districts (Austria) VPG's engineers were responsible for the planning and implementation of modern housing projects. All four buildings meet all requirements on construction physics.

## WUTHA FARNRODA

The entire estate of terraced houses with underground garages in Wutha-Farnroda/Freestate of Thuringia (Germany) was erected using the VS-System. VPG's engineers were responsible for filing, working drawings and structural analysis.





#### Year of completion: Vierthaler Building, 12th district: 1996

MATZINGER BUILDING, 14TH DISTRICT: 1997 GRABMAYER BUILDING, 21ST DISTRICT: 1997 PICHELWANGER BUILDING, 21ST DISTRICT: 1997



Year of completion:





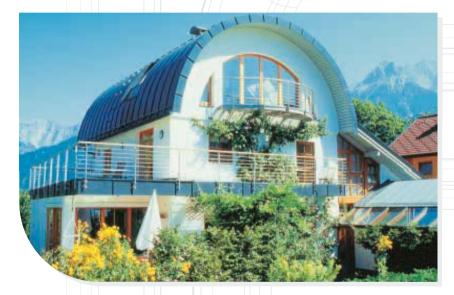


SEITE 16

### FAMILY HOME

# DR. VOCKNER

During the construction of this family home in Saalfelden (Austria) VPG's engineers were responsible for the working drawings. The existing building was adapted and topped with a barrel roof.



## FAMILY HOME GASSNER

The spacious family home in Saalfelden (Austria) was erected on a slight slope and has 200m<sup>3</sup> of living space, a winter garden and a double garage. Due to the mountainside construction parts of the 175m<sup>3</sup> basement are well daylit, VPG's engineers were responsible for the planning of the building. The entire building shell was erected with VS-System elements.





Building volume: 1.600M<sup>3</sup>

Year of completion: 1999



SEITE 19

# DR. TRAPP

The building shell for this luxurious family home in Wustrow (Germany) was erected using VS-System elements as well as hand-shaped clinker brickwork for the external walls. The house is idyllicly situated at the Baltic Sea resort of Wustrow and has a thatched roof which is typical for this region.

## FAMILY HOME ON A SLOPE

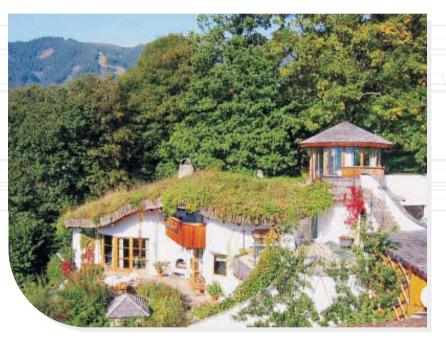
The family home in Zell am See (Austria) was built on a steep slope. The grass-covered roof almost "hides" the building in the surrounding environment. It has several levels and was planned with an open ground plan that allowed the steplike construction along the slope.





YEAR OF COMPLETION:

1998











# OETKER STIFT

The Caroline Oetker Stift is a large first-class retirement home on the Johannisberg above Bielefeld (Germany). Is has 103 luxurious apartments, a chapel, bowling alleys, a large park and an indoor swimming pool.



Due to the very steep site a backwardly anchored bore pile wall was used to secure the building pit.



Building volume: 48.000M<sup>3</sup>

1994/1995

YEAR OF COMPLETION:



## ALLEEKLINIK BERGSTRASSE/BENSHEIM

This clinic in Bensheim (Germany) offers outpatient and short-time treatments in the following departments: Oncology, plastic surgery, orthopedics, neurology, urology and jaw and face surgery. In only seven months VPG's engineers erected an additional ward, a bistro and an underground garage.



Building volume: 7.500M<sup>3</sup>

. .

Year of completion: 1998



### STANGLWIRT

# FELSENBAD

The so called "Felsenbad" of the famous Stanglwirt in Going (Tyrol/Austria) is an indoor and outdoor swimming pool which was erected on a slight slope. The wide supporting structure was combined with timber and masonry to form a cosy environment. Big rocks (up to 20 tons) in and around the pools contribute to the unique atmosphere.



Building volume:		
3.500M <sup>3</sup>		
YEAR OF COMPLETION:		
1986		

# STANGLWIRT INDOOR TENNIS COURT

For the construction of Stanglwirt's indoor tennis court VPG's engineers took care of the planning, structural analysis and supply of the patented three-hinged frame (a precast member). The building was erected on a slope which is why the eight-meter high gable wall was built into the soil. Due to the grass-covered roof the building harmonically blends with the environment.



Building volume: 35.000M<sup>3</sup>

Year of completion: 1988



### FREIZEITZENTRUM

# FILZMOOS

The modern leisure center Freizeitzentrum Filzmoos (Austria) offers indoor and OUTDOOR SWIMMING POOLS, SAUNAS, BISTRO, CLIMBING WALLS, PLAYGROUND, BOWLING ALLEYS, SOLARIUM AND A CONFERENCE ROOM,

## LICHTTECHNIK LEUCHTWURM

For Leuchtwurm Lichttechnik, a lighting technology company in Wiesing (Tyrol, Austria), an office and exhibition building with selling areas and STORAGE ROOMS WAS ERECTED.



BUILDING VOLUME: 8.600М3

YEAR OF COMPLETION: 1990



VPG'S ENGINEERS WERE RESPONSIBLE FOR THE PLANNING, PROJECT MANAGEMENT, STRUCTURAL ANALYSIS AND SITE MANAGEMENT. SINCE THE BETTER PART OF THE SWIM HALL IS COLUMN-FREE, A COMPLEX STEEL STRUCTURE WAS USED.

> BUILDING VOLUME: 6.200M3

YEAR OF COMPLETION: 2000



## OFFICE BUILDING ZELL AM SEE

IN 1993 AN OFFICE BUILDING WITH 900M2 OF OFFICE SPACE AND A 500M2 SELLING AREA WAS ERECTED TO HOUSE THE HEADQUARTERS OF VPG VERBUNDSYSTEME IN ZELL AM SEE (SALZBURG, Austria). Furthermore, an underground garage for 20 cars was built (watertight CONSTRUCTION) AS WELL AS AN ATRIUM ON THE SECOND FLOOR.

## PIESENDORF **SENOPLAST**

SINCE 1978 VPG'S ENGINEERS HAVE BEEN ERECTING SEVERAL PRODUCTION HALLS FOR SENOPLAST, A MANUFACTURER OF PLASTIC SEMIPRODUCTS SITUATED IN PIESENDORF (SALZBURG/AUSTRIA). THE LAST PROJECT, FOR EXAMPLE, WAS THE ERECTION OF A 13.000M3 HALL FOR PLASIC PRODUCTION AND PROCESSING IN 1997.



The critical geological situation and the high GROUND-WATER LEVEL IN THIS REGION REQUIRE PILE FOUNDATIONS. THE ARCHITECTURAL CONCEPT WAS AWARDED SEVERAL PRIZES.

> BUILDING VOLUME: 70.000M3



The atrium was roofed with a steel-glass construction.	
Building volume: 7.000M <sup>1</sup>	
Construction time: 8 months	



### UTTENDORF

# TECHNO Z

For the business park Techno Z in Uttendorf (Salzburg, Austria) VPG's engineers took care of the planning, project management and structural analysis of an industrial hall plus warehouse and office buildings for the administration and research departments. The construction time amounted to eight months.

# COLUMBUS CENTER

FI

The Columbus Center Jena (Germany) houses shops and service enterprises of all kinds. During the construction of this modern business center VPG's engineers were responsible for the planning, project management and structural analysis.





Building volume: 36.500M<sup>3</sup>

Year of completion:

1999



In addition, a parking garage for 350 cars was implemented.

Building volume: 38.000M<sup>3</sup>

YEAR OF COMPLETION: 1992





CONSTRUCTION SITE DORINT HOTEL AN DER MESSE KÖLN-DEUTZ



VPG VERBUNDSYSTEME PLANUNGS-PRODUKTIONS-BAUGESELLSCHAFT MBH

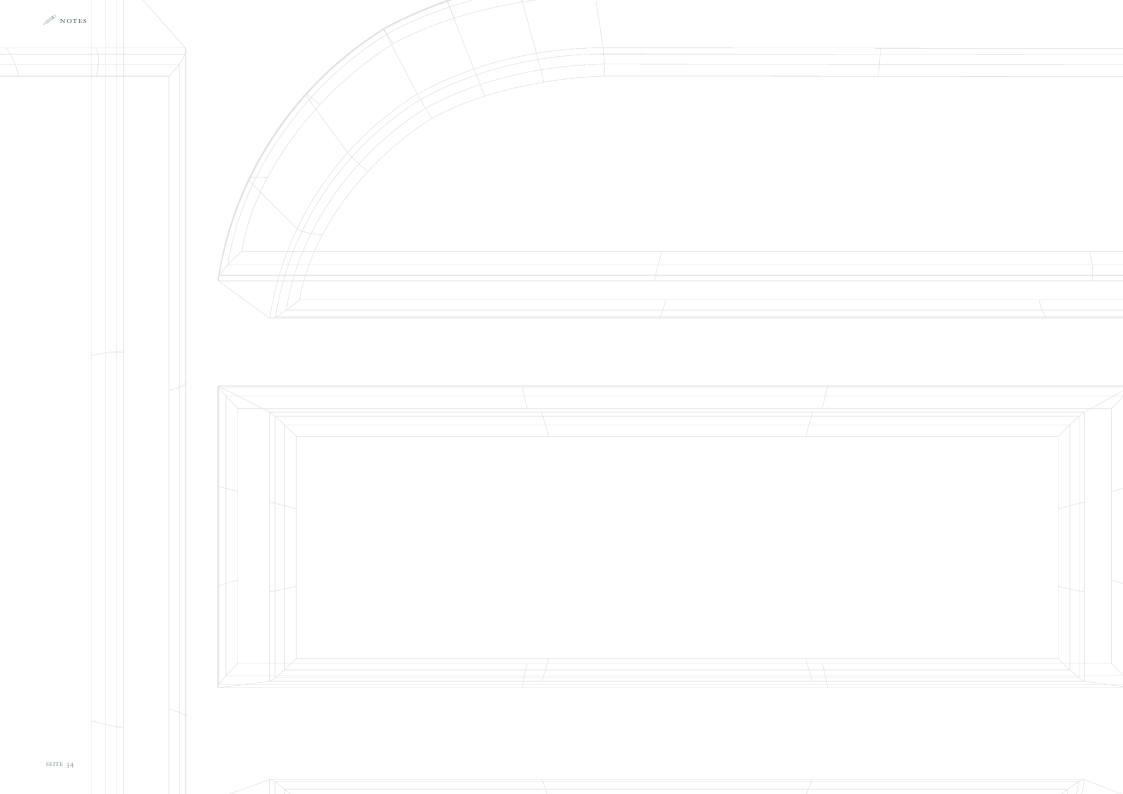
# DEPARTMENT FOR STRUCTURAL ANALYSIS AND STRUCTURAL DESIGN

FIELDS OF ACTIVITIES:	STRUCTURAL ENGINEERING	
	Industrial construction	
	CIVIL ENGINEERING	
	Special constructions	
Our services:		
STRUCTURAL DESIGN:	Preliminary design, design	
	Planning for permission to build	
WORKING DRAWINGS:	STRUCTURAL ANALYSIS	
	REINFORCEMENT DRAWINGS	
	STEEL CONSTRUCTION DRAWINGS	
	Timber construction drawings	
	PREFEBRICATED COMPONENT DRAWINGS	
Project management:	Construction management	
	Call for tenders, award of contracts, time scheduling	
	Coordination	
	On-site construction supervision	
CONSULTING SERVICES:	Feasibility studies	
	Profitability calculation	
	Renovation	
CONSTRUCTION PHYSICS:	Thermal protection	
	Sound insulation	
	Humidity protection	

CONSTRUCTION SITE KRISTOFF PLAZA APARTMENTS, TRENČIANSKE TEPLICE



SEITE 33



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AND NOT A RATIONALIZATION OF PAST WORKING METHODS."

[Ludwig Miës van der Rohe, »Industrielles Bauen«, 1924]

Our innovative composite formwork system allows industrialization and high flexibility. At the same time it meets all ecological and economical requirements.



