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Pharmacy Marx

Case study Zero waste No.2



Fig. 00 Façade Pharmacy Marx in Skypark Business Centre

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Participants & Key Facts

Client	Isabelle Marx
Architecture	metaform architects
Project leader	GG Kirchner
Engineer	Jean Schmit Engineering
Photographers	Interior: Steve Troes Exterior: Simon Menges & Nino Tugushi
Location	Findel, Luxembourg
Status	Completed
Year	2025
Gross floor area	160m ²
Category	Healthcare Architecture
Typology	Pharmacy
Program	Pharmacy, customer area, automated dispensing system, technical core, vaccination room, private area with overnight facilities for night shifts
Mission	Complete architectural mission
Nominations	Nominee Callwey Healing Architecture Awards 2026



01

Introduction

01 Introduction

Reduced to the essential

Pharmacy Marx is a newly completed pharmacy located in the Skypark building at Findel, directly adjacent to Luxembourg Airport.

The interior combines a dark, industrial ceiling with warm wooden surfaces, creating a contemporary yet inviting atmosphere.

The geometry of the floor plan, together with the intention to create an open and clearly structured layout, defines the spatial organization. A subtle spatial separation distinguishes the customer area from the technical core, including the semi-glazed automated dispensing system, which remains visible from the outside and offers insight into the pharmacy's operational processes.

Further inside, the space transitions from shared work areas to more private zones, establishing a clear progression from public to professional functions.



Fig. 01 Staff area with visible ceiling

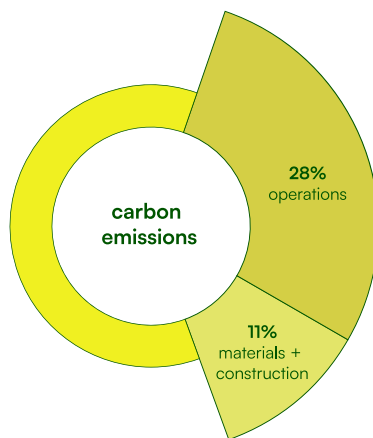
02

Circular Architecture

02 Circular Architecture

At Metaform, responsibility and circularity are part of our core values. It should be grounded in genuine conviction and real impact, rather than in mere “image.” Our approach is guided by DAR — Design, Architecture Research, which understands architecture as an interconnected collaboration of disciplines. Design emerges through the interaction of research, material, context and use, with the aim of creating durable and context-responsive architecture. The human scale remains central, while resources and environment are considered as part of a larger system. Too often, however, sustainability is reduced to marketing. Enough green elements are applied to appear responsible and to promote the idea of sustainability, without achieving any meaningful effect. Green façades, solar panels, rooftop gardens, tree-lined balconies, or ecological materials such as wood, clay, or stone do not automatically make a project sustainable. They are often little more than superficial architectural greenwashing. Today, 39% of energy-related CO₂ emissions originate from the construction and real estate sector. Architects have the potential to significantly reduce this figure and therefore carry a clear responsibility. Fig.2

True sustainability begins with considering the entire lifecycle of a building. This includes the extraction of materials, energy consumption during use, as well as demolition and waste management.



39%

of energy-related CO₂ emissions are caused by the buildings + construction sector

28%

operations:
heating, cooling, lighting,
powering buildings

11%

materials + construction:
“embodied carbon”

Fig. 02 CO₂ emissions in construction sector

Case study series at Metaform Skinperium, Pharmacy Marx & Epernay 18

The case study projects emerged from a growing awareness of the significant amounts of waste generated on construction sites. The environmental impact of construction waste, combined with the urgent need for sustainable practices, motivated our team to develop a new Zero-Waste approach.

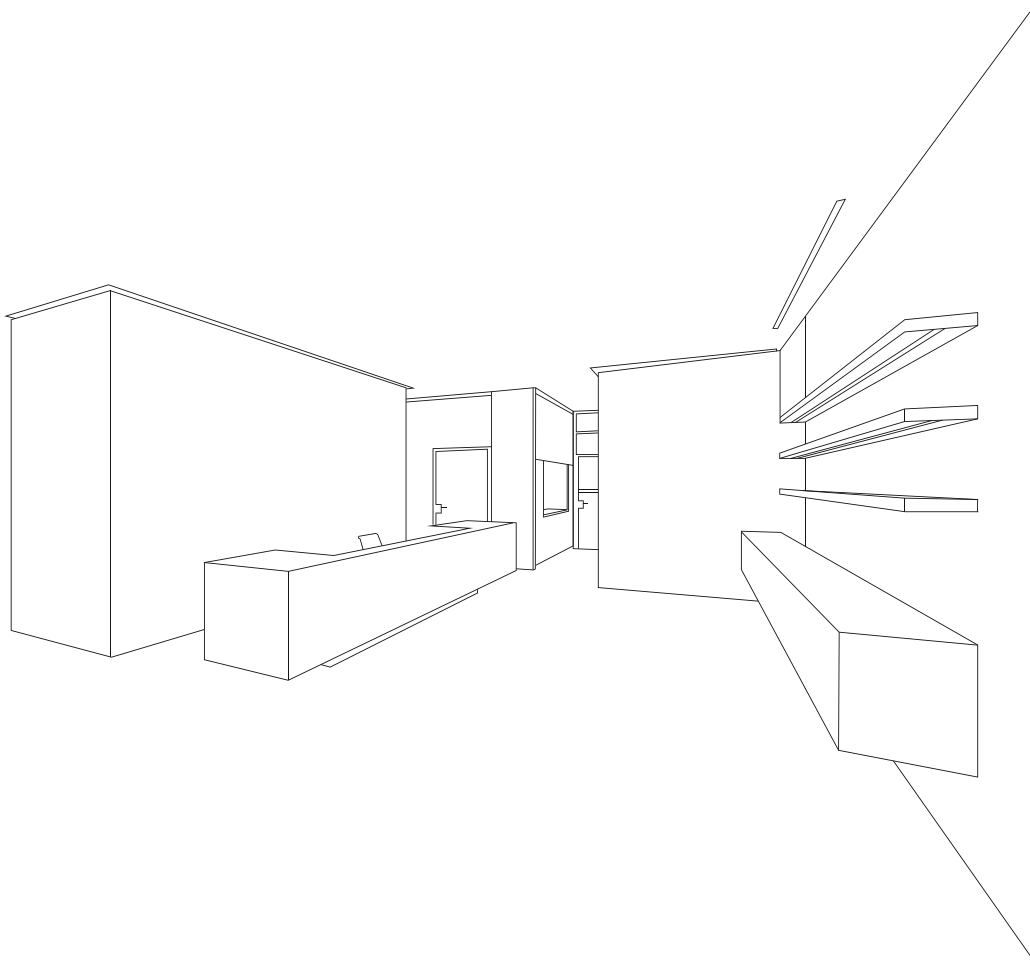
The first case study was the Skinperium project, where the construction phase was carried out with the strict objective of generating no waste at all. Most gypsum board offcuts and remnants were directly reused on site for walls or flooring, reducing waste by more than 80 percent.

The second project was Pharmacy Marx, located in the immediate vicinity of Luxembourg Airport. Here, the Zero-Waste approach was implemented more rigorously, and reduction became a true design method. Unnecessary layers were avoided, each building element was designed to fulfil multiple functions, and waste was reduced to nearly zero.

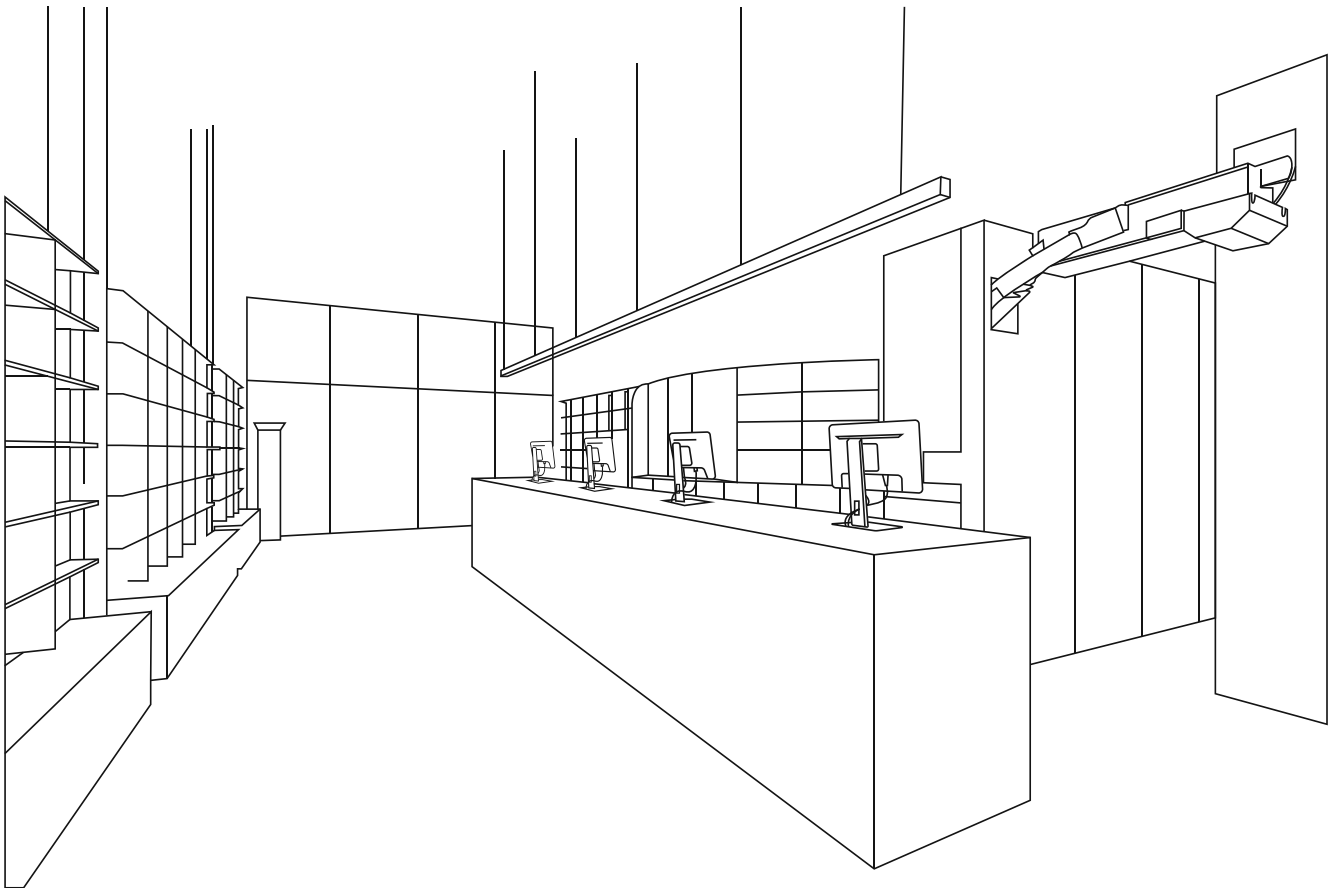
The third case study is currently under construction. For the Epernay office building, principles of reuse, Zero-Waste, and resource-conscious design are combined with a low-tech approach to create a building that derives its performance from the design itself rather than from complex technical systems. This significantly reduces energy consumption, maintenance requirements, and long-term operational impact.

With each case study, Metaform aims to identify what worked well and what did not, and to determine opportunities for improving future projects. This approach allows us to gradually transfer the knowledge gained to new projects. In this way, we not only refine our working methods, but also enhance sustainability in construction.

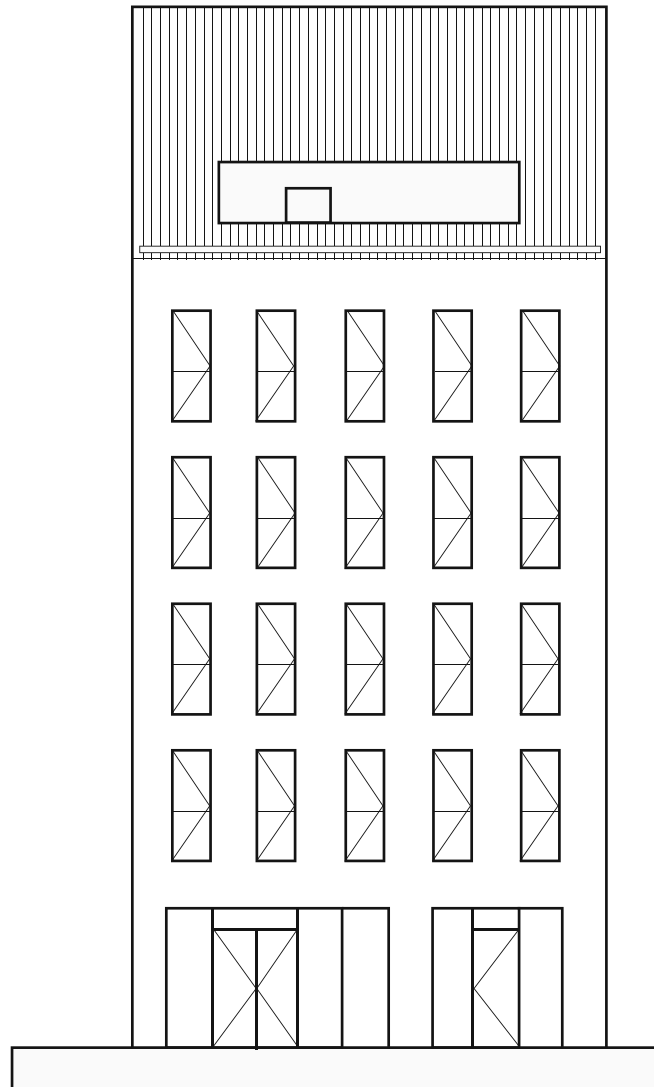
“For sustainability to be powerful, it has to be real.”



Case Study 1: Skinperium



Case Study 2: Pharmacy Marx



Case Study 3: Epernay (in construction)



03

Design Approach

03.1

Pharmacy Marx

Pharmacy — Reduction as a Design Approach

The pharmacy is the second project in a series of small case studies that explore material economy, resource conservation and architectural reduction in an experimental way. It builds on insights from Skinperium, a project in which the construction phase was carried out with the strict goal of producing no waste at all. This approach was further developed in the pharmacy project.

From the very beginning, the design focused on using as little material as possible and considering each component in multiple ways: functionally, structurally and atmospherically. Walls were replaced with built-in furniture that provides storage, spatial enclosure and structural stability at the same time. By avoiding additional construction elements, the design achieves a concentrated and clear spatial order in which every element has a precise purpose.

The high table in the lounge area serves as a dining table for the pharmacists during the day and contains a fold-out bed that is used during night shifts. This dual function illustrates the fundamental design attitude: architecture as compression rather than addition.

The idea of reduction continues throughout the construction process. Waste avoidance remained a priority during execution, and apart from a minimal amount of tile offcuts, no waste was generated on site. In the production of the furniture, the approach to material optimization was refined even further. Cutting patterns and workflows were developed to ensure that no leftover pieces would result. The small amount of unavoidable offcuts is completely reused in the workshop.

A suspended ceiling was consciously omitted. The existing technical installations remain visible and become part of the architectural expression. This decision follows the logic of the project. Nothing is concealed and nothing unnecessary is added. The visible technical elements add an honest and constructive dimension to the spatial composition and emphasize the idea that reduction means transparency and precision rather than concealment.

The pharmacy exemplifies an attitude that understands sustainability not as an aesthetic label but as an integral part of architectural thinking. It shows that omission can lead to a sense of density and to an architecture that achieves maximum impact with minimal material.



“The pharmacy is a small-scale project with a significant challenge: only five months from design to completion. Especially under this time pressure, it was important for us to demonstrate that sustainability and zero-waste strategies can be integrated from the very beginning of the design process.”

GG Kirchner — Partner & Lead Architect Pharmacy Marx



Fig. 03 Pharmacy Marx | Client Area



03.2

Interior Design Description

The following description outlines the interior design of Pharmacie Marx, located in the Skypark building at Luxembourg Airport.

The pharmacy occupies a total area of 150 m², including a 70 m² retail space.

The back-of-house area is visually separated from the glazed façade by a blue screen-like partition measuring 2.80 metres in height. Behind this element are grouped the Copy Corner, unpacking area, storage spaces, administrative office, laboratory, staff changing room, kitchenette, night-shift rest area, and WC. By stopping short of the ceiling, the partition maintains visual openness throughout the space while providing a functional separation that accommodates multiple uses.

The exposed ceiling, including all technical installations, is painted black to visually recede into the background, creating a calm and unified atmosphere.

In keeping with the architectural language of Skypark, the selected materials balance simplicity with warmth. The retail shelving and all built-in back-office furniture are crafted from white fir, introducing a natural and understated character. The separating partition is finished in HPL, while the sales counter is made of white Corian, creating an elegant and minimalist contrast.

The flooring consists of grey stone-effect ceramic tiles in a 30 × 60 cm format, reinforcing the restrained and contemporary aesthetic of the interior. Together, the materials establish a harmonious environment that reflects Skypark's raw yet refined architectural identity.

A central feature of the pharmacy is the semi-glazed dispensing machine by Gollmann. Visible from outside through its transparent enclosure, the system allows visitors to observe part of the pharmacy's internal operation in real time. This element aligns closely with Skypark's architectural approach, where technical processes, material honesty, and transparency become part of the spatial experience.

Interior Plans — Pharmacy Marx

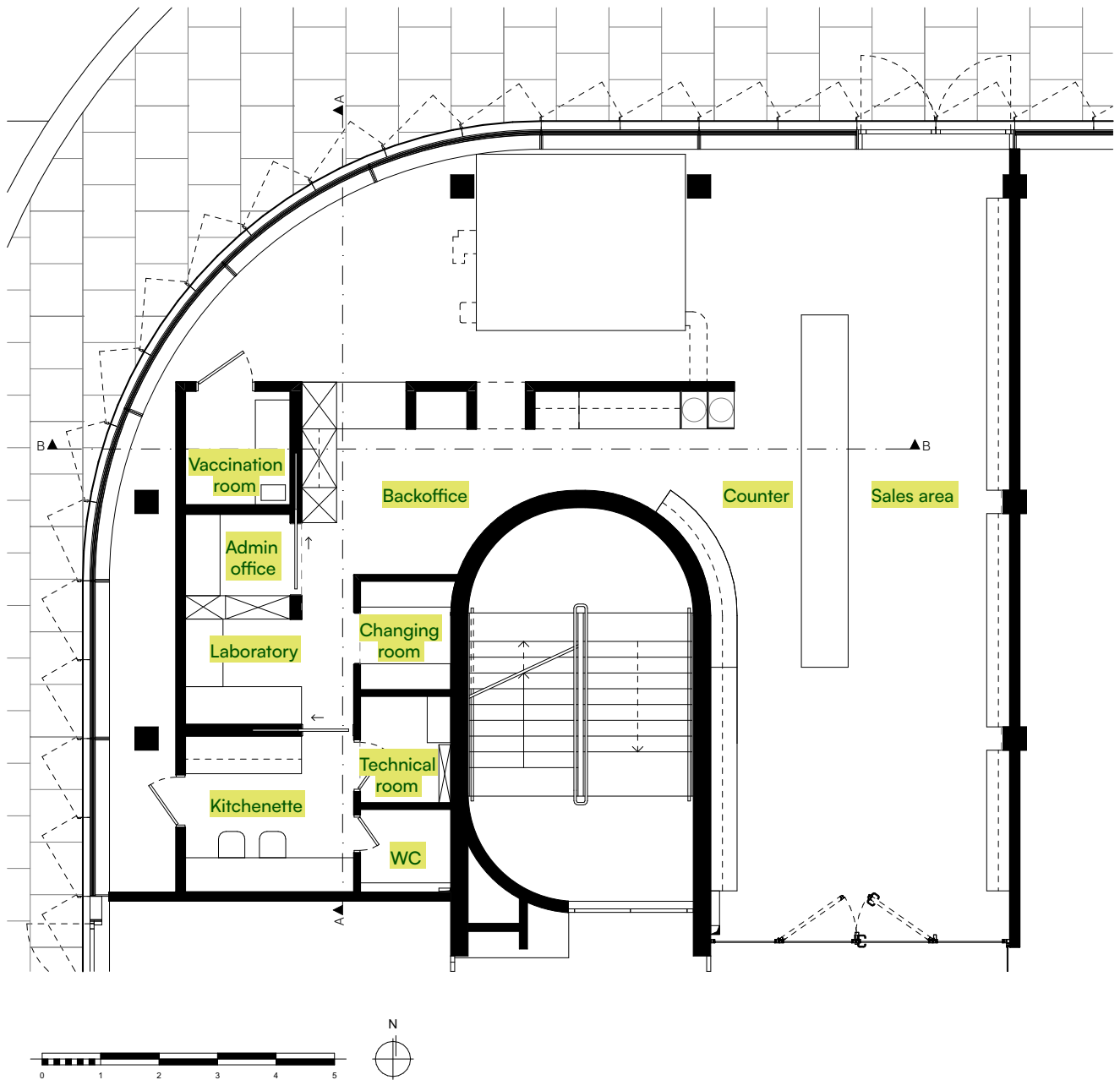


Fig. 04 Floor Plan

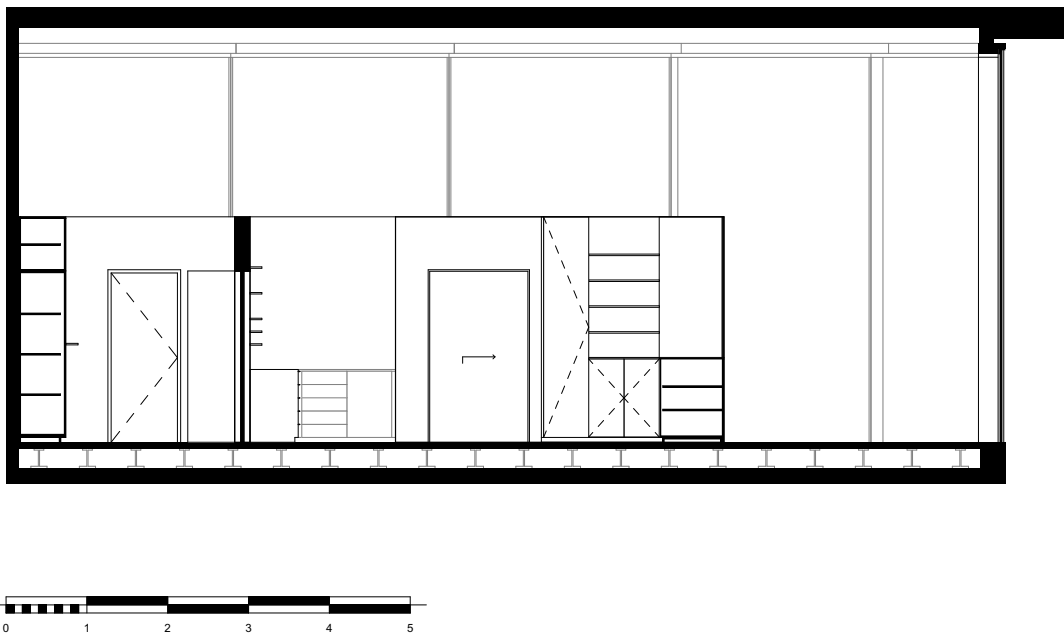


Fig. 05 Section A

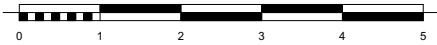
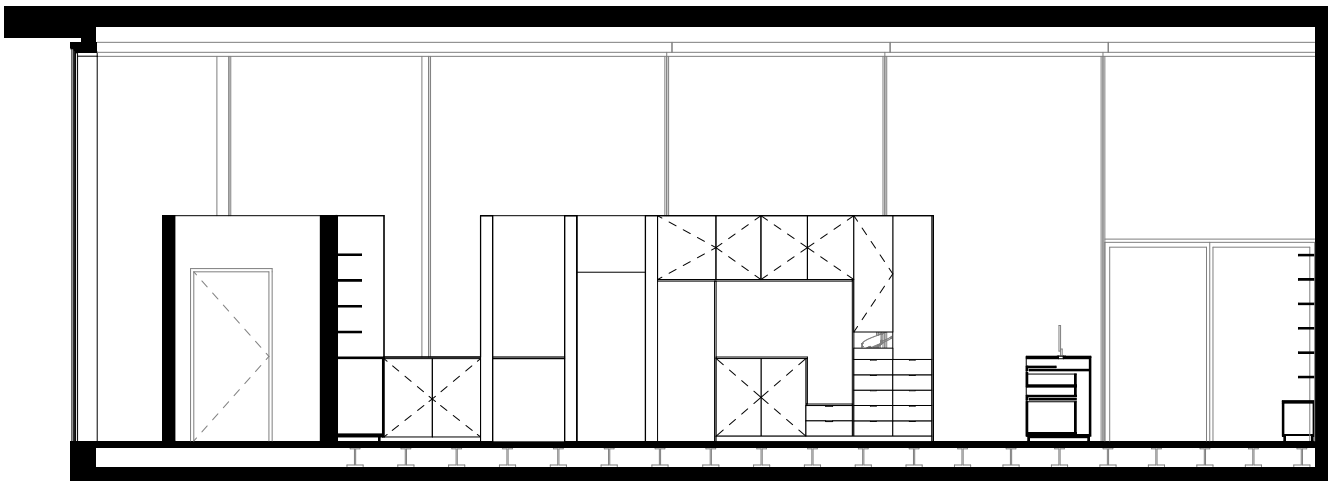


Fig. 06 Section B

04

Integrated systems

04.1

Integrated Systems

Kitchen furniture

All furniture is custom-made and constructed from HPL and spruce. The choice of materials and their execution deliberately reference the existing context, particularly considering that the Skypark is one of the largest timber construction buildings in Europe. Only the three kitchen stools and the bench in the customer area are specified as off-the-shelf items. Fig.7

The dispensing robot

Gollmann is a German manufacturer of automated dispensing systems. Each unit is individually planned and custom-made to respond precisely to the specific spatial conditions and functional requirements on site.

Gollmann systems are characterized by a specialized, compact design that enables significantly more efficient use of space. Compared to conventional systems, they require considerably less floor area and can therefore be integrated into existing structures in a particularly space-saving manner. They are substantially more compact than conventional robotic solutions. Fig.8

“Multifunctional elements minimise material use and maximise spatial efficiency.”



Fig. 07 Pharmacy Marx | Staff Kitchen



Fig. 08 Pharmacy dispensing robot



Fig. 09 Compounding | Pharmacy laboratory

04.2

Main principles

Resource use

Material consumption is minimised through a design strategy of reduction and multi-functionality. Additive layers are avoided, and construction waste was reduced to nearly zero.

Social added value

A clear and open spatial organisation enables intuitive use and transparency. The visible automated system provides insight into operational processes.

Circular approach

The project follows a zero-waste methodology, where each element fulfils multiple functions. Furniture replaces walls, integrating structure, storage and spatial division.

Product specifications

Custom-made furniture in HPL and spruce is precisely fabricated to avoid material waste. The compact automated dispensing system enables efficient use of space.

Innovative ideas

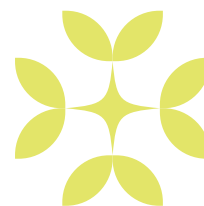
Reduction is applied as a design method, where architecture is understood as condensation rather than addition, achieving maximum effect with minimal means.



resources



reuse



waste



05

Nomination
+ Conclusion

05.1 Nomination

Healing Architecture Award 2026

Pharmacy Marx was nominated for the Callwey Awards 2026 — Healing Architecture, an international recognition highlighting exemplary healthcare environments. The nomination acknowledges the project's holistic approach, where architectural reduction, material responsibility, and human-centred design contribute to a calm, transparent, and welcoming healing environment.



05.2

Conclusion

Pharmacy Marx demonstrates how architecture can achieve more by using less. Developed as the second case study in Metaform's ongoing research into circular and zero-waste design, the project explores reduction not as a limitation, but as a design strategy capable of generating spatial quality, efficiency, and meaning.

Through the careful elimination of unnecessary layers, the integration of multiple functions within single elements, and a construction process that produced virtually no waste, the pharmacy shows how sustainability can be embedded in architectural thinking from the very beginning. Every component serves a clear purpose, contributing simultaneously to function, atmosphere, and resource efficiency.

At the same time, the project places people at its centre. The open layout, visible technical processes, natural materials, and warm spatial atmosphere create an environment that supports both users and staff. Rather than relying on technological complexity, the design promotes clarity, transparency, and well-being through simple yet deliberate architectural decisions.

Pharmacy Marx illustrates that healing environments do not require excess. Instead, they emerge through thoughtful design, honest material expression, and a careful balance between human needs and environmental responsibility. The project stands as an example of how circular architecture can transform reduction into quality and simplicity into lasting value.

“Through reduction, architecture reveals its essential value.”



Fig. 10 Pharmacy Marx | Client Area





“This case study is a metaform DAR project. DAR is a design-driven research department of metaform, which is essentially concerned with the topics of building in the future. We were founded in 2022 by metaform architects.”

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