

More than Living. The IBA Hamburg prototypes

Abstract

The results of IBA Hamburg 2013 propose some interesting new housing buildings presenting solutions for homes where live and work. This article illustrates four prototypes that may indicate a new trend in the future housing design, acting in the name of convertible and adaptable inner spaces through sustainability and energy efficiency.

Keywords: IBA Hamburg – Housing Prototypes – Sustainability – Convertible interiors

Introduction

In 2009 when I met Uli Hellweg, the Internationale Bauausstellung Hamburg (IBA, International Architecture Exhibition) director, the IBA projects were just little flashing lights over the display illustrating Wilhelmsburg, the island formed by the Elbe River just a kilometre South from Hamburg's Altona historical centre. At that time, despite the quantity of researches, congresses, and publications edited by IBA Hamburg till then, it seemed very hard to realized a such ambitious programme that put together all the themes our western world towns are facing: size shrinking and population decreasing, multi-ethnic and multi-cultural inhabitants and migrants, energy saving, smart mobility and neighbourhood regeneration. But the smiling face and the enthusiasm of Dr. Hellweg, the same individual that as a young expert introduced the theme of water saving and recycling in the IBA Berlin 1987 building a waste water phyto-depuration plant in the Germany Capital Kreuzberg quarter, was there to say 'IBA Hamburg will manage to do it'. And taking count also that this challenge was operating with a very slow budget, what one can see during this year Final presentation could appear a real miracle. Actually the smartness of the IBA Hamburg programme lays in the little scale size of its solutions and in the ability to process them through joint-ventures contracts with private investors that recognized that the IBA's public and press-monitored display could be a good way to promote their techniques and technological innovations on a larger scale. More, this is actually the right place where is worthy to prove new solutions both for architectural plans and engineering solutions for the ever-changing cities of today and tomorrow.

So, IBA Hamburg doesn't show how to deal with a wounded city as it was IBA Berlin 1987, or what to do with a post-industrial territory, as it happened with IBA Emscher Park 1999, or how to transform a devastated landscape as in the IBA Fürst-Pückler-Land 2010, or how to renovate towns as in the IBA Stadtumbau 2010; this IBA indicates how to merge social conflicts and tensions as parts of our communities, to design new buildings and to develop new public spaces scenarios to live according to the new standards all of us are experiencing thanks to our lifestyle and how to save energy without loosing any of the benefits we are used to. And all this has been done not through mega-proje-

cts, but promoting, selecting and then realizing some 'model' building, simple to be tested and, also, to be exported in their solutions in other contexts.

This paper presents four fresh-built prototypes – four residential condominiums – interesting as they merge environmental sustainable solutions with architectonic program flexibility, two of the big issues discussed nowadays inside the research and professional architectural world. These four realized projects show also that the best environmental friendly solutions come out only starting to think housing design as a 'unique whole' that should include all the various features of project design (architecture, engineering, building physics and so on) and not to be a puzzle of parts to be assembled one over the other.

It's clear that now¹ it's too early to have any kind of monitoring feedback on the sustainable performances of these buildings and to critique by experience if their dwelling internal spaces and the rooms adaptability may be a mere designers' utopia to be very difficult to realize empirically in the future, but presenting these housing models I like to underline the necessity to go on working on this kind of "whole integrated design" recipe to renew the contemporary city, inventing places where, as in these cases, living and working under the same roof is possible.

New solutions

The theme of the 'House of Tomorrow' in IBA Hamburg has been actually declined through two parallel channels, the first asking for solutions for "hybrid houses" (where to live and to work in a innovative way) and a second exploring the innovations in building materials to design "smart houses".

In the "hybrid houses" built prototypes the target was to obtain the maximum flexibility ta-

king count of the changing needs of the residents, supporting them in their evolution during the different moments of their lives thanks to spaces able to adapt and to modify. Structures, rooms and materials in these 1-to-1 scale models are adaptable to face what people now ask from their dwellings: to be extended or reduced reflecting the variability of the family necessities or the ones coming from working at home (from a PC position to a 'complete' office). More, IBA asked designers to propose not only homes to fit and combine nowadays versatile and multi-purpose living and working spaces, but also to think about sustainability, taking count of the necessity to houses to age and to maintain their best user-friendliness. The answer is to design multipurpose spaces to be used multiple times during the moments of a day or in years. This also influences the building physics calculations and the performances to be taken in count in evaluate the overall energy balance of the housing complex. (illustration 1)

The Hybrid House²

The innovative proposal behind this building stays in combining different daylight conditions for living and working throughout the home. The house consists in 16 units – most of them duplex apartments – facing all four directions in order to catch in any moment of the day the best solar gain and the best inner illumination. The complex modular system façade is enriched by the combination of recessed balconies and private gardens, and –at the upper units – roof terraces. The sole vertical connection system of the edifice allows to each unit, whose entry is served by a walkway, a free combination of the spaces inside the apartment (illustration 2). It's up to the inhabitants to choice which part to be designated as a working place and which as a living space, also taking count that the duplex apartment can be enlarged merging other units present at the first and third floors (illustration 3). The entire project is also designed to be sustainable and applies environmentally friendly construction techniques that permit to change both its function and its internal layout with little or none expense, as all the possible moves and change have been predicted in advance.

Hybrid Development³

If the Hybrid House plays with the concept that any place can become 'another place' passing from living to working and vice versa, the architects who designed the "Hybrid Development" bet all on the mere contrary: one place belongs to one function. Their housing building has working areas separated from the living areas. The four storeys wooden structure edifice presents at the ground level a commercial area on the South-eastern while on the North-western side there are dwellings and at the centre the vertical connections to reach the units at the upper levels. These units, designed on a grid plan, can host working places or apartments (separated or merged) allowing a high degree of versatility in the final layout. The most interesting performance of the building is the possibility to joint units vertically – thanks to the wooden prefab slabs technology-, creating duplex solutions and/or horizontal ones and – obviously – any of these parts can be devoted to living or working, as the unique aim of designers is a 'smart separation' of these two solutions of define the inner spaces. The built structure is closed with prefabricated wooden panels, permitting a perfect integration with the grid plan and giving to the entire Hybrid Development a green and very up-to-date looking. (illustration 4 and 5)

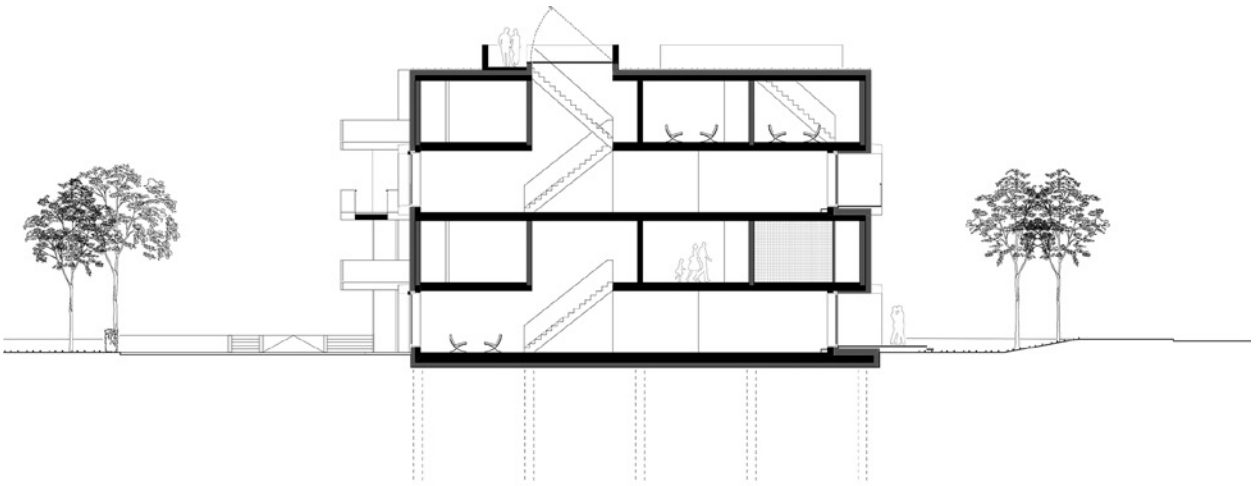
IGS Centre⁴

IGS is the acronym of Internationale Gartenschau (International Garden Exhibition), the floral expo that occupies the centre of the Wilhelmsburg Island, a huge green core that, after the IBA and IGS closing, will pulse for the renewed district neighbourhood and for the whole City of Hamburg. This building, the first to be built in 2011 to host the IGS Headquarters, is the result of

il. 1. A panoramic view of Wilhelmsburg Mitte with all the prototype houses realized by IBA Hamburg (photo courtesy IBA Hamburg/Johannes Artl)

il. 2. A view of the Hybrid House, at ground floor doors open into the dwelling, while at the 2nd level doors open into working spaces. (photo courtesy of IBA Hamburg/Martin Kunze)





ii. 3. A Hybrid House section. The internal stairs connect the living spaces to the working ones in the duplex dwellings or vice versa. (drawing courtesy of Kleffel Papay Warncke Architekten)



ii. 4. The 'Hybrid Development' wooden structure condo (photo courtesy of Bieling Architekten)

a competition which five architectural firms were invited to. The winning design by Nägeliarchitekten is highly flexible; more it's convertible and sustainable. The four storeys building stands on reinforced concrete pillars sunk into a green mound containing, at the moment, part of the garden exhibition and after may be

used for commercial or office purposes. The upper floors, now hosting offices and one apartment, can be completely remodelled thanks to a project design having as principle concept interior spaces as convertible ones. This means that in the building can found place apartments or offices of different sizes with the only similarity to be organized as a U-shaped form around an atrium that may become an open space with function as recessed balcony.

These atriums permit also to bring the daylight throughout all the rooms, which can be arranged freely also thanks to special mobile structural supports. Beside sustainability also energy efficiency is the other target reached by this building, which has been awarded with the Silver Seal by the Deutsche Gesellschaft für Nachhaltiges Bauen (German Society for Sustainable Building), thanks to its plant combining heat pump and geothermic systems integrated with the district energy network to create the perfect balance between heating and cooling at all the times. (illustration 6)

ii. 5. A Hybrid Development section (drawing courtesy of Bieling Architekten)





il. 6. The IGS Centre, to be transformed in housing at the end of 2013. (photo courtesy of IBA Hamburg/ Bernadette Grimmenstein)



il. 7. The BIQ building with its façade clad with algae bioreactors. (photo courtesy IBA Hamburg/Johannes Artl)

BIQ⁵

Beside the “Hybrid” houses, at IBA Hamburg are presented also the “Smart Materials” houses series, and one of this drives both for its technological peculiarity and its apartments design from the experiment straight to the possible applications in tomorrow’s dwellings standard features. The housing structure called ‘BIQ’ (an acronym that stays for Biologic Intelligence Quotient) is the actual realization of the building-concept known as the ‘Treefrog’ series⁶ elaborated in years by the Austrian architectural collective Splitterwerk. This time prof. Mark Blaschitz and his professional companions managed to create a performing and actually green as chlorophyll skin to their passive edifice. For the first time in Europe the South-eastern and South-western building façades are clad with a double glazing frame system filled of water where algae can live all their lifecycle producing photosynthesis heat, whose the condominium takes directly advantage, and bio-mass that is collected and converted in energy by the district thermal plant. The water present into the bioreactors changes density during the day, operating as a solar light natural shading screen for the interiors, wrapped in emerald light. The bioreactor panels also contribute in bringing down the external noises. But this unique characteristic of BIQ stands in the fine research conducted by Splitterwerk in the possibilities related to change of destination of the dwelling’s spaces in the future. Two of the fifteen flats (the “Milanese” and the “Hamburger” apartments) are designed without any prefigured room apparel: they apparently are wide open-spaces to be arranged on demand. The families, according to their needs, choose how to aggregate the functional parts of the apartment swapping bathroom with kitchen or the living area with the sleeping one or can decide to combine them creating a kind of ‘neutral zone’, called ‘niche’, surrounded by a versatile space where to live, to work or simply to stay. The BIQ way to adjust the dwelling space is a unique and may really sign a new trend in the future housing design. A little revolution to be tested when the two specialized apartments will be ready, for the late part of the IBA Hamburg Finale⁷. (illustration 7 and 8)

ENDNOTES:

¹ This article has been submitted on June 2013, just after the official opening of three or four of these housing study cases during the first phase of IBA Hamburg Final presentation.

² Project Architects: Architectural competition: Brandhuber + Niehüßers Architects, Berlin – Architectural realisation: Kleffel Papay Warncke Architects, Hamburg; Investors: HTP Hybrid House GmbH & Co. KG; Beginning of construction: December 2011; Completion: March 2013; Project costs: approx. 5 M. Euro; Property size: approx. 2,040 sqm; Gross floor area: approx. 2,500 sqm; Sizes of units: 65–145 sqm; Energy standard: EnEV, Energy -Saving Ordinance 2009 minus 30%; Energy supplier: Integrated Energy Network Wilhelmsburg Central.

³ Project Architects: Bieling Architects, Hamburg; investors: Wernst Immobilien (Real Estate), Hamburg with Deutsche Immobilien (Real Estate) AG, Hamburg; Beginning of construction: January 2012; Completion: February 2013; Gross floor area: approx. 2,302 sqm; Storeys: 4; Utilisation units: max. 20; Sizes of units: 43–120 sqm; Energy standard: EnEV, Energy-Saving Ordinance 2009 minus 30%; Energy supplier: Integrated Energy Network Wilhelmsburg Central.

⁴ Project Architects: Nägeliarchitekten, Berlin; Investors: Otto Wulff Bauunternehmung (Construction enterprise) GmbH & Co.KG, Hamburg; Beginning of construction: July 2010; Completion: September 2011; Project costs: approx. 5 Mio. Euro; Property size: 1,900 sqm; Gross floor area: 2,286 sqm; Sizes of units: from 110 sqm; Energy standard: EnEV, Energy-Saving Ordinance 2009 minus 30%; Energy supplier: Integrated Energy Network Wilhelmsburg Central, local heating and geothermic heat pump system.

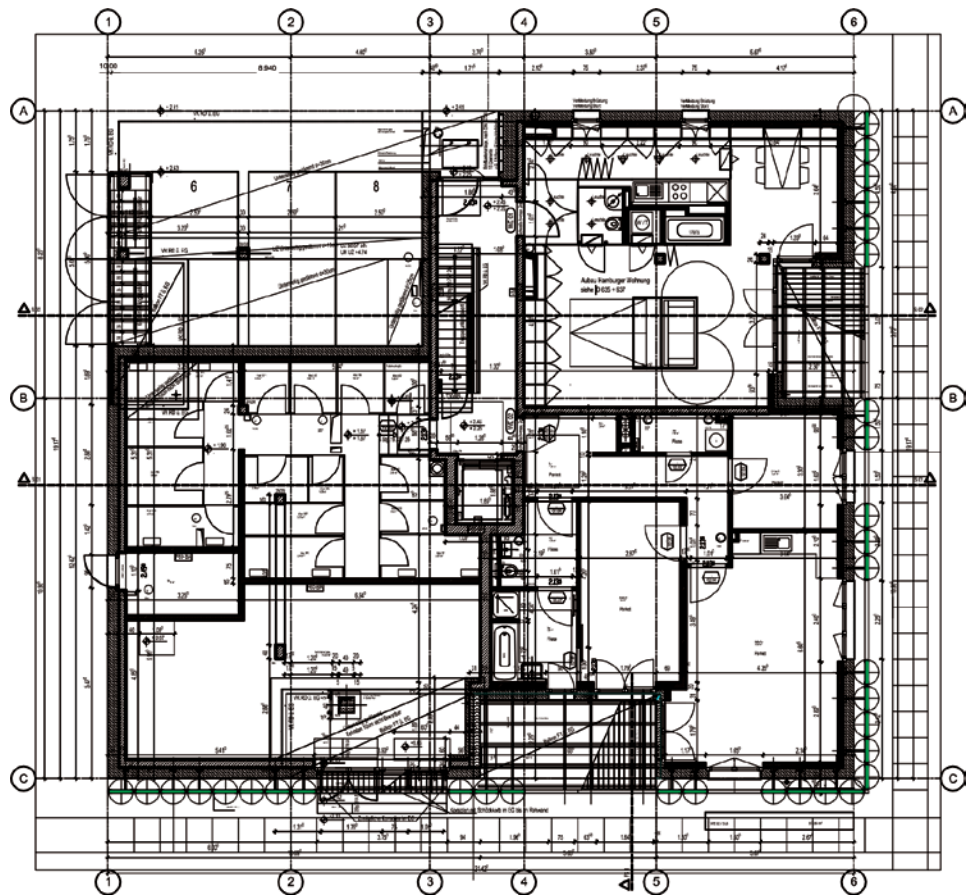
⁵ Project Architects: Splitterwerk, Graz (A), consulting: Arup GmbH, Berlin and Bollinger + Grohmann Ingenieure, Frankfurt, Immosolar GmbH, Hamburg; Investor: Otto Wulff Bauunternehmung GmbH & Co.KG; Beginning of construction: December 2011; Completion: March 2013; Project costs: approx. 3,4 Mio. Euro; Property size: 839 sqm; Gross floor area: approx. 1,350 sqm; Sizes of units: 50–120 sqm; Energy standard: Passive-house standard; Energy supply: Integrated Energy Network Wilhelmsburg Central.

⁶ Actually Splitterwerk titled the BIQ project the “Clever Treefrog”, and in many ways this project is the direct consequence of the “Black Treefrog”, realized by the Styria’s Studio in Bad Waltersdorf (A), a renewal project for new dwellings into a former fire station. In this case all the ‘daily life’ activities (kitchen, bath, sleeping, etc.) find place in some niches distributed all around the ‘buffer’ zone created between the old external envelope and the new one, built from inside. The residual spaces, constituting the core of the dwelling, can be freely used because the internal envelope is conceived as a continuously active multimedia surface.

Actually (end of June, 2013) the BIQ’s bio-reactors are working on test-mode, and the two flats, one with the internal continuous envelope illustrating the Milanese skyline and the other one dedicated to Hamburg’s outskirts’ wild nature are still under construction and they will be ready for the end of August, 2013.

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- [3] IBA Hamburg, IBA Hamburg Projects and Concepts – Catalogue for the Interim Presentation 2010, Jovis Verlag, Berlin, 2010.



ii. 8. The BIQ's ground floor plan, at the right upper corner of the drawing the 'Hamburger apartment' as realized (drawing courtesy Splitterwerk)

iii. 9. A view of the Hamburger specialized apartment designed by Splitterwerk for BIQ. (photo courtesy IBA Hamburg/Johannes Artl)

