

Green Lighthouse

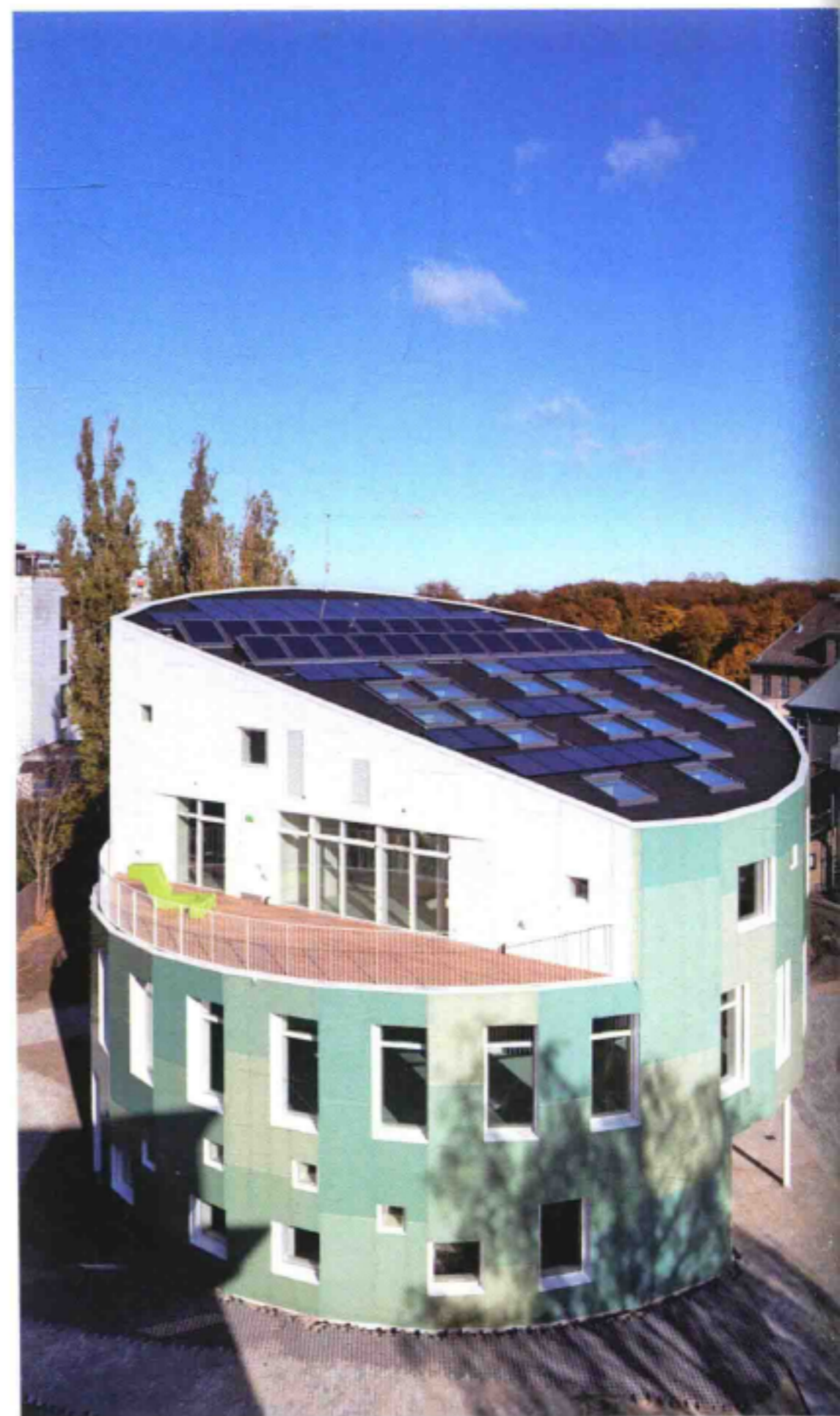
Green Lighthouse is Denmark's first CO₂-neutral public building is home to the Faculty of Science at the University of Copenhagen. The building's circular shape and the adjustable louvres of the façade mirror the course of the sun. The sun being the predominant source of energy is the overriding design concept behind the new building. Green Lighthouse is based on a whole new experiment with an energy concept, consisting of a supply combination of district heating, photovoltaics, solarheating and cooling and seasonal storage.

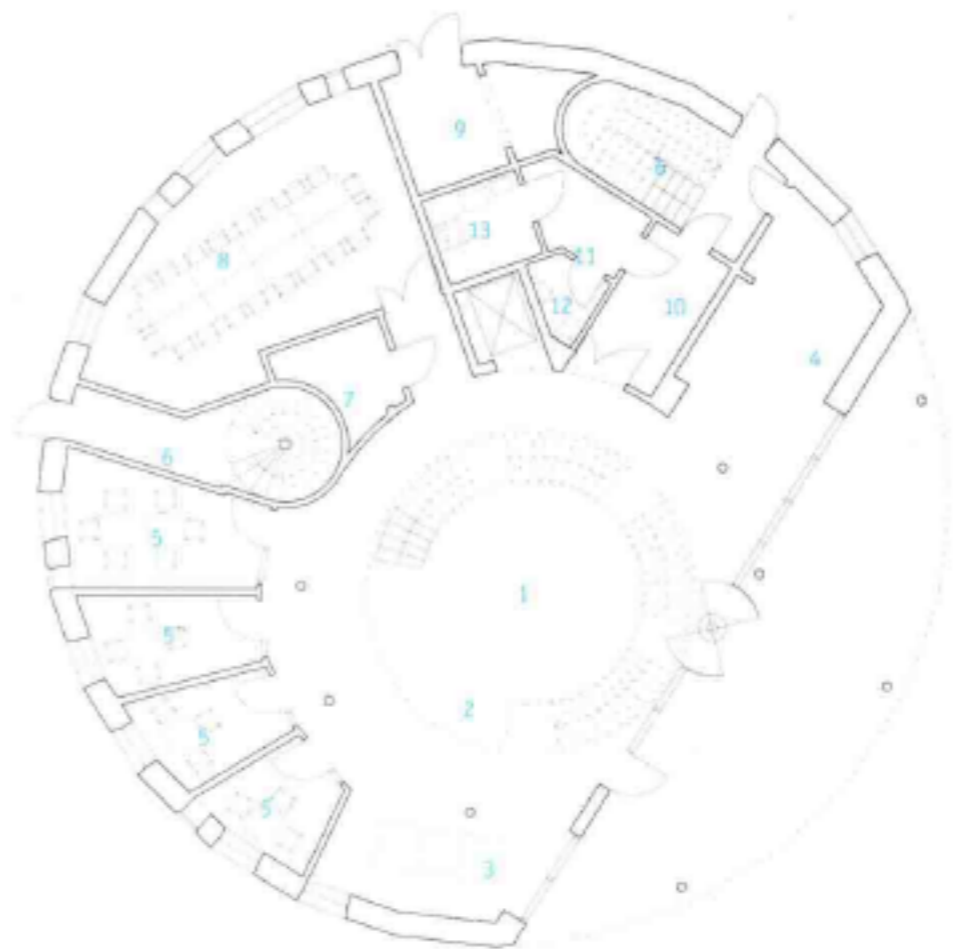
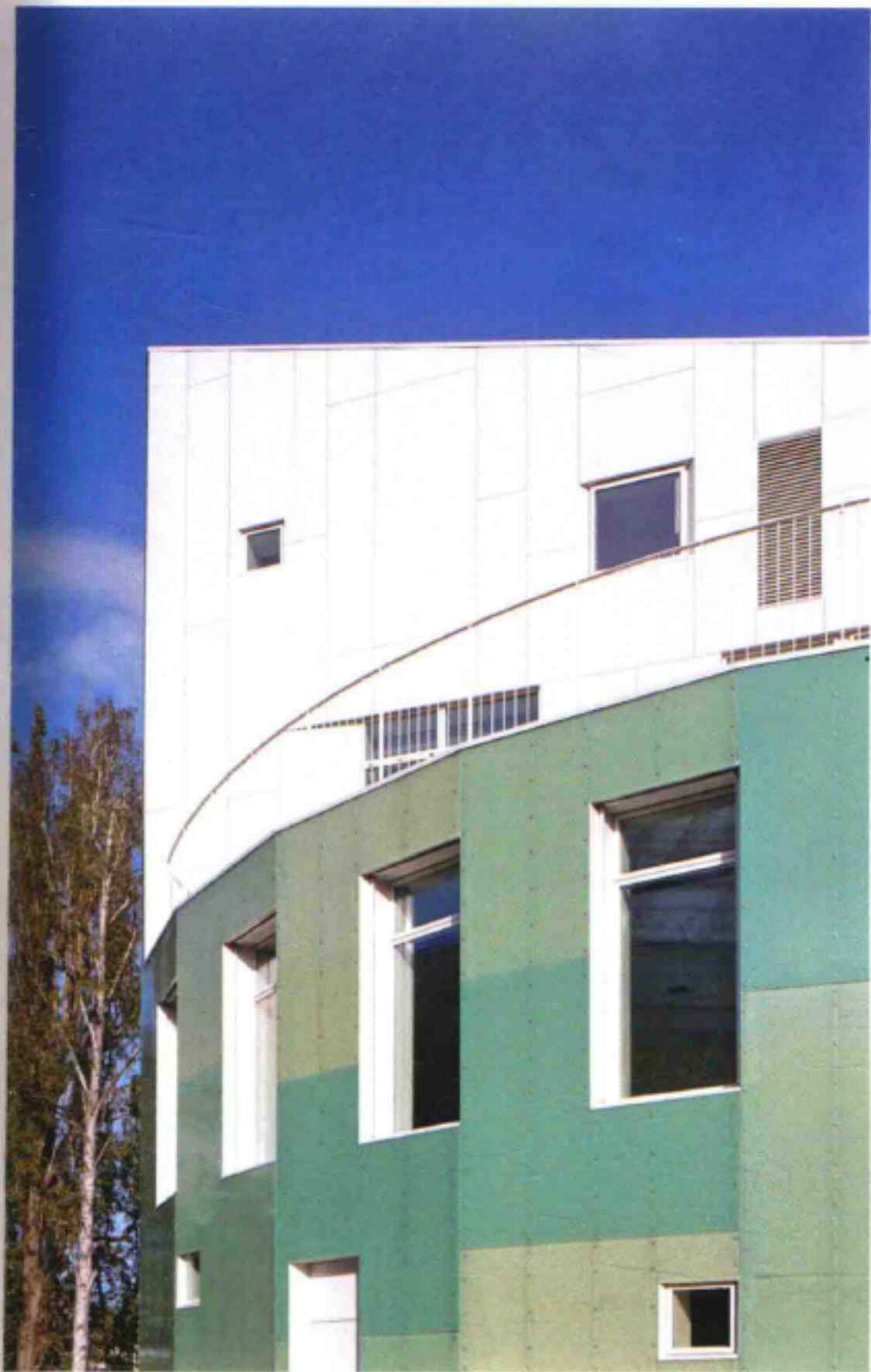
To achieve carbon neutrality, many green design features were incorporated to reduce energy use and provide a holistic and healthy indoor environment for students and faculty. The building itself was oriented to maximise its solar resources, while windows and doors are recessed and covered with automatic solar shades to minimise direct solar heat gain inside the building. Plentiful daylight and natural ventilation are provided by means of the carefully-placed VELUX skylights, Velfac windows and the generous atrium. Finally, sensibly-integrated state-of-the-art technology has been applied: heat recovery systems, photovoltaic panels, solar heating, LED lighting, phase change materials, geothermal heat are just some of the technologies that are seamlessly integrated into the building. Seventy percent of the reduction of the energy consumption is the direct consequence of architectural design.

绿色灯塔楼

绿色灯塔楼是丹麦首座达到二氧化碳平衡的公共建筑，是哥本哈根大学理学院的教学楼。建筑的圆形造型和可调节的百叶窗式外墙可以反射阳光。绿色灯塔楼启用了全新的试验性能源理念，结合了集中供热、太阳能光电板、太阳能采暖和制冷、季节性存储设施。

为了达到碳平衡，建筑采取了多种绿色设计策略来减少能源消耗，为师生提供了一个全盘的健康室内环境。建筑的朝向保证了太阳能资源的最大化，凹进的门窗顶上装置着遮阳板，减少了太阳直射。VELUX天窗、Velfac窗和宽大的中庭为室内带来了充足的光线和自然通风。此外，建筑还采用了一系列的最新科技：热回收系统、太阳能光电板、太阳能供暖、LED照明、相变材料、地热系统等。建筑所节约能耗的70%都来自于这些有效的节能设计。





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|----------------------------------|--------------|
| 1. main stairs | 1. 主楼梯 |
| 2. students' lounge/working area | 2. 学生活动室/工作区 |
| 3. students' lounge/quiet area | 3. 学生活动室/静修区 |
| 4. reception | 4. 接待处 |
| 5. meeting rooms | 5. 会议室 |
| 6. fire escapes | 6. 安全出口 |
| 7. printing room | 7. 打印室 |
| 8. auditorium | 8. 礼堂 |
| 9. plant room | 9. 机房 |
| 10. garderobe | 10. 衣帽 |
| 11. lavatory | 11. 浴室 |
| 12. WC | 12. 洗手间 |
| 13. disabled WC | 13. 无障碍洗手间 |



Photo: Adam Moerk

Educational

Architect: Christensen & Co.

Completion Date: 2009