

INNOVATION AND APPLICATION OF GREEN BUILDING

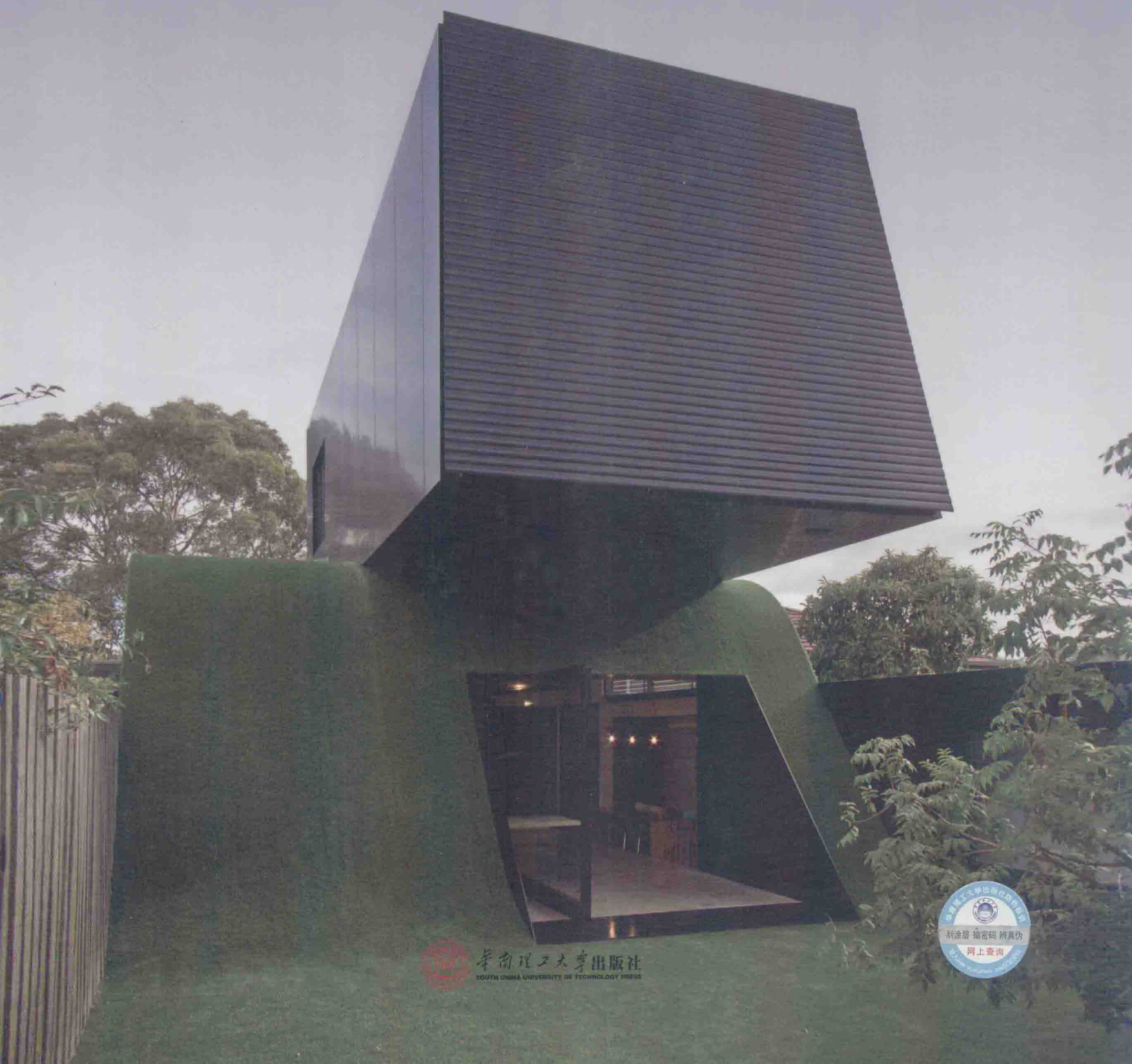
MATERIALS

— RESIDENTIAL BUILDINGS

绿色建筑材料的创新与应用·居住建筑

VOL. 2

深圳市艺力文化发展有限公司 编



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SOUTHERN CHINA UNIVERSITY OF TECHNOLOGY PRESS



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深圳市艺力文化发展有限公司 编

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Preface

材料打造独特建筑

在建筑设计中，材料担任了重要的角色。

没有选对正确的材料，即便是优质的设计概念和建筑结构也会受到冲击。而另一方面，如果缺乏优质的建筑结构和空间组织概念，那即便是最好最贵的材料也无法改善建筑本身。

因此，让二者同步于设计之中，既实现建筑功能及其环境空间组织和结构的优质设计，又保证选材的质量，这点在建筑设计中非常重要。

图 片 1： 离 别 堂，2009 (Photo @ Tomaz Gregoric)

在建筑的实际施工过程中，建筑往往要根据特定的条件来建造空间和选用材料，这就是建筑设计中的妥协。主要的妥协因素当然是来自于客户所给的预算，选材经常是根据城市规划的需求来确定材料的颜色与类型，通常的限制因素有防火性能、声音参数、传热条件以及在某些异常天气中的特殊材料使用性能，这些限制因素在建筑设计中起了重要作用。一座好的建筑会遵循这些妥协因素，而最后的建筑效果也往往会比那些没有任何限制因素的建筑要好。

在实际施工的过程中，我们倾向于设计纯粹的建筑——空间的创造产生于选址环境与功能性的规划。选择将这二者同步的建筑结构，对我们来说影响重大。我们相信，如果建筑外形根据特定的逻辑方法建造，那建筑结构的所有成分和材料选择都能从建造过程的本身中衍生出来。

图 片 2： 贝特体育馆，2013

当我们建造一栋建筑时，我们会对选址、当地的气候条件、附近建筑的用材及建筑元素，尤其是对过去建筑的用材做调查。我们相信，遵循传统可以创造出最好的可持续效果。使用当地的材料和其历史中特定场所的建材，不仅能让新建筑与周围的环境保持和谐，还能创造出独一无二的建筑。

图 片 3： 6x11 阿尔卑斯别墅，2009 (Photo @ Tomaz Gregoric)

Materials That Create Unique Architecture

The materials play a significant role in architecture.

Incorrect choice of materials affects the impact of the building, no matter of the high quality of the concept and volume. But on the other hand, if the volume and the concept of the spatial organisation have no quality, even the best or most expensive materials cannot improve it.

Therefore, the synchronisation of both, which means, achieving spatial organisation, volume with relation to functionality and its surrounding as well as the choice of material, is important.

Picture 1: Farewell chapel, 2009 (Photo @ Tomaz Gregoric)

In architectural practice, the way of generating architecture depends on specific circumstances. So creating the space and choosing materials is a set of compromises. The main compromise is, of course, the budget of the client. Very often, choice of materials depends on urbanistic requirements that define colour and type of materials. Common restrictions, such as fire-resistance, acoustic parameters, thermal conditions or behaviours of specific materials in certain climate, play a significant role. Good architecture follows these compromises, and the final result is better than it would be without restrictions.

In process of our practice, we tend to create buildings that are pure — creation of space arising from the site context and functional plan organisation. It is one of most important impacts for us that the structure of the building is chosen in synchronisation with this two. We believe that if form is generated with certain logic, all components of the building's structure, as well as choice of materials, arise from the process itself.

Picture 2: Bate stadium, 2013

When creating the building, we make a research of the site, such as its climatic conditions as well as what materials and architectural elements are used in close surrounding, especially the ones that were used historically. We believe that following tradition creates the best sustainable effect. Use of local materials and the ones that were used on specific site through the history, not only creates harmonisation of the new build with close environment and context, but also generates architecture that is unique and special.

Picture 3: 6x11 Alpine Hut, 2009 (Photo @ Tomaz Gregoric)



Picture 1



Picture 2



Picture 3

About ARTPOWER

PLANNING OF PUBLISHING

Independent plan, solicit contribution, printing, sales of books covering architecture, interior, graphic, landscape and property development.

BOOK DISTRIBUTION

Publishing and acting agency for various art design books. We support in-city call order, door to door service, mail and online order etc.

COPYRIGHT COOPERATION

To further expand international cooperation, enrich publication varieties and meet readers' multi-level needs, we stick to seeking and pioneering spirit all the way and positively seek copyright trade cooperation with excellent publishing organizations both at home and abroad.

PORTFOLIO

We can edit and publish magazine/portfolio for enterprises or design studios according to their needs.

BOOKS OF PROPERTY DEVELOPMENT AND OPERATION

We organize the publication of books about property development, providing models of property project planning and operation management for real estate developer, real estate consulting company, etc.

INTRODUCTION OF ACS MAGAZINE

ACS is a professional bimonthly magazine specializing in high-end space design. It is color printing, with 168 pages and the size of 245*325mm. There are six issues which are released in the even months every year. Featured in both Chinese and English, ACS is distributed nationwide and overseas. As the most cutting-edge counseling magazine, ACS provides readers with the latest works of the very best architects and interior designers and leads the new fashion in space design. "Present the best whole-heartedly, with books as media" is always our slogan. ACS will be dedicated to building the bridge between art and design and creating the platform for within-industry communication.



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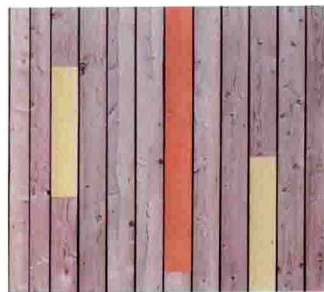
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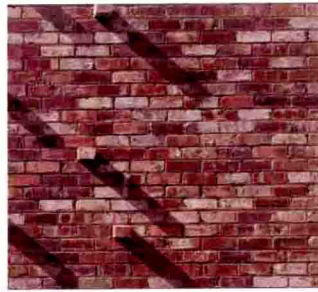
Future Editions

If you would like to contribute to the next edition of Artpower, please email us your details to: artpower@artpower.com.cn

Contents



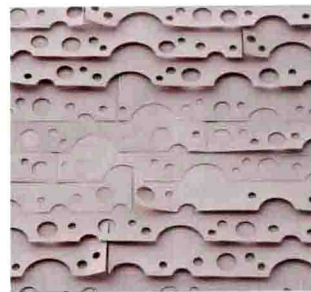
CO2-Saver House



Ilma Grove House



Villa 921



Fabric Facade Almere

CO2—Saver 房子

CO2—Saver House 002

Zuber 房子

Zuber House 012

布面楼房

Fabric Facade Almere 021

山屋

Hill House 038

巴特勒之家

Butler House 054

Ilma 林屋

Ilma Grove House 078

JD 住宅

JD House 100

斯塔克霍夫改造住宅

Streckhof Reloaded 112

Franz 小屋

Franz House 118

921 住宅

Villa 921 126

卢加诺湖别墅

Lake Lugano House 136

梅里涅米夏日住宅

Summerhouse Meriniemi 144

茵尼斯基薄荷房屋

Infiniski Menta House 150

伦诺克斯住宅

Résidence Lennox 156

树屋

The Treehouse 160

雷昂斯·乔治斯中心

Centre Léonce Georges 166

鸟之岛屋

Birds Island 172

巴黎篮子公寓

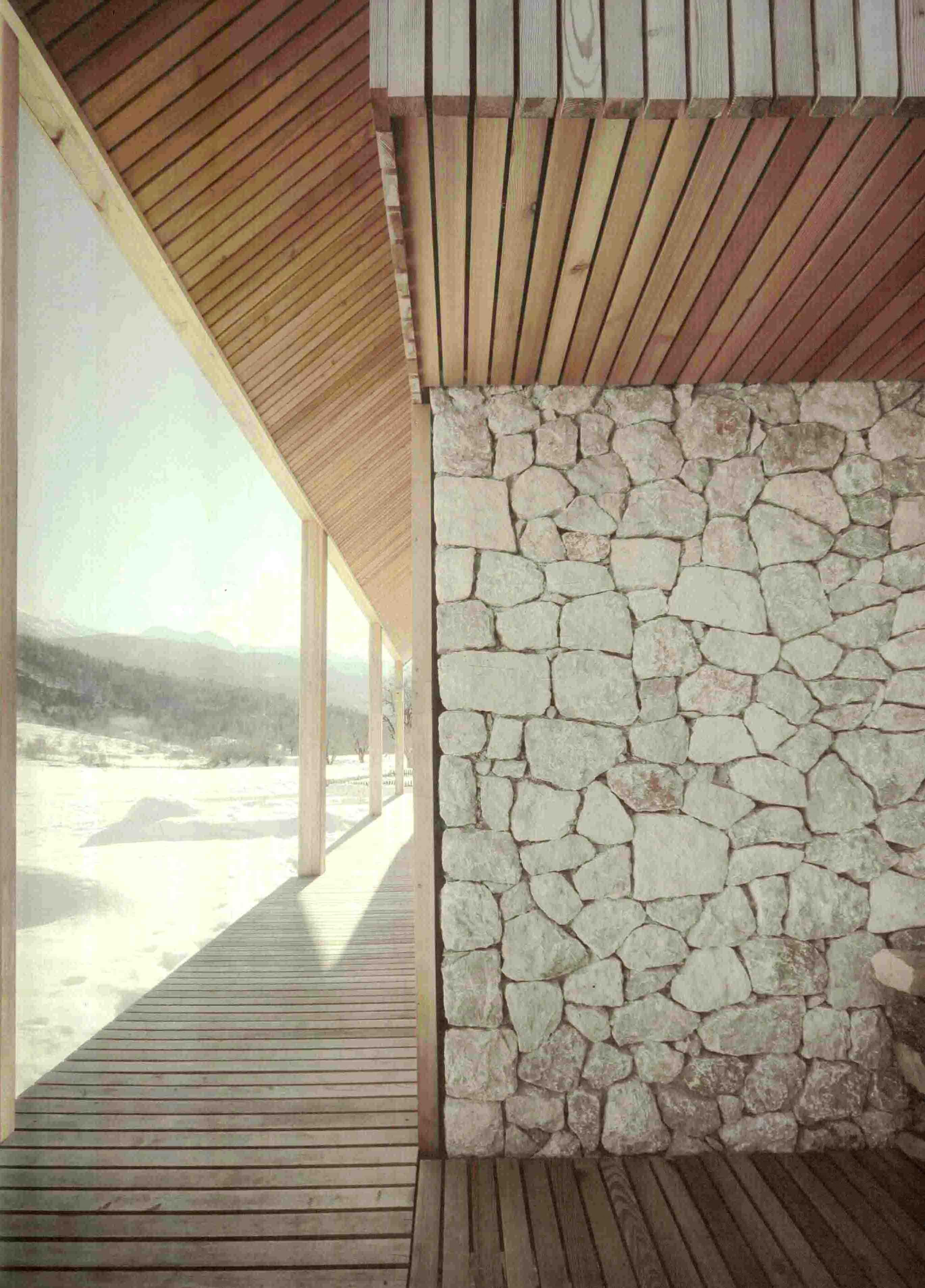
Basket Apartments in Paris 176

教师之家

Teachers Housing 194

设计师名录

Contributors 200





CO2—Saver 房子

CO2—Saver House

This simple sustainable house – like a chameleon – blends with its surrounding area on Laka Lake in Upper Silesia in Poland. Colourful planks within the timber facade reflect the tones of the landscape. The window reveals with fibre cement cladding frame images of the countryside. Analogical to the most creatures, the building is outside symmetrical, although the internal zones – according to function – are arranged asymmetrically.

The form of the house is designed to optimise the absorbance of solar energy. Approximately 4/5 of the building envelope is facing to the sun. The single storey living space on the ground floor is externally clad with untreated larch boarding. Solar energy

这个简洁的可持续性住宅，像变色龙一样，与波兰上西里西亚的拉卡湖周围环境融为一体。木房正面的各色木材反映了景观的色调。带有纤维水泥外墙的窗户展示了乡村的框型影像。如同大多数生物一样，此房子外部是对称的，但内部空间根据功能非对称设置。

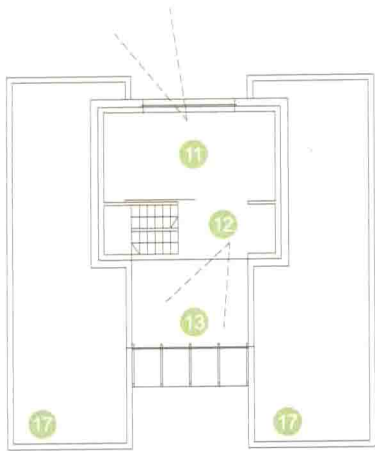
房子被设计成充分吸收太阳能的形式，大约 4 / 5 的房子表面是面向太阳的。首层生活空间外面覆盖着未经处理的落叶松木板，太阳能通过玻璃般光滑的露台获

is gained there by the amply glazed patio and stored in the loam walls. Solar thermal collectors are located on the roof and a photovoltaic system is planned for the future. The dark facade of the “black box” – a three storey structure clad with charcoal coloured fibre cement panels – is warmed by the sun, reducing heat loss to the environment. The passive and active solar energy concepts and a high standard of thermal insulation are enhanced by a ventilation plant with thermal recovery system.

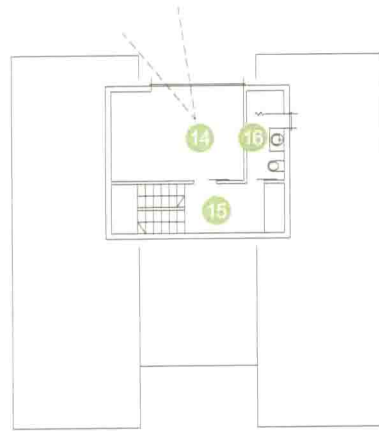
The design of the project was determined by the twin goals of low lifecycle costs and a reduction in construction costs. All details are simple, but well thought out. The house did not cost more than a conventional one in Poland.

得并存储在壤土墙里。太阳能集热器安装在屋顶，未来计划安装光伏系统。“黑匣子”一个三层结构，覆盖着炭黑色纤维水泥板的深色外观由太阳加热，可减少热量流失到环境中。热回收系统的通风装置增强了主导和诱导式太阳能观念和热绝缘材料的标准。

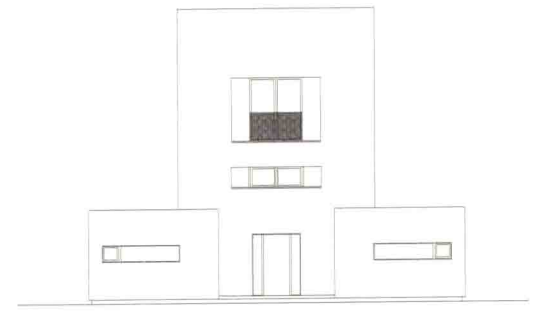
该项目的设计有两个目标：低寿命周期成本和低建设成本。所有细节虽简单却精益求精。此项目的成本没有超过波兰的传统房子。



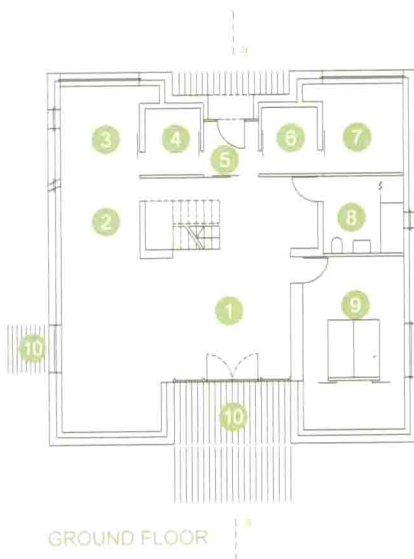
SECOND FLOOR



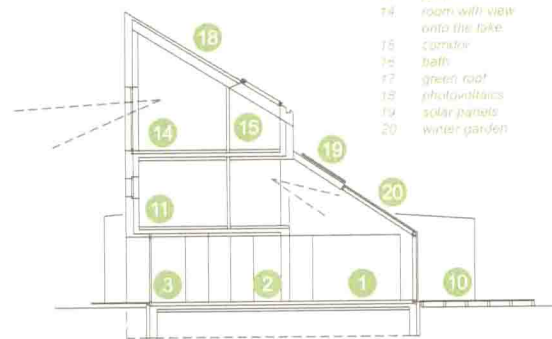
TOP FLOOR



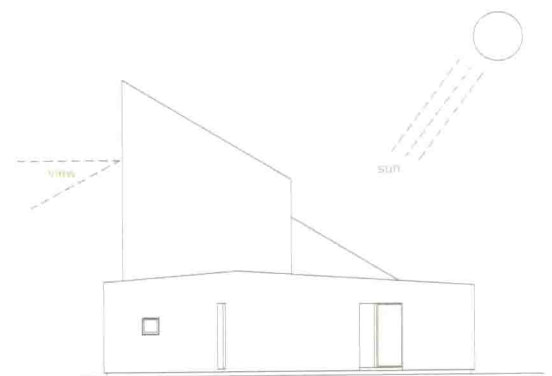
ELEVATION NORTH



GROUND FLOOR



SECTION a-a

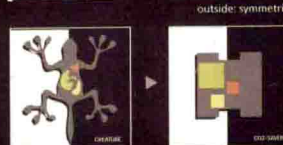
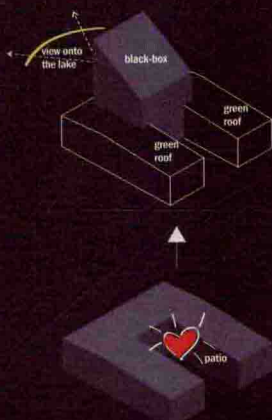
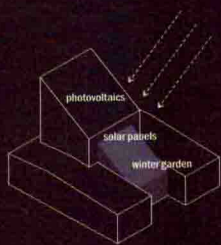


ELEVATION WEST

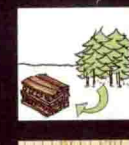


SCALE 1:200

0 1 5 m



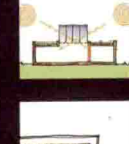
compact structure
optimized percentage
outer surface / cubature
optimized orientation



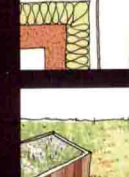
building materials:
- natural
- close to home
- short transport routes
- partly recycled
- recyclable



traditional timber cladding (larch)
- no chemical treatment
- very low embodied energy
- easy to repair / replace
- reversible
- recyclable

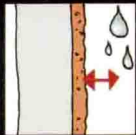


passive solar system:
- green house and "black box"
for passive solar energy harness
- high thermal mass materials inside
- thermal zoning
- stack effect

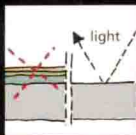


very high thermal insulation
no heat bridges
windproof
additional thermal insulation
of window frames

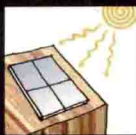
green roof
extensive vegetation



loam wall
for natural climate
regulation inside



reduced floor construction
(polished concrete)
with high thermal mass



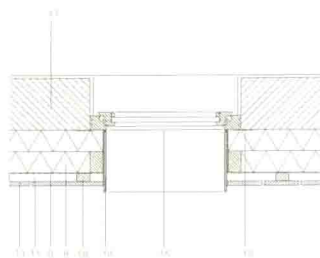
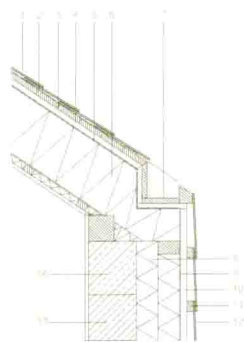
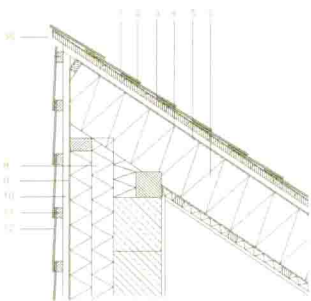
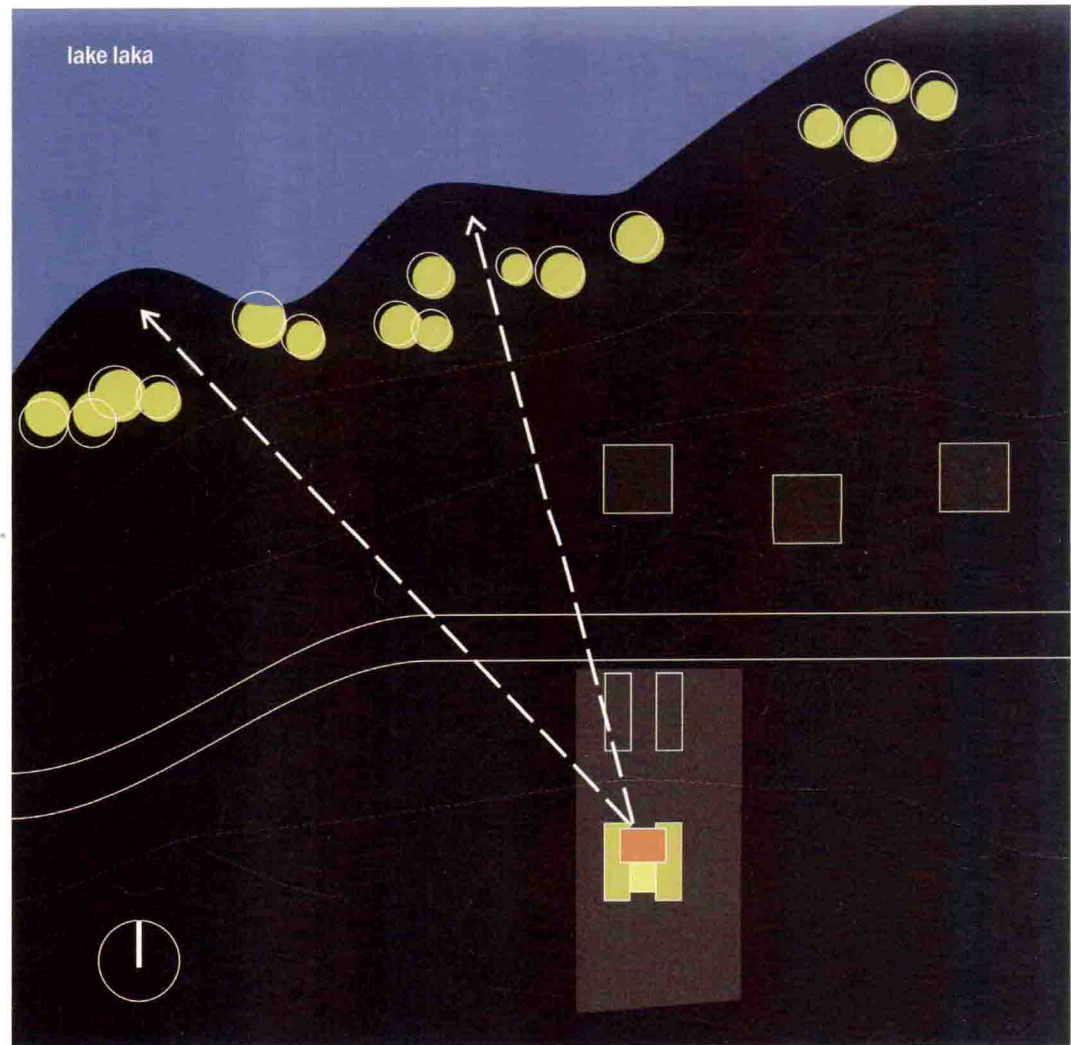
active solar systems:
- solar heater
- photovoltaics



ventilation
with energy recovery



intelligent building
control systems



- Roof**
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