Transform!
Designing the Future of Energy

Exhibition Concept

Vitra
Design
Museum

Contents

The Exhibition

Energy is one of the forces that keep our society going; energy is political; energy is invisible. The buildings, infrastructures, and devices for generating, distributing, and using energy are products of design, however, and design has a central role to play in the urgently needed transformation of the energy system. The exhibition »Transform! Designing the Future of Energy« explores the ongoing energy transition from a design perspective: from devices for harvesting renewable energy to solar buildings and wind turbines, from smart mobility to self-sufficient cities. The exhibition probes into the global thirst for energy and examines how design can assist us in switching to renewable energies and reducing our energy consumption. What action do industry and politics need to take, what can each individual contribute to a successful energy transition?

The exhibition »Transform! Designing the Future of Energy« consists of four sections. Moving from small to large, it begins with the human body and how we position ourselves within the contested terrain of energy politics. From the next section, which presents an overview of everyday energy tools, it goes on to look at construction and mobility. The exhibition is rounded off by a final section addressing the energy dimension of urban and infrastructural planning. Displays feature innovative product design, graphic design, and speculative design as well as architectural prototypes, scale models, and films made specially for the exhibition. A historical perspective is provided by a number of case studies tracing the relationship between design and the energy sector throughout the twentieth century.

COVER:
Helen Stelthove, 2024

PREVIOUS PAGE:
Léon Félix, Helios, foldable solar cooker, 2023

OPPOSITE PAGE:
Jule Bols and Sophia Götz, Pneuma, wind turbine and greenhouse, part of U.F.O.G.O project at ECAL / University of Art and Design, 2023

Human Power

At the start of the exhibition, large scale photographs by renowned photographers Mitch Epstein, Ed Kashi and Luke O'Donovan convey, how different sources of energy have informed our cities and landscapes. All forms of energy generation, distribution, and storage have a spatial footprint: they require buildings and construction. The true costs of energy – from both fossil and renewable sources – are all too often externalised, making the energy sector a much contested and politically charged terrain, particularly now, while the energy transition is on-going. Placards and protest signs, handbills and flyers from different countries and periods reflect the development of energy politics across the last five decades ranging from government programs to activist groups: from the Atoms for Peace programme launched by US President Eisenhower to the first anti-nuclear-power protests, from the promotion of wind and solar energy to civil resistance against solar power plants and wind farms – from environmental activism to NIMBY (Not In My Backyard) culture.

An interactive installation, created exclusively for the exhibition, invites visitors to discover their own power. Pedalling away on exercise bikes that transform human energy into electricity, users are immersed in a videogame like setting, enabling them to compare their energy potential with the amount of energy needed in daily routines such as taking a shower, making coffee, or surfing the internet. Information graphics conceived for the exhibition, contextualise this human energy production within global energy consumption and how it currently relates to the different types of energy sources.

Among these, petroleum is still in the lead: a slide show of archival maps and photographs documents more than a hundred years of a global »Petroleumscape« (to use a term coined by Carola Hein) in the making and of the path dependencies thus created from which we need to break free.

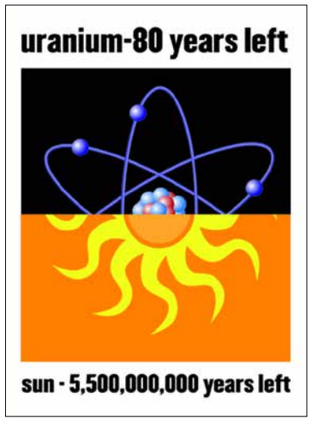
ABOVE:
Anne Lund, The Smiling Sun, logo of the anti-nuclear power movement, 1975

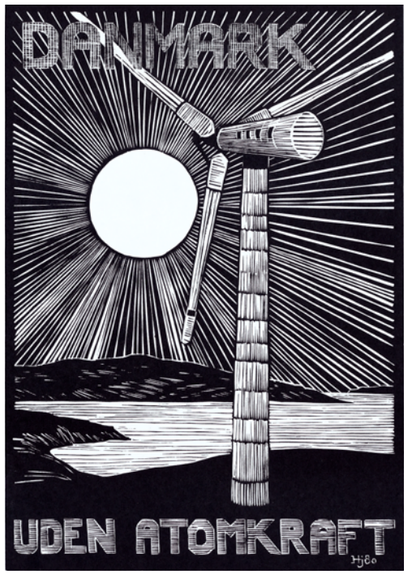
OPPOSITE PAGE, CLOCKWISE FROM TOP:
Installation view, »Transform! Designing the Future of Energy«

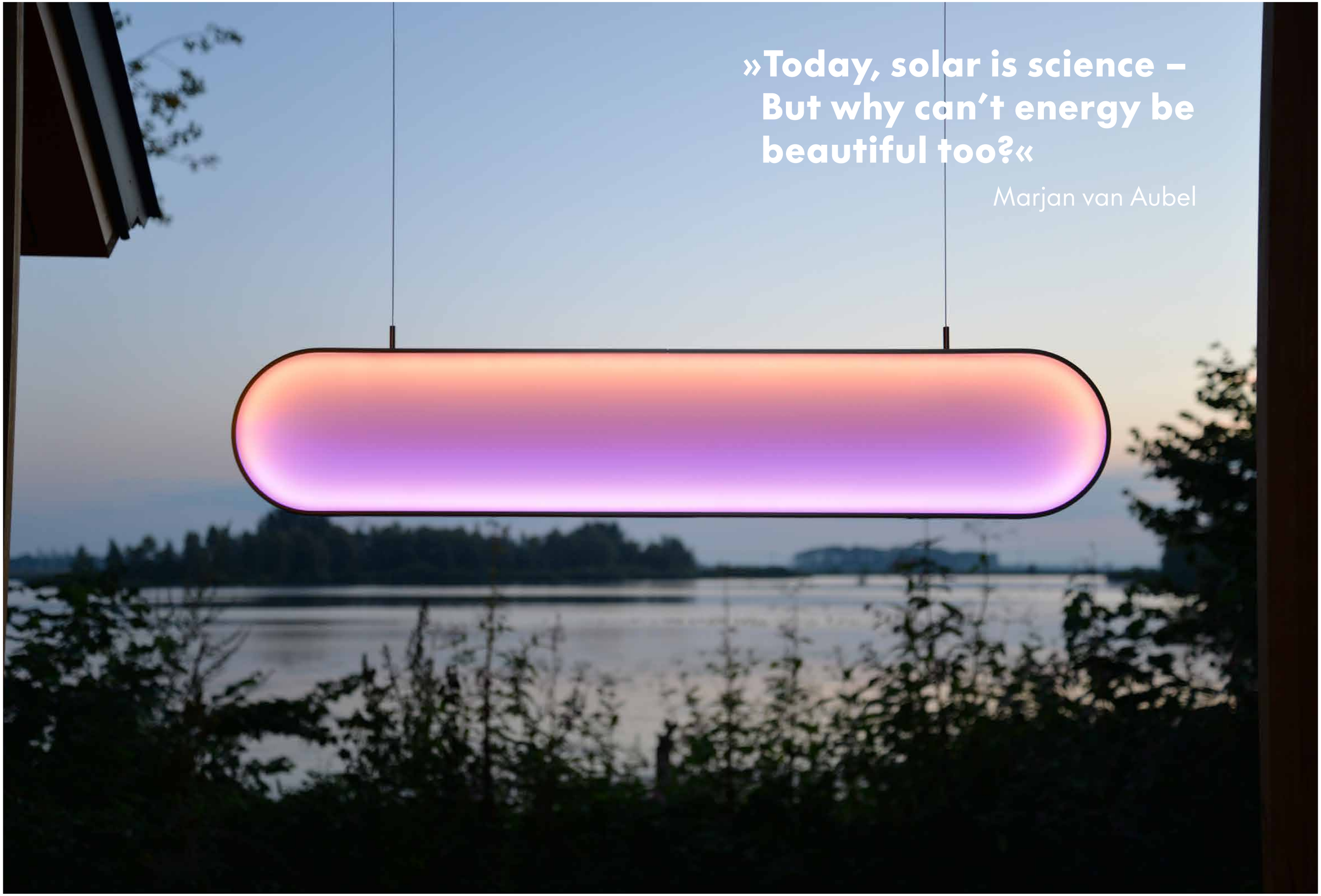
Unknown Designer, »Danmark Uden Atomkraft« [Denmark Without Atomic Power], Denmark 1980

Richard Vickaryous, »Uranium – 80 years left. Sun – 5,500,000,000 years left«, USA, 2009

Nikolay Silaev, Atom v mirnych celjach! (Atoms for peaceful purposes), 1960







»Today, solar is science – But why can’t energy be beautiful too?«

Marjan van Aubel

Room 2

Energy Tools

Advances in photovoltaics, turbine technology, and biogas production today make it possible to use renewable energy efficiently even on a small scale. While some of the new tools were inspired by the »off-grid« lifestyle embraced by many people around the world, others were developed for communities without access to the grid. The second section of the exhibition introduces off-grid options for harvesting renewable energy in and around the home. These include products at the experimental stage, prototypes, serial products, and a number of speculative design projects. Marjan van Aubel's Sunne represents a new breed of sun-powered lighting design. Pauline van Dongen's creations harvest solar energy by means of textiles with integrated photovoltaics; the 25+- curtains developed by Esmée Willemsen & Anna Koppmann store heat by means of a phase-change materials printed on the fabric. To replace open fires in off-grid communities, Stefan Troendle has designed a cooker fuelled by green hydrogen.O-Innovations are working on prototypes for omni-directional wind turbines making the most of wind energy in windy cities. The archetypal artefacts designed by Pablo Bras offer a contemplation on the little flows of energy that always eddy around us, such as flowing water or gusts of wind.

The exhibition also features solar-powered objects from the 1950s, when solar energy was first discussed as an alternative to fossil fuels. It was during this period that the Bell company launched the first photovoltaic cell, architects began to develop solar houses, product designers fitted electronic devices with photovoltaic cells, and Charles and Ray Eames created the Solar Do-Nothing Machine as a playful visualisation of how solar energy makes things move.

PREVIOUS PAGE:
Marjan van Aubel, Sunne, solar powered lamp, 2022

ABOVE:
mischer'traxler, »The Idea of a Tree«, bench, 2008

OPPOSITE PAGE, CLOCKWISE:
Aurea Technologies, Shine Turbine, portable wind turbine, 2023

Pauline van Dongen, Solar Shirt, 2014

Charles and Ray Eames,
Solar Do Nothing Machine, 1957

Esmée Willemsen, Anna Koppmann,
Plus Minus 25°C. thermal regulating curtains, 2020

Transformers

The building and construction sector accounts for around 36 percent of global energy consumption, and the transport sector's share is nearly as high. The exhibition's third part presents innovative solutions for reducing energy demand in both sectors.

Among the building projects featured is Snohetta's Powerhouse Brattørkaia in Trondheim. The building combines photovoltaics with the use of sea water for heating and cooling; its concrete elements serve as a kind of battery for storing heat and cold. Powerhouse Brattørkaia produces more than twice as much energy as it consumes, feeding the surplus into a local microgrid. The Day After House by TAKK architecture demonstrates that improving the energy balance of existing structures does not necessarily require high-tech. The retrofit is based on a wooden box-in-box concept making use of natural insulation materials and cross-ventilation, creating an apartment with different thermal zones that need little to no heating.

While the energy transition may be expected to involve a switch to electric automobiles, this is only a small part of the changes in mobility we will see in the future. Projects presented in the exhibition include an experimental lightweight solar car by Team Sonnenwagen and Ono Motion's Cargo E-Bike, which was designed to replace diesel-powered vehicles in courier and parcel services.

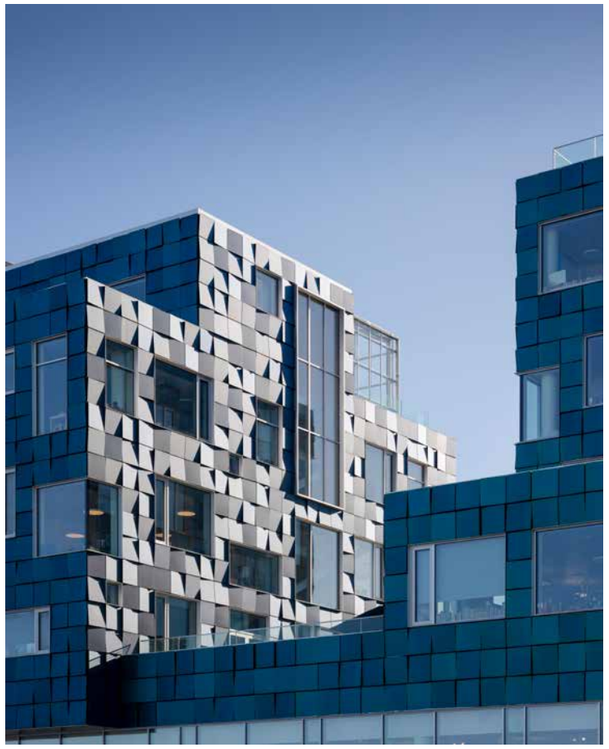
ABOVE:
Team Sonnenwagen Aachen, Covestro Sonnenwagen, solar powered race car, 2019

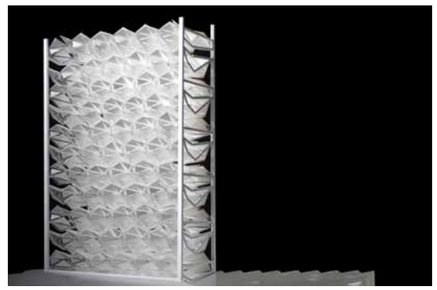
OPPOSITE PAGE, CLOCKWISE:
TAKK // mireia luzárraga + alejandro muiño, The Day After House, 2021

Ben Berwick, Solgami, solar screen, 2019

Onomotion, Ono Pioneers Edition, E-Cargobike, 2020

CF Møller Architects, Copenhagen International School, Copenhagen, 2013–2017





»SolarVille aims to showcase that, when combined, technologies such as solar panels, micro-grids and blockchain open new opportunities for [...] people to leapfrog traditional grid electricity.«

Space 10

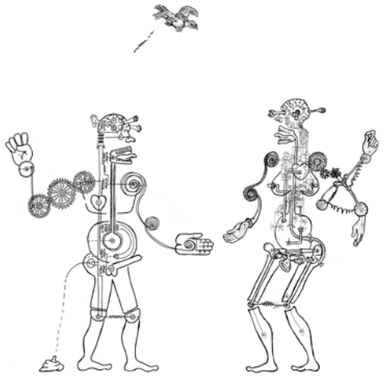
Room 4

Future Energyscapes

The efficient use of renewable energies will require new and different distribution networks. The fourth section of the exhibition addresses the opportunities offered by the energy transition for redefining and decentralising energy production and use. Renewable energy can be generated where it is used, obviating the need to ship and distribute fuels across long distances. Space Ten's Solarville envisions a town powered by solar energy where production, distribution, and consumption are steered by blockchain management. ECAL's U.F.O.G.O project is a compelling case study on how to increase the acceptance of local windfarms by designing site-specific wind turbines.

The transition to renewable energies that depend on natural cycles will also require new structures for regional and local energy storage. Carlo Ratti's Hot Heart concept for Helsinki proposes a series of islands to be moored off the Finnish capital's coast with the dual function of storing thermal energy and serving as a hub for recreational activities. A film commissioned from Transsolar and Urban Catalyst will visualise why energy needs to become an integrated layer of urban planning. And what do we do with the obsolete infrastructures of the fossil age? Honglin Li and XTU Architects propose turning offshore oil platforms into holiday resorts or ocean plastic waste incineration plants.

The exhibition also looks back at historical visions of renewable energy networks, from Atlantropa to to OMA's Eneropa study, juxtaposing them with present-day conceptions like the European Space Agency's plans for harvesting solar energy in space or the Solarpunk movement dreaming of new, green cityscapes in tune with nature and powered by the sun. The exhibition seeks to show that designing the transformation of the energy system means far more than new ways of harvesting renewable energies and making better use of existing resources and structures. It means altering the pace at which our societies function, moderating the need for energy and, in other words, redesigning the way we live.



PREVIOUS PAGE:
Space 10, Solarville, miniature neighbourhood (1:50 scale) powered by solar energy, 2019

ABOVE:
Kris de Decker, Melle Smets, Human Power Plant, detail 2023

OPPOSITE PAGE, CLOCKWISE:
Eneropa, part of OMA's Roadmap 2050 vision, 2010

Carlo Ratti, Hot Heart, thermal energy storage, vision for Helsinki 2030

Hamburger Energiewerke, Energiebunker Hamburg, 2013

XTU Architects, X_Land, rendering, 2020

Leon Tukker, Atomhawk Solarpunk challenge – Nova Nakhon Sawang

Facts

Exhibition floor space
600 – 1,000 m² / 6,000 – 10,000 sq ft

Exhibits
Design objects, models, posters, film, photography, and prototypes

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Exhibition Tour
»Transform! Designing the Future of Energy« is available to international venues until approximately 2029. The exhibition travels including all exhibits, contextual films and images, exhibition architecture and all media equipment.

Venues
Vitra Design Museum, Weil am Rhein
23 March 2024 – 1 September 2024

↗ Tour Dates

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Opposite page: Christa Carstensen, Harvest / Solar, solar-powered table lamp, 2023
Back Cover: Philips Design Probe, Microbial Home, Bio-Digester Island, 2011

Installation Shots

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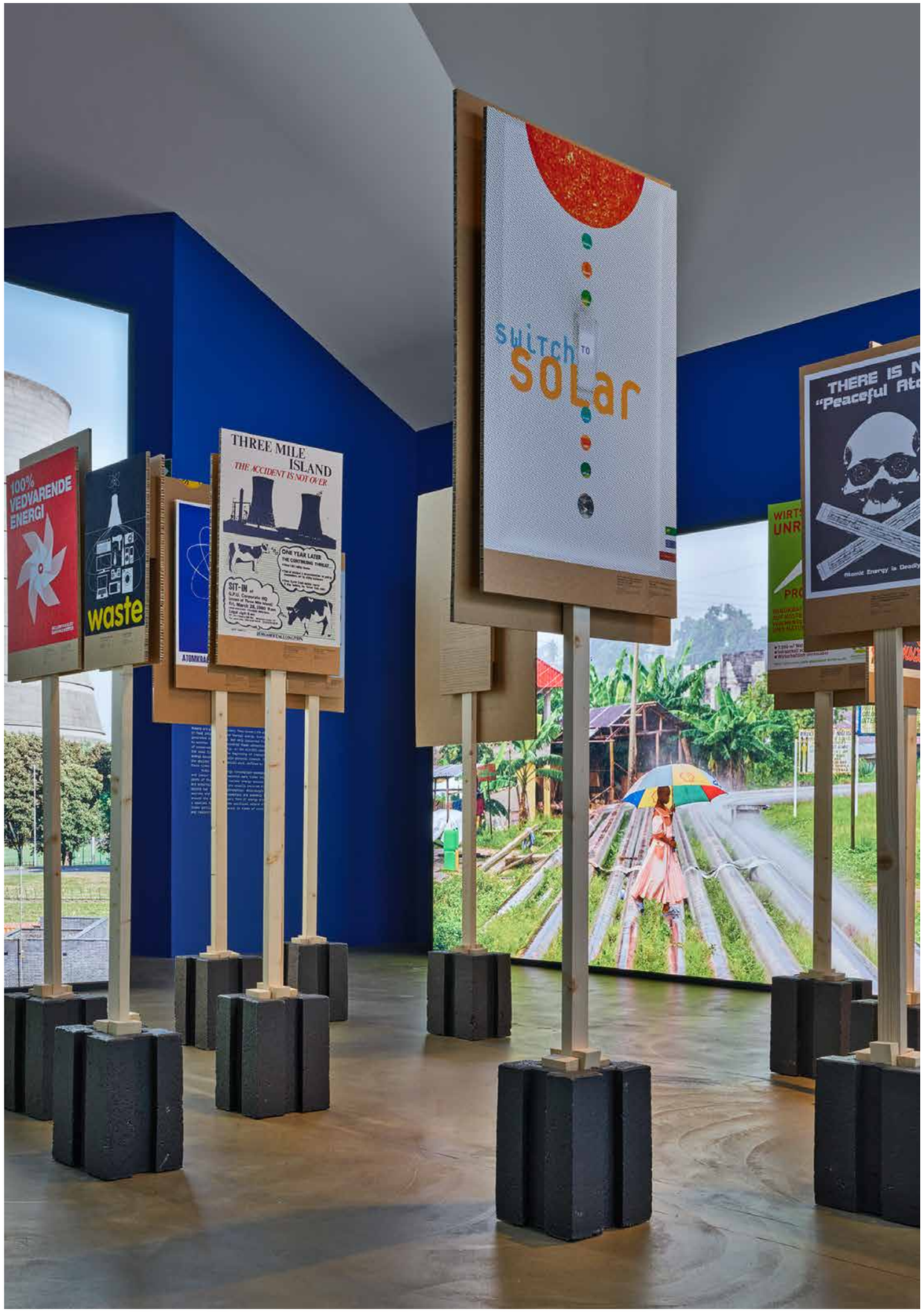
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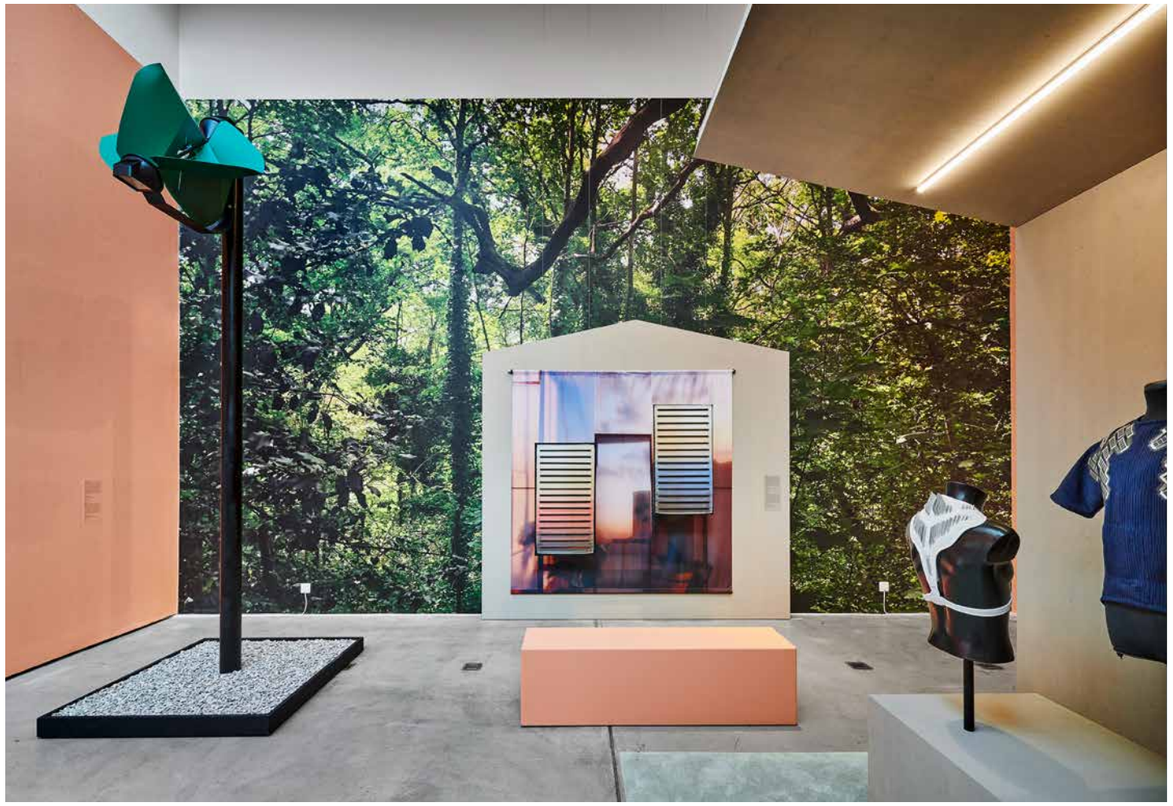


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Video

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