

SOLAR HOUSING IN FREIBURG

SOLARSIEDLUNG AM SCHLIERBURG, FREIBURG
 STEPHANIE CORTES + CARMELLE LUMINARIAS | CARBON NEUTRAL DESIGN STUDIO | PROJECT | DESIGN PRECEDENTS

PROJECT INFORMATION

PROJECT | SOLAR HOUSING IN FREIBURG
 ARCHITECT | ROLF DISCH
 DATE | 2000
 LOCATION | FREIBURG, GERMANY
 CLIMATE | WINTER: -01 C (32 F) TO SUMMER: 25 C (77 F)
 SIZE | 11,000 m² (118403.01ft²)

PROJECT COST

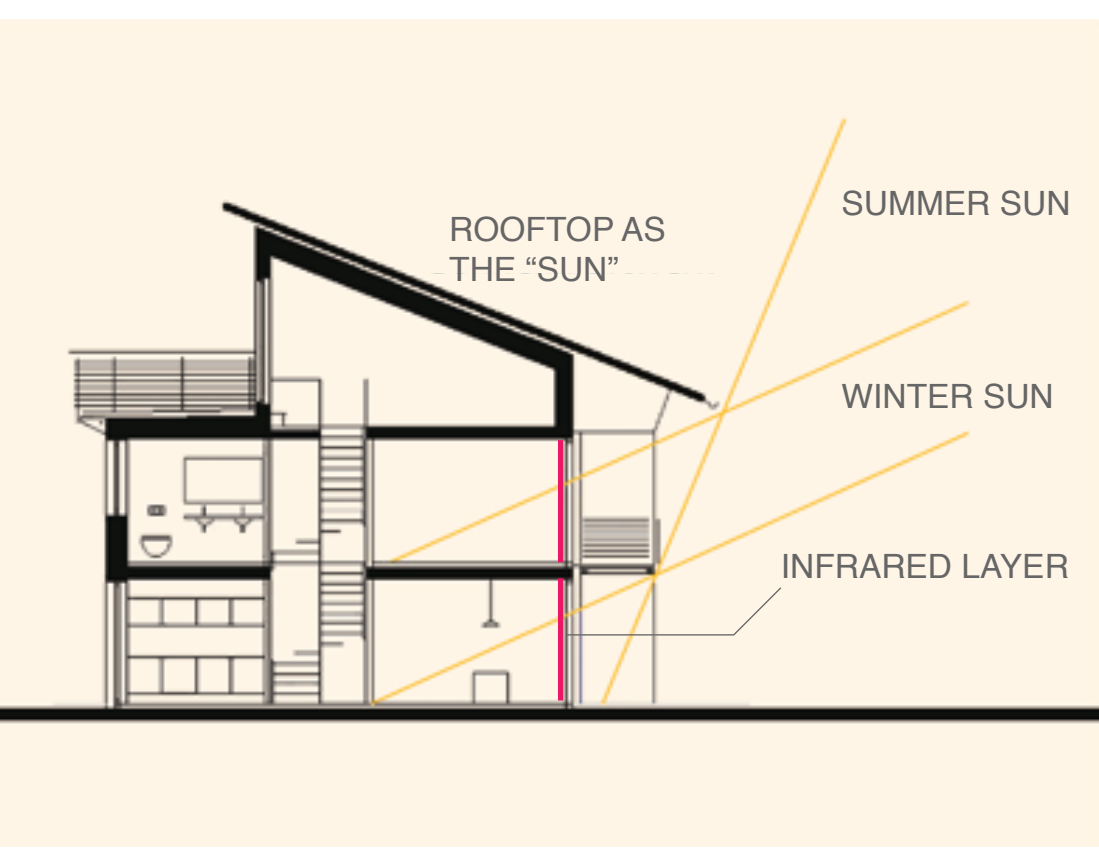
TOTAL COST | THE SOLAR SETTLEMENT WAS PAID BY INVESTMENTS THROUGH THE BUSINESSES RENTING SPACE OUT. NO COST WAS INDICATED.

SUSTAINABILITY

LIGHT PENETRATION

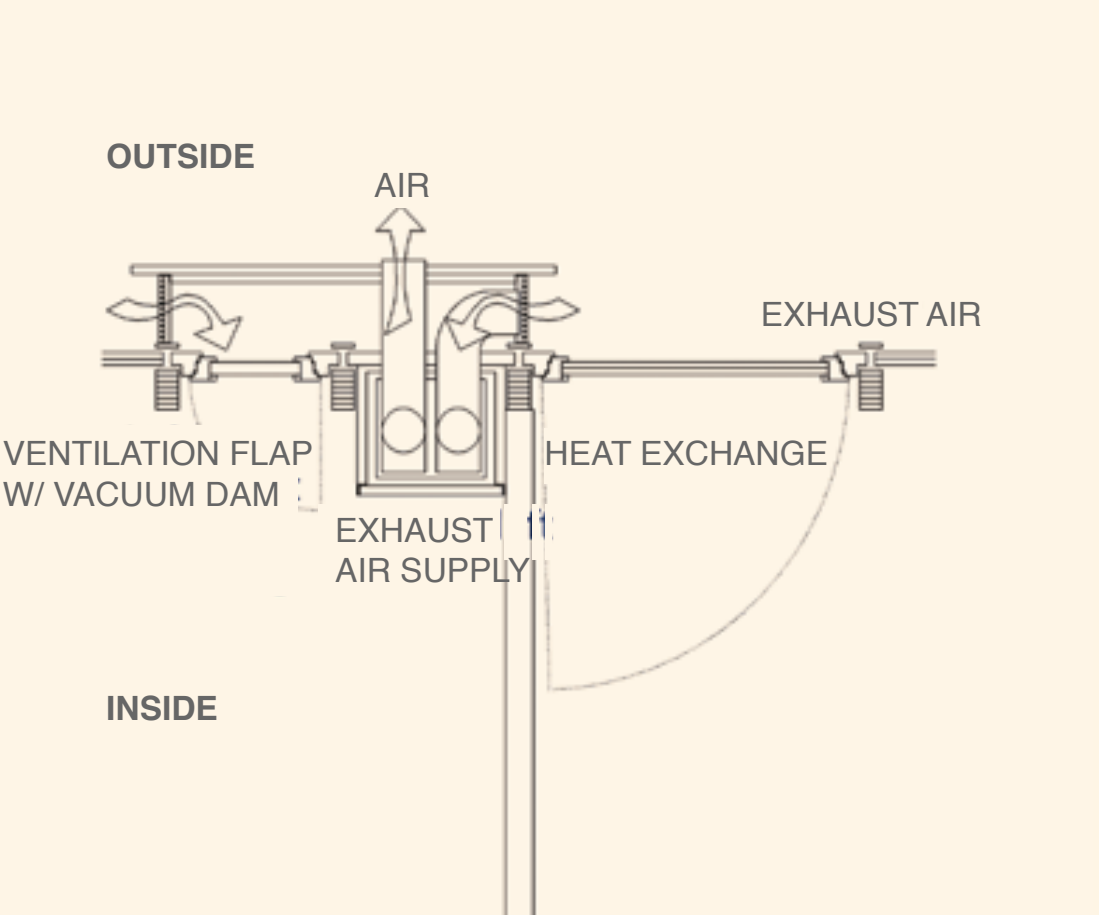
DUE TO THE FULL GLASS FACADE ON THE STREET SIDE, LIGHT IS ABLE TO PENETRATE THROUGHOUT THE YEAR THUS ELIMINATING ENERGY USAGE WITH ARTIFICIAL LIGHTING.

EASMENTS ARE PLACED TO DIRECT SUN LIGHT AWAY FROM EYE LEVEL DURING THE SUMMER SEASONS, BUT THE LONG HEAT RAYS ARE HELD INSIDE BY AN INFRARED REFLECTION LAYER ON THE INNER SIDE OF THE WINDOW PANES FOR HEATING IN THE WINTER SEASONS.



CROSS-SECTION AIR SYSTEMS

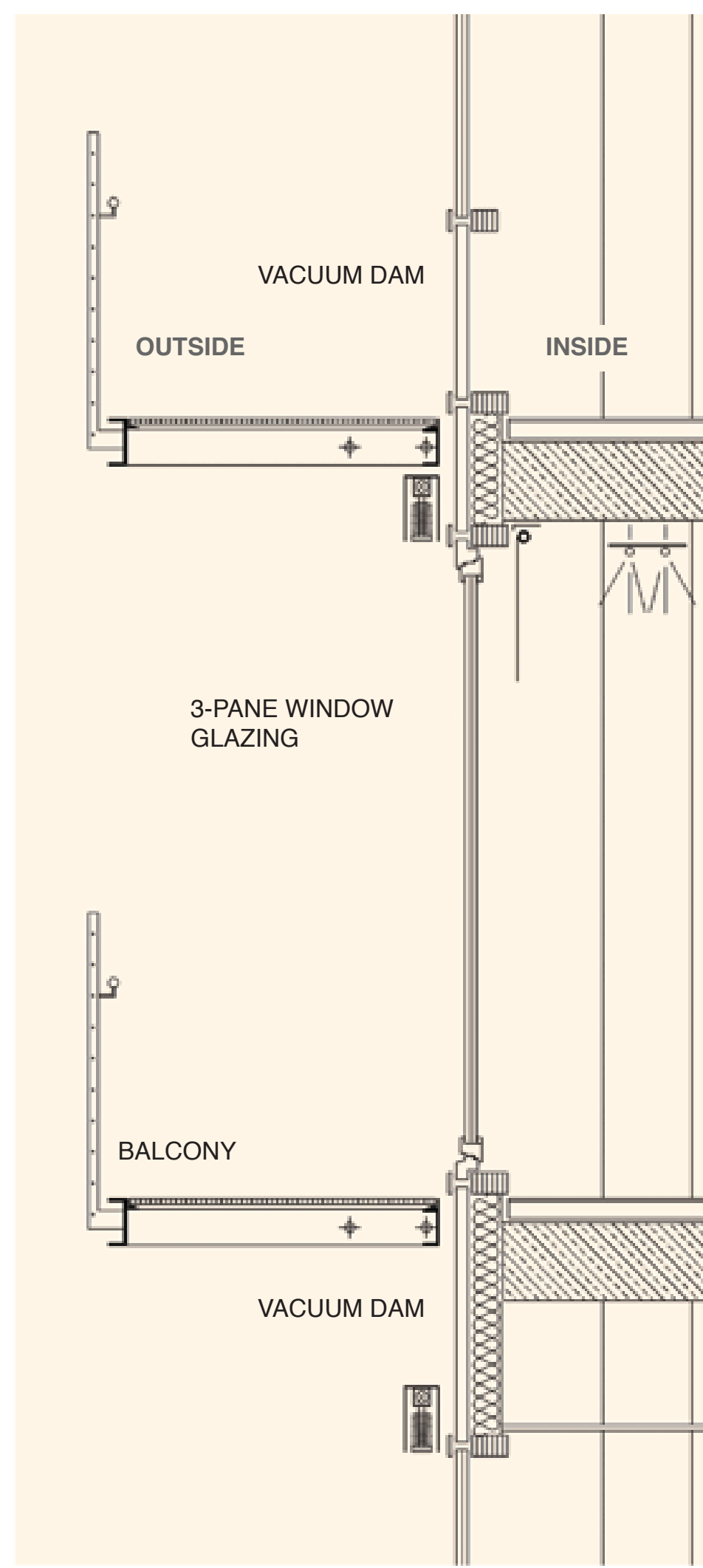
OUTSIDE WALLS, PARAPETS AND VENTILATION HATCHES ARE VACUUM INSULATED. THIS GUARANTEES 10X EFFICIENCY THAN WITH REGULAR BUILDING MATERIALS OF THE SAME THICKNESS.



WALL SECTION - FACADE

THE WALL SECTION SHOWS THE GLASS FACADE AS FUNCTIONING AS AN EXTERIOR WALL, A LATENT HEAT AND PASSIVE LIGHTING DEVICE, AND AS A VIEW TO THE OUTSIDE.

ALL AFOREMENTIONED ASPECTS CONTRIBUTE TO THE WELLNESS OF THE TENANTS OF THE SOLAR SETTLEMENT.



AIA / COTE TEN MEASURES FOR SUSTAINABLE DESIGN

INTEGRATION

THE SOLAR SETTLEMENT IS SHAPED AROUND THE IDEA THAT SUSTAINABILITY CAN BE FUNCTIONAL, BEAUTIFUL, AND COST EFFECTIVE. ROLF DISCH DESIGNED THE SOLAR SETTLEMENT TO BE A PLACE OF LIVING, WORKING, AND PLAY. IT'S INTEGRATION INTO THE SITE HAS BEEN REWARDING DUE TO THE HIGH TRAFFIC IT ACCUMULATES FROM VISITORS GOING TO RESTAURANTS, CLINICS, THE SUPERMARKET, AND DRUG STORE FOR ESSENTIAL AND LEISURE NEEDS.

FOR TENANTS, THIS PROJECT IS ESPECIALLY BENEFICIAL DUE TO THE HIGH ENERGY PRODUCTION FROM THE SOLAR ROOFS. THIS SYSTEM GENERATES MORE ENERGY THAN ALL THE TENANTS NEED TO USE, THUS THEY ARE GAINING THEIR INVESTMENT INTO THE SOLAR SETTLEMENT BACK BY PRODUCING SO MUCH ENERGY.

COMMUNITY

THE SOLAR SETTLEMENT IS AN ENSEMBLE OF MULTISTORY AND A COMMERCIAL BUILDING, THE SUN SHIP, WITH RETAIL, CLINICAL PRACTICES, AND OFFICE SPACE, WHICH FULFILLS VARIOUS FUNCTIONS FOR THE SOLAR ESTATE. SIXTY SOLAR RESIDENCES DIVIDED UPON 11,000 M² - INCLUDING NINE PENTHOUSES - WITH TOGETHER 7,850 M² FLOOR SPACE. THE SUN SHIP, FLANKING THE WEST EDGE PROPERTY, SEALS THE COMMUNITY IN WITH 1,200 M² OF COMMERCIAL SPACE AND 3,600 M² OF OFFICE SPACE.

ECOLOGY

THE SUN SHIP IS A QUANTUM LEAP IN BUILDING TECHNOLOGY. THE PLUSENERGY HOUSE IS OUR ANSWER TO THE ECOLOGICAL CHALLENGES OF THE 21ST CENTURY - A BUILDING THAT GENERATES MORE ENERGY THAN IT CONSUMES. THE 2ND SUN SHIP REAL ESTATE FUND IS AN INVESTMENT INTO THE FUTURE FOR YET ANOTHER REASON: COMPARED TO CONVENTIONAL PROPERTY, A SOLID AND SUSTAINABLE WAY OF BUILDING WITH NATURAL, HIGH QUALITY BUILDING MATERIALS RESULT IN A CRUCIAL PLUS IN TERMS ALSO OF VALUE STABILITY. THE FUND BUILDING THUS BECOMES EVEN MORE EXCLUSIVE - AND YOUR INVESTMENT HELPS TO KEEP THE WORLD A GOOD PLACE TO LIVE IN EVEN FOR YOUR GRANDCHILDREN.

ECONOMY

THE SAVING WITH TODAY'S ENERGY PRICES ARE ABOUT 1,100 TO 1,800 EUROS PER YEAR FOR HEATING DEPENDING ON THE HOME'S SIZE. THAT IS BECAUSE ONLY LITTLE HEATING IS NEEDED. ADDITIONALLY THERE ARE ABOUT 3,000 TO 5,000 EUROS ANNUALLY IN GAINS, CREATED BY THE SOLAR PANELS ON THE ROOF AND WHICH IS GUARANTEED BY LAW FOR 20 YEARS. WHETHER IT IS FOR SELF OCCUPANCY OR LEASING: A PENTHOUSE ON THE SUN SHIP ROOFS IS AN INTERESTING CAPITAL INVESTMENT, AND BECAUSE OF THE INDEPENDENCE FROM ENERGY CRISES AND INCREASING PRICES, IT IS ALSO A GOOD SAFEGUARD FOR THE FUTURE.

ENERGY

PV PANEL SYSTEMS GENERATE SOLAR ELECTRIC POWER. THIS IS FED INTO THE PUBLIC ELECTRICITY GRID AND PAID FOR ACCORDING TO THE RENEWABLE ENERGY ACT (EEG). A NEARBY COGENERATION PLANT SUPPLES THE LITTLE REMAINING HEAT REQUIREMENTS OUT OF A REGENERATIVE BIO MASS FOR THE SUN SHIP. THE CALCULATION IS SIMPLE AS THIS: ADDITIONAL COSTS BECOME ADDITIONAL PROFIT. THIS CREATES ADDITIONAL VALUE AND LOWER ENERGY COSTS FOR TENANTS.

THE PV PANELS ARE THE ROOF. HIGH ENERGY OUTPUT IS COMBINED WITH AN ELEGANT FORM. UP-TO-DATE SOLAR TECHNOLOGY IS COMBINED WITH THE WELL-TRIED AND OLD-ESTABLISHED ROOF OVERHANG, WHICH SHIELDS OFF THE HIGH SUMMER SUN. BUT THE RAYS OF THE LOW WINTER SUN FALL DEEP INTO THE ROOM.

A VENTILATION SYSTEM IS INTEGRATED TO KEEP A PERMANENT SUPPLY OF FRESH AIR - ALMOST WITHOUT LOSS OF WARMTH. THIS DEVICE IS HIDDEN BEHIND THE COLORFUL SHEATHINGS. THERE IS A VENTILATION DEVICE WITH HEAT RECOVERY WHICH KEEPS THE INSIDE TEMPERATURE CONSTANT. THE AIR FLOWS THROUGH THE GRATES ON BOTH SIDES OF THE SHEATHES DIRECTLY INTO THE ROOMS. IN ADDITION, ROOM-HIGH SHUTTERS CAN BE MANUALLY OPENED AND STAY OPEN FOR THE COOLING OF THE ROOMS DURING NIGHT TIME. THESE TEMPERATURES ARE ALSO PRESERVED BY THE VACUUM INSULATION SYSTEM THAT IS 10X MORE EFFECTIVE THAN WITH REGULAR BUILDING MATERIALS OF THE SAME THICKNESS.

WELLNESS

UNHEALTHY EMISSIONS IS NOT FATE, RATHER THE RESULT OF BAD MATERIALS. OF COURSE HEALTH-CONSCIOUS BUILDING TECHNOLOGY IS POSSIBLE. BY USING EXCLUSIVELY NATURAL, RENEWABLE, AND RECYCLABLE BUILDING MATERIAL, THERE WAS NO BURDEN TO THE INNER ROOMS AND THE ENVIRONMENT WHATSOEVER. THAT TOGETHER WITH THE NATURAL CLIMATIZATION ENSURES AND ALTOGETHER HEALTHY WORKING CLIMATE. OFFICES WILL BE TURNED TO FEEL-GOOD ROOM. ECOLOGY IS THE ORIENTATION OF FOR THE TENANTS AND EMPLOYEES, THE CUSTOMERS AND THE CLIENTS.

AN ABUNDANCE OF LIGHT AND COLOR ARE PLAYING THROUGHOUT THE SETTLEMENT TO PROMOTE CREATIVE PRODUCTION IN THE LIVING AND WORKING ENVIRONMENT. BIG WINDOWS ALLOW FOR USERS TO SEE OUTSIDE THUS ADDING ANOTHER OUTLET TO CREATIVITY AND HEALTHY LIVING.

RESOURCES

THE SOLAR SETTLEMENT USES MATERIALS THAT ARE:

- NATURAL
- RENEWABLE
- RECYCLABLE



CHANGE

IN THE TIMES OF CLIMATE CHANGE AND PROGRESSING DESTRUCTION OF THE ENVIRONMENT, THE SUN SHIP IN FREIBURG IS A SIGNAL FOR CHANGE. WITH ITS NET ENERGY GAINS AND EFFICIENCY IN TERMS OF RESOURCES IT IS A ROLE MODEL TO EXERT SIGNIFICANT INFLUENCE. THE SUN SHIP: A BEACON THAT SHOWS US THE WAY OUT OF THE FOSSIL FUEL ERA INTO THE SOLAR ERA.

DISCOVERY

RECOGNITION FROM THE PRESS:

- Disch's energy savings principles impact on the architectural forms chosen, because while the form is supposed to follow the building's function, the criterion of "form follows energy" is given an equal status here. *Family Home, 3/05*
- With the Schlierberg Solar Settlement, the company has set new standards for solar construction and residences in the 21st century. The Schlierberg Solar Settlement means that the future of solar construction and residence in harmony with nature is already a reality today. *Der Monat, 3/06*
- Making possible today what was impossible yesterday. Houses that produce more energy than their inhabitants can consume. A high quality of life thanks to healthy construction materials. Solar energy as the driving force in society. *Badische Zeitung, 7/05*

