

An illustrated article on the adaptive re-use of Vienna's old Gasometers (Gas Tank Living, Sept/Oct 2005) for Designer/Builder - Journal of the Human Environment.  
**GAS TANK LIVING: AN UNUSUAL CASE OF ADAPTIVE RE-USE IN VIENNA**



In 1962, in Vienna's plush residential district of Hietzing, the Austrian capital's very last gas lantern was extinguished. It's still there today, pressed up against the outside wall of the 13th District's local museum, small testimony to one of the reasons why a network of 700 kilometres (435 miles) of gas piping was laid out across the city in the late 1890s. If one were able to trace the pipe that once fed gas to Hietzing's historic street lamp back to its point of origin, that point would be nine kilometres (5.6 miles) away in the

3rd District of Simmering. Today, however, we would find there not the original Simmering Gas Works that used to provide Vienna with all its gas, but instead the celebrated Gasometer complex of apartments, shops and offices now occupying the brick shells that once encased Simmering's massive gas supply tanks. Known simply as the Gasometer it is a stunning and very Viennese example of the re-use of a redundant industrial structure. While it should not be missed by any visitor to the city remotely interested in the architecture of adaptive reuse, the Gasometer also serves as a useful reminder of Vienna's continuing commitment to the ideals of social housing established decades ago in the tumultuous 1920s and '30s.

Yet most visitors to Vienna these days, certainly those with only a few days in which to explore this magnificent city, are likely to miss the Gasometer because they largely restrict themselves to the Gothic, Baroque and Art Nouveau splendours of the so-called Inner City (Innere Stadt), or 1st District, lying inside the Habsburg Boulevard known as the Ringstrasse. They waltz, at times quite literally, through the city palaces and along medieval streets, buying wholeheartedly into the cosy (gemütlich) ideals of Old Vienna (Alt Wien). The phrase "adaptive re-use" could hardly be expected to enter the minds of such visitors and yet, in a non-dramatic way, even for them it is all around. For example, many of the old Baroque palaces of the nobility now provide grandiose settings for various governmental departments; evidence of the ongoing process of recycling existing buildings to new uses as one historical era or

political regime replaces another. Another perhaps more striking example of this sort of historical re-use is the palatial Märkleinisches Haus at Am Hof 7, built as a grand city residence to plans by the eminent Baroque architect Lukas von Hildebrandt (1668-1745). In 1935 the ground floor of the palace was converted into a fire station and museum, one of the grand former reception rooms now providing the unlikely backdrop for Vienna's first steam-powered fire engine.

Beyond the sometimes stifling confines of the Inner City, however, lie Vienna's myriad residential and industrial districts, arranged in a series of concentric rings that spread out to the city limits. Habsburg grandeur at the centre soon gives way to a more utilitarian landscape dominated in large part by the huge housing projects (Gemeindebauten) built during the city's inter-war Socialist experiment known as Red Vienna (Rotes Wien). Here can be found many of Vienna's older industrial buildings, structures that are intrinsically more difficult to re-use once they have become obsolete than the domestic and other spaces inherited from the imperial epoch. A fine example of such modern reuse is the former water tower on Windtenstrasse in the 10th District of Favoriten. Soaring 67 metres (220 feet) into the air it was built in 1889 to store alpine water piped in from the distant Rax and Schneeberg Mountains. The Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict now protects this structure's quite unnecessarily magnificent polychrome brickwork, and its cavernous innards have today found a new use as an occasional art space.

Certainly the most dramatic, elaborate and successful adaptation of an industrial era structure to new use in Vienna, indeed perhaps in Austria, is the conversion of the Simmering Gas Works into the stunning mix of the old and the new that is the Gasometer complex. The origin of the works lies in Vienna's drive to modernisation in the latter half of the nineteenth century. Rapid industrialisation manifested itself in the building of huge apartment blocks in the previously rural suburbs to house a burgeoning population that would reach an all-time high of two million in 1910. There was also the arrival of an adequate water supply mentioned above, as well as the channelling of the Danube to prevent the flooding of potential building land and the creation of a metropolitan tram and train network. The city itself was symbolically opened up to the forces of commercialisation and modernity by the demolition of the Renaissance fortifications from 1857 onwards creating the famous Ringstrasse Boulevard in the process. Such a gesture was also designed to engender a sense of social democracy in a populace who had been driven to

revolution in 1848 by starvation, unemployment and appalling housing conditions.

As late as 1899 the supply of gas to Vienna was still in private hands. Deemed an increasingly undesirable situation by Vienna's city council, this monopolistic state of affairs was ended in October of the same year with the opening of the new municipally-owned gas works in Simmering, a development announced by the appearance of four huge gasholders on the city's skyline (the gasholders, also termed gas tanks, continue to be called incorrectly 'gasometers', a term which more accurately refers to the large pressure gauges found on the outside of such structures). Each gasholder comprised a cylindrical brick-built shell that was 67 metres (220 feet) high and 65 metres (213 feet) wide inside which was concealed a multiple-section telescopic iron tank boasting a maximum capacity when fully extended of about 90,000 cubic metres (295,272 cubic feet) of gas. The tank would rise and fall, guided by rollers along a vertical railway, as gas was either added to it (having been generated by adjacent coke-oven works) or consumed by Vienna's 100,000 meter holders, lighting companies and other end-users. The tanks were made airtight at the base by means of a 12 metre (39.37 feet)-deep pool of water contained within the earthen mounds upon which the containers were founded (1). Soon the works were able to supply 110,000,000 cubic metres (360,888,000 cubic feet) of gas annually, although the storage capacity of its four tanks combined would only ever equal half a days total requirement of gas. Hostilities late in the Second World War caused extensive damage to pipelines and the production and distribution of gas eventually ceased entirely not to resume until repairs were made to the system in 1946 (2).

With the demise of Vienna's street gas lighting in the early 1960s, gas use was primarily limited to household heating and cooking. Despite a drop in demand for gas, several upgrades were made to the system during the following decade until eventually Vienna's gas supply was converted to pure natural gas in 1978. This effectively brought to an end the need for gas production from coke at the Simmering works. For a while the old tanks were used for storage and metering purposes only. In 1986 the huge containers were finally decommissioned entirely, the empty brick shells only occasionally brought to life by the bustle of film crews (notably in 1987 for scenes for the James Bond movie, *The Living Daylights*) and by the giant sound systems of all night "raves" and other, more enervating, music events. Fortunately, however, despite obsolescence of the gas works and removal of the iron tanks, the decorative brick outer casings of the containers were deemed historically important by the City Council

and spared the wrecking ball. Indeed, within a very few years of becoming obsolete, these four structures – lined up close to each other in a row — became one of the most unusual and comprehensive examples of adaptive reuse of an industrial site not only in Vienna, but in Europe.



By 2001 elaborate plans had been drawn up for a full-scale conversion of the former Simmering Gas Works into a self-contained residential, business and commercial development. The hugely successful conversion of the four empty brick shells into what is today's Gasometer complex is particularly inspired. Four internationally renowned architects, commissioned by three of the city's foremost housing associations, were each given a gasholder to convert, the resulting structures being uniquely designed yet connected together by an

elevated, glass-walled walkway so as to form a dense, integrated mixed-use complex. In just two and a half years, and at a cost of 174.4 million Euros (206.8 million US Dollars), four empty structures - each big enough to hold Vienna's famous Ferris wheel - became the site for 615 comfortable and affordable apartments. Also included was a 70-store shopping mall running the length of the complex, numerous offices and underground car parks, not to mention 70,000 metres (229,656 feet) of new shelving for the Vienna City and County Archives (Wiener Stadt- und Landesarchiv), a treasure trove of documents including, among many other historic items, the last will and testament of one Ludwig van Beethoven. The renovated site is serviced by its own underground rail station (U-Bahn) (part of the U3 line), as well as two nearby rapid transit stations (Schnellbahn) thus integrating the Gasometer into the city's renowned public transport network. Also close by is the A23 south eastern peripheral motorway as well as a direct connection to the Lower Prater cycle path. The ease of access to and from the Gasometer, together with the construction nearby of a purpose-built media centre with multiplex cinema, reached by a glass bridge across Guglgasse, helps draw 15,000 or more visitors a day to the site.

The conversion of the interior spaces of the old gasholders into viable living and working spaces took 11,200 metric tonnes of steel, 93,000 cubic metres (305,114 cubic feet) of concrete, 92,000 square metres (301,833 square feet) of partitioning, 290 kilometres (180.17 miles) of

cable and 120 kilometres (74.56 miles) of water pipe. Some 60,000 cubic metres (196,848 cubic feet) of material was excavated and on any particular day during construction there were up to 1600 workers on site. And of course a handful of those people were the architects themselves.

The conversion of Gasometer A, the first container to be seen by the visitor arriving by U-Bahn, is based on a concept by French architect Jean Nouvel, a prominent planner of residential and other developments in Europe and Honorary Fellow of the American Institute of Architects (his work includes the Institut du Monde Arab in Paris and Lyon Opera House). Nouvel attached nine slender residential towers, each 12 storeys high, to the inside wall of the brick container. The towers are separated by four-metre wide (13.12 feet) gaps which allow outside light to flood the interior through sham windows that were part of the original brick shell. The light is reflected again and again by the mirrored surfaces of the inner tower walls, leading some to dub Nouvel's conversion the "Palace of Light". Moreover, this wonderful play of light within the volume of the structure is not only appreciated by the residents of the towers but also by visitors to the shopping centre located at the basement level below, which is separated from the apartment towers by a transparent glass roof.

Gasometer B is the work of Wolf D. Prix and Helmut Swiczinsky, founding members of the Coop Himmelb(l)au group, which is famous for a number of revolutionary building projects in Vienna and elsewhere (for example Vienna's SEG Apartment Tower and the Museum Pavilion in Groningen in the Netherlands). Prix and Swiczinsky arranged living spaces in four and five-storey-high rings set on the inside of the container and facing a peaceful inner courtyard below which continues the shopping mall from Gasometer A. At the lowest level is a general purpose events venue, extensively sound-insulated, with seating for over 4,000. Most dramatically the architects built a secondary residential block which is propped up at an angle against the outside of the container. Primarily used to house students, this steel and glass addition is known as "The Shield". Aesthetically, the aim of the exterior addition is to add an unambiguously modern element to what is otherwise a somewhat 'Victorian'-looking structure, as well as to soften the overwhelmingly industrial look of the containers when seen from a distance. Needless to say, because of its visibility and dramatically different architecture, "The Shield" is an element of the conversion that has garnered both praise and criticism.

Third in the line of containers, Gasometer C, is the creation of Manfred Wehdorn, an expert on the restoration of Viennese residential and industrial architecture (including the recent renovation of the vast Rossauer Barracks and the plush Palais Coburg). He was also instrumental in getting UNESCO World Heritage status for Vienna's Inner City. At the Gasometer, Wehdorn elected to retain as much of the original feel of the gasholder as possible. Thus, leaving the outer brick shell intact, he built six residential towers directly inside the old walls forming an inner structurally independent shell, or ring. This has resulted in a series of interesting floor plans for apartments which are shaped like slices of cake in order to maximise usage of available space. The towers taper towards the top and incorporate planted terraces that in turn compliment planted areas in the inner courtyard. Gasometer C also includes three levels of office accommodation below the apartment levels and continues the shopping mall on the ground floor.

Finally, Gasometer D is to a design by Wilhelm Holzbauer whose previous work includes the Andromeda Tower in Vienna's Donau-City, the city's huge IBM offices as well as Tech Gate Vienna, the city's most modern business research centre. Rather than adopt a version of the inner-ring model found in the other gasometers, Holzbauer's plan envisaged a star-shaped arrangement of three residential towers connected in the centre. The spaces between the towers form roofed interior courtyard gardens across which residents from their balconies can catch glimpses of the surrounding city landscape through the windows of the original brick shells. The basement level of Gasometer D contains underground parking above which is situated the Vienna City and County Archives.

The successful outcome of Vienna's Gasometer mixed-use conversion is based on the important premise that housing must remain as affordable and comfortable as possible, and that residents must have access to the superior infrastructural amenities that facilitate social communication. With this principle in mind, it was decided by both the architects and the housing associations that the former gas works should not simply just be converted into publicly subsidised apartments: to do so would probably have created the same sort of disastrous social housing projects such as those built elsewhere in Europe during earlier decades. Instead, by combining the talents of four forward-looking, socially-committed architects (rather than giving over the job to just one architectural firm) a varied, mixed-use and original residential landscape has been created, one that appeals to a particular audience. The resulting mix of accommodations at the Gasometer is interesting and reveals who that audience is. Among a total of 615 single and family apartments, there are

subsidised owner-occupied and rental flats as well as privately financed owner-occupied penthouse apartments. In addition there is dedicated student accommodation, notably in "The Shield", adding a further 78 units with 247 beds. In demographic terms, however, the majority of Gasometer residents are single tenants, without families and on average between 30 and 40 years of age. These residents are indicative of a recent trend in the housing market in Vienna, and indeed elsewhere, namely a tendency for younger, relatively well-heeled city residents to stay in one place for only a short period, to move willingly on a regular basis, and to search for surroundings that complement and contribute to a desired lifestyle.



The Gasometer apartments themselves, whether bought or rented, represent great value for money, their construction having been financed by three non-profit making housing associations operating under Vienna's historic umbrella of 'social housing'. Importantly, the associations comply with the stringent health and safety regulations that apply wherever residential developments receive public subsidies. Indeed, without these subsidies the Gasometer project could not have been realised in its current form and young single people

would never have been able to afford to live there.

The most interesting of the housing associations involved in the Gasometer conversion is GESIBA (Gemeinwirtschaftliche Siedlungs- und Baustoffanstalt). GESIBA was founded in 1921 as the "Non-Profit Making Estates & Building Materials Association" whose main function was to provide co-operatives and residents' associations with cheap building materials and loans for construction on favourable terms. As Red Vienna's social housing programme expanded during the 1920s so GESIBA began working on residential developments of its own. GESIBA'S most significant contribution during this time was the experimental Werkbundsiedlung model housing estate in Hietzing, where prominent modernist architects (such as the American Richard Neutra and Frenchman André Lurçat) were invited to design affordable two-bedroom detached houses for working-class families. Although ultimately a little too expensive for Vienna's inhabitants, and consequently bought

by the city for renting out, the estate is still held up as an exemplar of communicative and progressive provision of social housing.

After the Second World War Vienna again embarked on a massive programme of social housing, this time to replace the more than 270,000 homes that were destroyed during Allied bombing raids and the subsequent Soviet liberation of the city in April 1945. The process culminated in GESIBA's construction of the incredible Alt-Erlaa estate in the 1970s, out in the 23rd District of Liesing. With its own U-Bahn station, shopping centre, kindergarten and literally hundreds of planted sun terraces soaring into the sky, Alt-Erlaa is often cited as one of Europe's most successful social housing developments, the occupants of its 3,181 apartments regularly expressing a very high satisfaction rates in polls. Significantly, GESIBA is also active in other areas from which it derives its successful approach to social housing, most notably the planning and construction of nurseries, schools and old people's homes, as well as the administration of major public buildings on behalf of the City of Vienna.

Another clue to GESIBA's success in the provision of social housing harks back to another lesson learned during the period of Red Vienna, namely that large concentrations of residents require an infrastructure of services and amenities to keep them happy and contented. Like the city's famous Karl-Marx-Hof in the 19th District of Döbling, as well as the other 400 city-owned apartment blocks built between the wars, planners of the Gasometer complex realised that for success it too had to be conceived and built as a city within the city. Consequently, the Gasometer has an elaborate and extensive series of amenities to support the apartment dwellers including shops, restaurants, a cinema, nursery, doctor's surgery, chemist, police station and bank, as well as ample garage parking for both residents and visitors alike.

Another factor contributing to the successful conversion of Simmering's old gas works into a popular and important example of contemporary social housing is its involvement in what is often called "E-Living". GESIBA is currently working with an Information Technology company to provide what they advertise as "networked housing" in Gasometers C and D; this will allow entire residential communities to have continual access to up-to-date information regarding facilities and activities throughout the complex. Residents will be able to view rental information and other details, partake in chat rooms and forums, and take advantage of e-commerce opportunities. Tenants will thus be able to micro-manage their own space within the Gasometer as well as ultimately play a part in

the broader management, level of social activity and upkeep of the complex as a whole.

Although the Gasometer, Vienna's grand experiment in adaptive reuse, is still in its infancy, early indications are that its planners and architects have succeeded not only in creating an affordable, comfortable and healthy living space for 1500 inhabitants, but also have brought new life to an area of the city that was in need of urban renewal. Whilst the target audience of the Gasometer remains the young urban section of the population, it may only be a matter of time before older people too gravitate towards this exciting and idiosyncratic housing development, themselves now fully appreciative both of the benefits of new technology and of the visual and other pleasures of inhabiting one of Vienna's landmark structures.

When the Simmering Gas Works was first constructed a hundred years ago its ornate outer brick casings masked the high-tech interior workings of large-scale gas storage. Now long redundant as an industrial site, it is indeed ironic that only the exterior decorative brickwork remains from the original structures, the very part that, from a technical and utilitarian viewpoint, was not really necessary in the first place. The century-old brickwork still greets the visitor to the former Simmering Gas Works, the Habsburg double-eagle motif proudly adorning its old doorways. Yet today the Gasometer walls no longer conceal an essential part of a once modern industry, but rather one of Europe's most advanced and high-tech living spaces. In this way nothing has changed at all at the Simmering Gas Works – and meanwhile back in Hietzing, not far from the Habsburg summer palace of Schönbrunn, the old gas lamp is still dutifully lit each night, albeit this time by electricity.

Notes: (1) For an excellent photographic survey of this and other types of gasholder, see *Gas Tanks* by Bernd and Hilla Becher (The MIT Press: 1993). In the case of the multiple-section gasholders at Simmering as gas was added to the tank so the lowest, and widest, ring would rise out of the water to approximately the same height as the water's depth. At this point the ring locks and the next, slightly narrower, ring continues to rise. This process continues, so long as gas is added, until the tank is fully extended, by which time the final ring, or "bell" so-called because it is covered, would be level with the top of the brick shell. Conversely, as the gasholder empties itself of gas, which it does naturally through weight and gravity once the valves connecting it to the external pipelines are opened, the metal tank telescopes back downwards until the bell is flush with the surface of the water. The brick shell, a strictly decorative element typical of Habsburg Vienna, is then left freestanding.

(2) For an idea of the level of destruction wrought on the architectural fabric of Vienna during the last years of the Second World War, see *This Pearl Vienna – A Book of Pictures Taken From Vienna's Most Dreadful Time* by Hans Riemer (Jugend und Volk G.M.B.H.: Wien, 1946). It was Adolf Hitler himself who described Vienna as a pearl, one which he promised to place in a suitable setting. That setting was ultimately rubble and burned out buildings that were either demolished or else meticulously restored with monies from the Marshall Plan. Lost forever unfortunately was much of the gloriously excessive nineteenth century Habsburg infrastructure, notably its railway stations and bridges over the Danube.

Useful websites for Vienna's Gasometer complex include [www.gasometer.at](http://www.gasometer.at), [www.g-town.at](http://www.g-town.at), [www.arcspace.com](http://www.arcspace.com) (with excellent sectional plans of the four gasometers) and GESIBA's own site at [www.gesiba.at](http://www.gesiba.at).