

LUDWIK

Dirección Creativa
Dirección de Arte
Diseño Gráfico

APPROACH

En Ludwik creemos en la comunicación conceptual, creativa y sencilla. Creemos en la excelencia y en la eficacia. Planteamos soluciones creativas y atractivas partiendo de las ideas y cuidamos todos los elementos y fases del proceso de diseño para las marcas con las que trabajamos.

Entendemos la comunicación visual como el mensaje que conecta dos puntos: un emisor y un receptor. Nuestro trabajo consiste en que ese mensaje llegue de un punto a otro de la forma más clara y honesta posible. Puede ser en forma de campaña, de libro, de logotipo, de cartel, de web o todo a la vez.



El Palau De La Música Catalana, CCCB, Institut de cultura de Barcelona (ICUB),
Harvard University, Actar Publishers, Editorial Planeta, Viction:ary,
Uniqlo, Levi's, Novartis, Boheringuer, Bayer, Schwarzkopf, Macallan, Damm,
Marcilla, La Sirena, Médicos Sin Fronteras, Amnistía Internacional,
TMB, El Consorci ZF Barcelona, Zurich, La Caixa, Andbanc.

MEMORIAS & INFORMES.



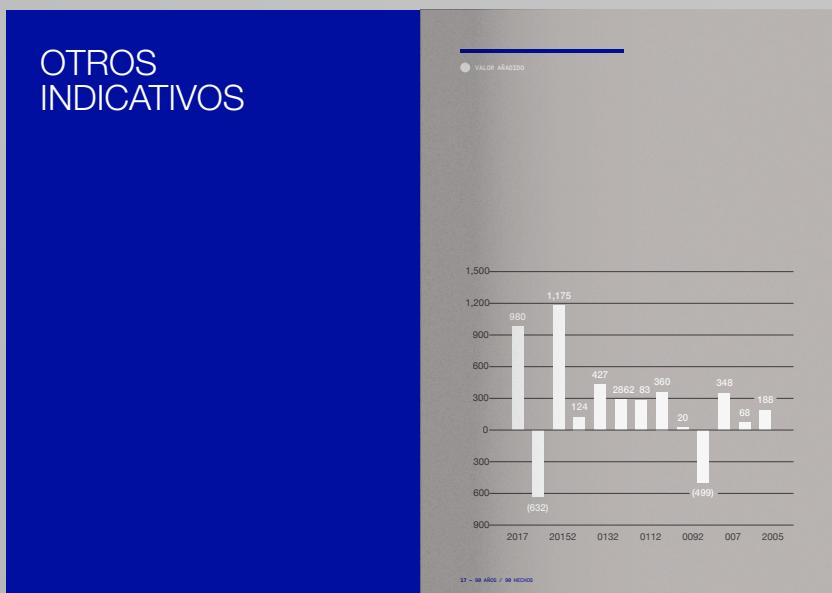
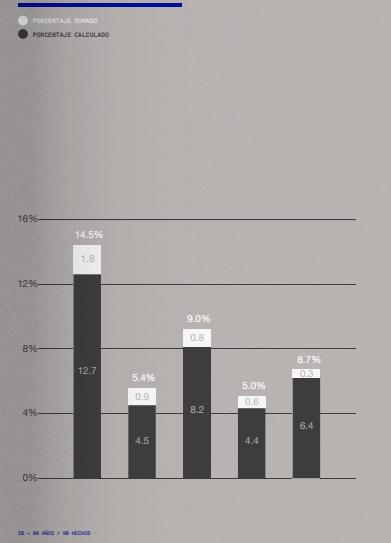
1919 — 2009

H. 1/ Metchnikov
H. 2/ Farmacias
H. 3/ Misión
H. 4/ Sociedad
H. 5/ Calidad
H. 6/ Compromiso
H. 7/ Equipo Humano
H. 8/ Liderazgo
H. 9/ Premios
H. 10/ Entusiasmo
H. 11/ Humanismo
H. 12/ Proximidad
H. 13/ Apertura
H. 14/ Yoghourt
H. 15/ Anticipación
H. 16/ Herramientas
H. 17/ Rigor
H. 18/ Futuro
H. 19/ 1919
H. 20/ Carasse
H. 21/ Danone
H. 22/ Divulgar
H. 23/ 90 Aniversario
H. 24/ Compañía
H. 25/ Internacional
H. 26/ Solidaridad
H. 27/ París
H. 28/ Sabor
H. 29/ Soja
H. 30/ Feremento
H. 31/ Exclusivo
H. 32/ Leche
H. 33/ Microscopio
H. 34/ Frio
H. 35/ Investigación
H. 36/ Ciencia
H. 37/ Medio Ambiente
H. 38/ Madrid
H. 39/ C/ Corsica 590
H. 40/ Estudio científico
H. 41/ Fermentación
H. 42/ Fábric
H. 43/ Cepa
H. 44/ Bifidobacteria
H. 45/ Universidad

H. 46/ Multidisciplinar
H. 47/ Comunidad Científica H.
H. 48/ Colaboración
H. 49/ Expertos
H. 50/ L Casei DN- 114001
H. 51/ Monografía
H. 52/ Nutrientes Esenciales
H. 53/ Colesterol
H. 54/ Probiótico
H. 55/ Immunutrición
H. 56/ Yoghur Vivo
H. 57/ Materia grasa
H. 58/ Prebiótico
H. 59/ Simbiótico
H. 60/ Diabetes
H. 61/ Advisory Board
H. 62/ Salud
H. 63/ Calcio
H. 64/ Yoghurt
H. 65/ Leche fermentada
H. 66/ NUSA
H. 67/ Formación acreditada
H. 68/ Dieta
H. 69/ Tránsito intestinal
H. 70/ Funcional
H. 71/ DN-173010
H. 72/ Cepa dependencia
H. 73/ Mujeres
H. 74/ Infancia
H. 75/ Seniors
H. 76/ Etiquetado
H. 77/ Caducidad
H. 78/ Flora intestinal
H. 79/ Sistema inmunitario
H. 80/ Leche de continuación
H. 81/ Vitamina D
H. 82/ Huesos
H. 83/ Publicaciones
H. 84/ Charla a consumidores
H. 85/ Reglamentación
H. 86/ Consejo científico
H. 87/ Credibilidad
H. 88/ NAOS
H. 89/ Instituto
H. 90/ Becas

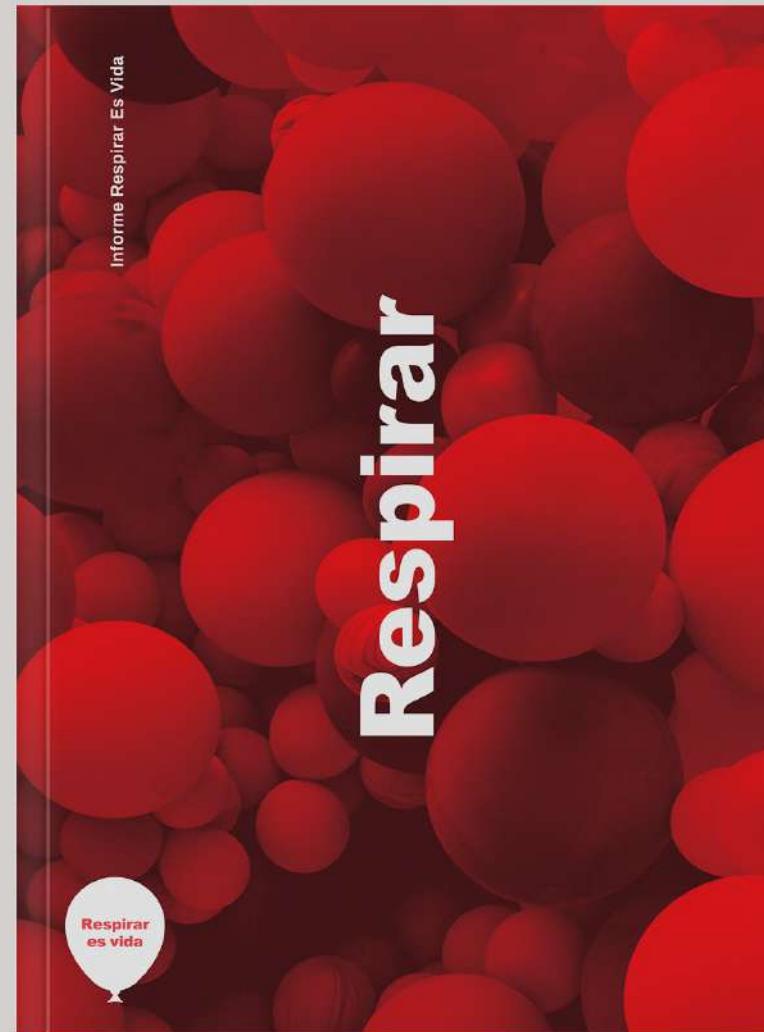


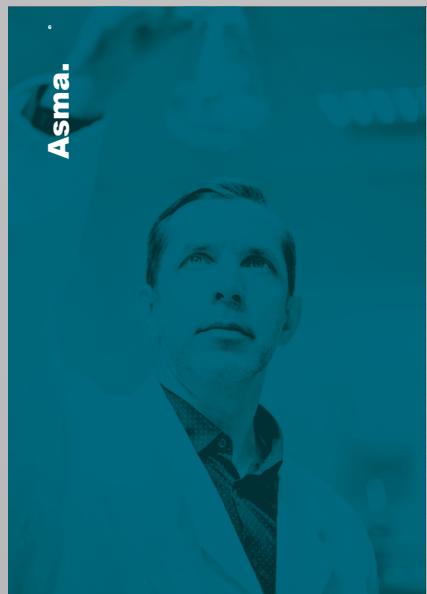
2008–2009 BALANCE SITUACIÓN



RETORNO TOTAL







Asma.

Descripción general

El asma es una afección en la que se estrechan y se hinchan las vías respiratorias, lo cual produce mayor mucosidad. Esto podría dificultar la respiración y provocar tos, sibilido al respirar y falta de aire. Para algunas personas, el asma es una molestia menor. Para otras, puede ser un problema que les impide moverse o las actividades cotidianas y que puede producir ataques de asma que pongan en riesgo la vida. El asma no tiene cura, pero sus síntomas pueden controlarse. Debido a que el asma cambia con el paso del tiempo, es importante que colabores con el médico para controlar tus signos y síntomas, y para ajustar el tratamiento según sea necesario.

Síntomas

Los síntomas del asma varían según la persona. Es posible que tengas ataques de asma con poca frecuencia, sin embargo, otros tienen ataques más frecuentes, como cuando hace ejercicio o sienten algo en su momento. Signos y síntomas del asma que son más frecuentes y molestos: Aumento de la dificultad para respirar (se calcula con un medidor de flujo máximo, el cual es un dispositivo que se utiliza para verificar el funcionamiento de los pulmones).

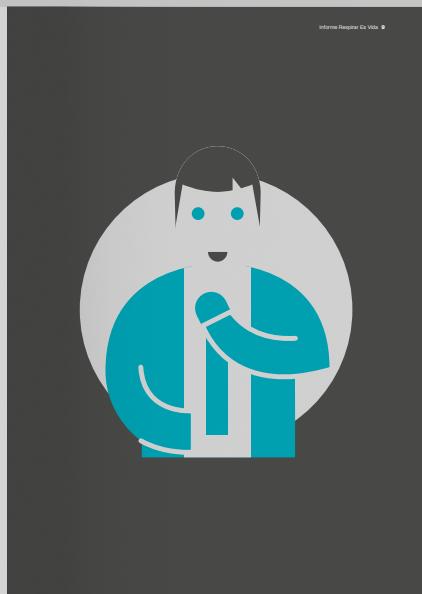
Cuidados del Asma

Aunque el asma no tiene cura, si se pueden tomar una serie de medidas para prevenir una crisis. Estos son algunos consejos:

Cuando la causa del asma es extrínseca como por ejemplo una alergia, es recomendable evitar la exposición a los agentes que la causan. Los principales en España son el polen de gramíneas (las cupresas), las arácnidas, el plástico de sombra y la parietaria), los hongos ambientales, los ácaros de polvo y los epitelios de algunos animales (perros, gatos, caballos y roedores comúnmente). Los síntomas más frecuentes de la alergia al polen son picor en los ojos, estornudos y goteo nasal. En el caso de que una persona no esté diagnosticada pero presente alguno de estos síntomas, debe acudir al alergólogo.

Otra precaución que deben tener en consideración los alérgicos es evitar realizar ejercicios intensos en época de polinización, ya que esto puede generar dificultades respiratorias que derivan en un ataque de asma.

Los enfermos de rinitis deben tener especial cuidado ya que esta enfermedad con frecuencia precede al asma. Es recomendable que el paciente se observe para detectar cualquier indicio de principio asmático.



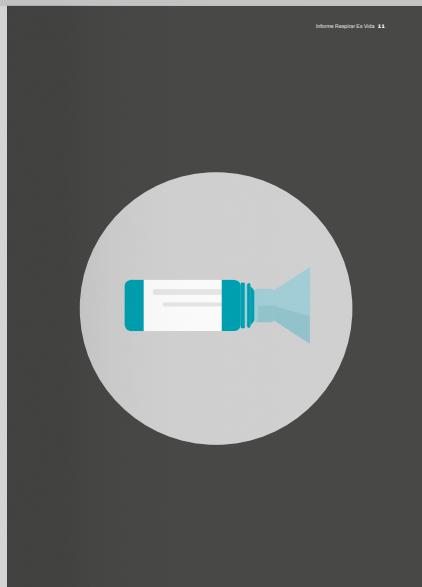
Cámaras de inhalación.

¿Por qué la medicación es inhalada?

La medicación por vía inhalada tiene una acción más rápida y requiere menor cantidad que si se administra por vía oral. Pero un inconveniente es que requiere una técnica específica y distinta para los diferentes tipos de dispositivos.

Cámaras de inhalación

Al aumentar la distancia entre el dispositivo y la boca, facilitan la maniobra de inhalación y aportan una mayor cantidad de fármaco al pulmón. En el caso de los Antiflammatorios su uso disminuye el efecto local en la boca (afonías, candidiasis, etc) y es muy recomendable.



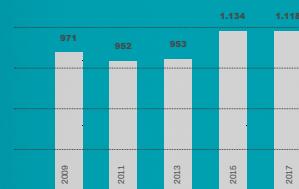
Cifras

Esta estadística muestra la evolución anual del número de muertes registradas por asma en España desde el año 2009 al 2017, por géneros. En el año 2017, se registraron un total de 196 muertes debido a esta enfermedad en hombres y 922 en mujeres. El número de muertes por asma en España ascendió a un total de 1.118 fallecimientos en el año 2017, lo que supone un aumento considerable respecto a años anteriores.

El asma es una enfermedad del sistema respiratorio caracterizada por una inflamación crónica de las vías aéreas, situadas en la parte superior del aparato respiratorio. Entre sus principales síntomas se incluyen la respiración cortada, la falta de aire, la opresión en el pecho y tos. Durante un ataque grave, las vías respiratorias pueden cerrarse impidiendo que los pulmones realicen su función y por tanto afectar a órganos vitales, llegando incluso a provocar la muerte.

3,2 M.

Número de muertes por Asma en España 2009-2017
Fuente: INEE Spain.





EPOC

La enfermedad pulmonar obstructiva crónica (EPOC) es una enfermedad crónica inflamatoria de los pulmones que obstruye el flujo de aire desde los pulmones. Los síntomas incluyen dificultad para respirar, tos, producción de mucus (esputo) y sibilido al respirar. Es causada por la exposición a largo plazo a gases o partículas irritantes, en la mayoría de los casos del humo de cigarrillo. Las personas con EPOC tienen mayor riesgo de padecer enfermedades cardíacas, cáncer de pulmón y una variedad de otras afecciones.

El enfisema y la bronquitis crónica son las dos afecciones más frecuentes que contribuyen a desarrollar la EPOC. La bronquitis crónica es la inflamación del revestimiento de los bronquios, que llevan aire hacia y desde los sacos de aire (alvéolos) del pulmón. Se caracteriza por la tos diaria y la producción de mucus (esputo).

El enfisema es una afección en la cual los alvéolos que están en los extremos de las vías aéreas más pequeñas (bronquiolos) de los pulmones se destruyen como resultado de la exposición diaria al humo de cigarrillo y a otros gases y partículas irritantes.

La EPOC se puede tratar. Con el tratamiento adecuado, la mayoría de las personas con EPOC pueden lograr un buen control de los síntomas y la calidad de vida, además de reducir el riesgo de otras afecciones relacionadas.

Cuidados del EPOC

Síntomas

Los síntomas de la EPOC no suelen aparecer hasta cuando ya se ha producido un daño significativo, por lo general, empeoran con el tiempo, particularmente si el paciente sigue expuesto al humo del tabaco. Los pacientes con bronquitis crónica presentan una tos diaria y producción de mucus (esputo) como síntoma principal durante al menos tres meses al año en dos años consecutivos.

Hinchazón en los tobillos, los pies o las piernas. También es probable que las personas con EPOC tengan episodios llamados reagudizaciones, durante los cuales los síntomas empeoran más que la variación habitual diaria y duran al menos varios días.

Causas

La causa principal de la enfermedad pulmonar obstructiva crónica (EPOC) en los países desarrollados es el tabaquismo. En los países en desarrollo, la EPOC a menudo se presenta en personas que están expuestas a gases combustibles usados para cocinar o para calefaccionar en viviendas con mala ventilación.

Solo aproximadamente el 20 al 30 por ciento de los fumadores crónicos que tienen EPOC clínicamente aparente, al menos al principio, tienen antecedentes de tabaquismo de larga data y pueden presentar una función pulmonar reducida. En algunos fumadores se manifiestan afecciones pulmonares menos frecuentes. Se les puede diagnosticar mal como EPOC hasta que no se realiza una evaluación más minuciosa.



Convencionales y Modulite®

¿Por qué la medicación es inhalada?

La medicación por vía inhalada tiene una acción más rápida y requiere menor cantidad que si se administra por vía oral. Pero un inconveniente es que requiere una técnica específica y distinta para los diferentes tipos de dispositivos.

Cartuchos: convencionales y Modulite®.

En estos dispositivos la medicación se encuentra en el interior de un "spray", que al presionarlo libera una cantidad determinada.

Dispositivo de apariencia externa similar al anterior, pero el fármaco va en una solución, por lo que no precisa agitar antes de utilizarlo. El orificio de salida de la válvula es menor que el dispositivo pMDI convencional. Estas dos circunstancias proporciona un aerosol con dos características diferenciales:

- Unas partículas más pequeñas, que alcanzan y se depositan en las vías aéreas pequeñas.

- Una nube de aerosol con una velocidad de emisión lenta que facilita la coordinación de la inhalación, disminuye el impacto orofaringeo, disminuye el efecto frío y facilita el depósito pulmonar del aerosol.



Cifras

Las muertes por enfermedad pulmonar obstructiva crónica (EPOC) estimadas en España han ascendido de las 18.000 defunciones anuales a las 29.000 al año, según han contabilizado el último estudio de la Carga Global de Enfermedad (GBD 2015) o Global Burden of Disease (GBD 2015), que ha analizado las tendencias actuales de esta enfermedad respiratoria durante el periodo 1990-2015.

Los hallazgos del GBD 2015 relativos a la EPOC se han publicado en The Lancet Respiratory Medicine. Un análisis que está encabezado por Joan B. Soria, epidemiólogo y asesor científico de la Sociedad Española de Neumología y Cirugía Torácica (Separ), y financiado por la Fundación Bill & Melinda Gates.

“Es ya la cuarta causa de muerte, más mortal que el cáncer de pulmón”

El número de casos de EPOC en España también ha aumentado de los 2,1 millones estimados –según Epis 2015– a los 2,9 millones estimados según el mismo estudio de GBD, que contiene datos detallados, regionales y nacionales sobre muerte, prevalencia, años de vida ajustados por discapacidad (DALYs) y años vividos con discapacidad por EPOC. En cambio, la prevalencia mundial tiende a la baja, puesto que la estimación de casos de EPOC en el mundo ya no es de 240 millones anuales sino de 174 millones al año.





Report 2016

Plenary

Chairmanship
Ada Colau Ballano
Mayor Barcelona City Council

Vice-Chairmanship
Jordi Cornell Serra
Special State delegate El Consorci de la Zona Franca

Committee
Miquel Ferré Navarrete
State Secretary of Finance
Ministry of Finance and Public Administration
Victor M. Calvo-Sotelo Ibáñez-Martin
State Secretary of Telecommunications and Information
Society Ministry of Industry, Energy and Tourism
Miguel Temboury Redondo
State Secretary of Economy and Competitiveness
Ministry of Economy and Competitiveness
Julio Gómez-Pomar Rodríguez
State Secretary of Infrastructure, Transport and Housing
Ministry of Development

Ex officio members (due to position)
Almudena Escobedo Canalda
Head of Provincial Customs and Excise Office
José Alberto Carbonell i Camallonga
Director General of the APB

Members representing the Barcelona City Council
Gala Pla Ferrando
Councillor for Participation and Districts (Barcelona en Com) **Xavier Trias i Vidal de Llobaters**
President of PDeCAT – Unió – Demòcrates municipal group
Carina Mejías Sánchez
President of the Ci's municipal group
Alfred Bosch i Pascual
Councillor and president of the ERC municipal group
Jaume Collboni i Cuadrado
Councillor and president of the PSC municipal group
Alberto Fernández Diaz
President of the PP municipal group
Maria-José Lecha González
Councillor and president of the CUP municipal group

Members representing Cambra de Comerç, Indústria i Navegació
Miquel Vallès i Masdes
President of Cambra de Comerç, Indústria i Navegació
Josep González i Sala
President of FIMEC

Member representing Port de Barcelona
Sílvia Cambra i Sánchez
President of the APB

Member representing Foment del Treball
Joaquim Gay de Montellà
President

Member representing a railway company
Pablo Vázquez Vega
President of RENFE – Operadora

Members representing trade unions
Camil Ros
Secretary General of UGT Catalonia
Joan Carles Gallego
Secretary General of CC.OO Catalonia

General secretary's office
Anton Ferré
Secretary general (acting) of El Consorci

Observers
Antoni Detrell
Business area and Economic and Financial Department manager of El Consorci
Anton Ferré
Secretary general (acting) of El Consorci
Maria Fernández Gonzalo
State attorney
Cristina Ozores Jack
State attorney
Jordi Martí Grau
Municipal manager of Barcelona City Council

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Report 2016



Ada Colau,
Mayor of Barcelona and president of the Plenary
of El Consorci de la Zona Franca de Barcelona

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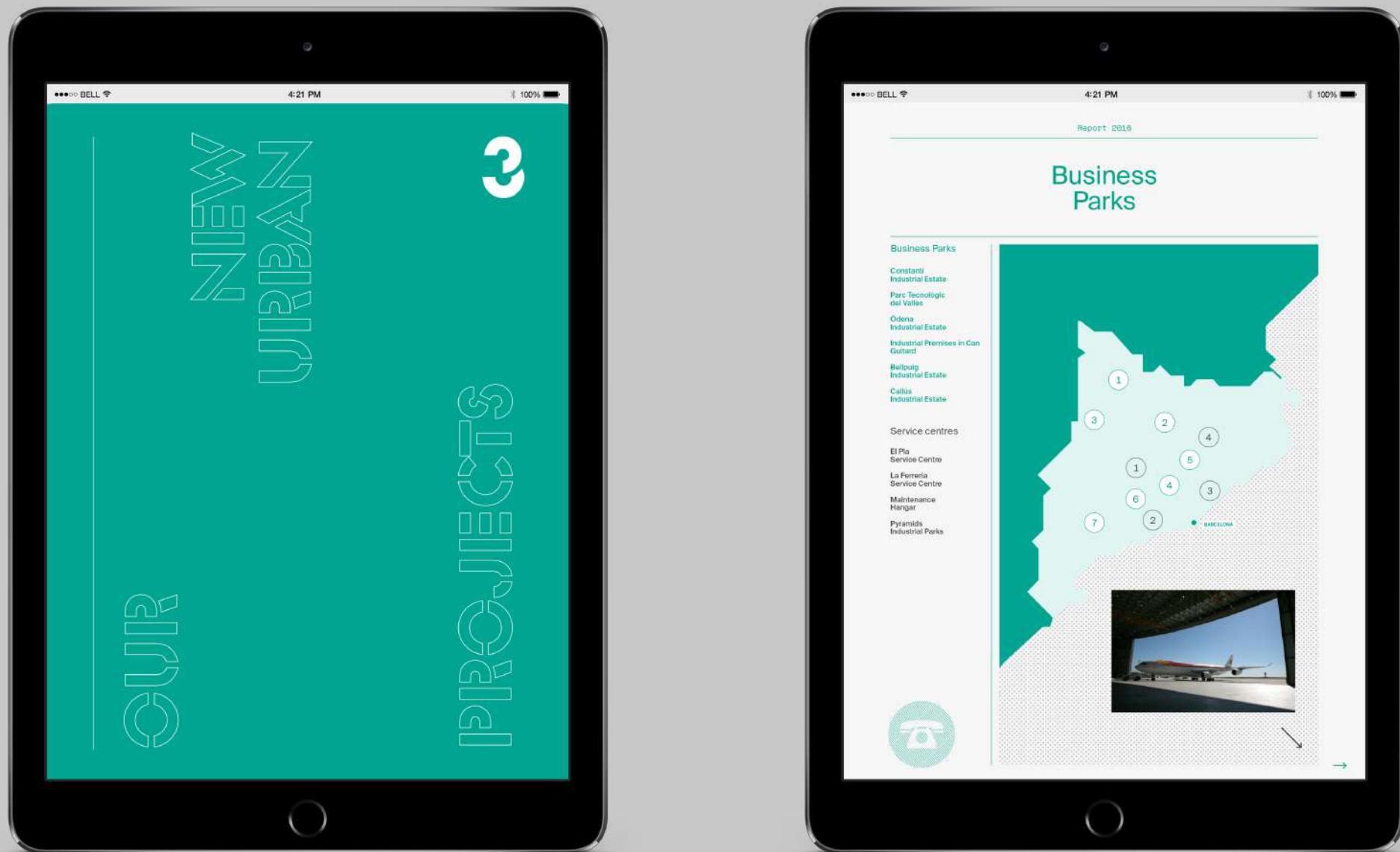
Scroll ↑

Celebrating our first centenary is the perfect occasion to underscore the importance of El Consorci de la Zona Franca as an economic platform of our city. Having 680 hectares of public industrial land near the Barcelona port and airport has facilitated industrial development throughout the metropolitan area. This area is also steeped in history, a tribute to thousands and thousands of workers and their social achievements.

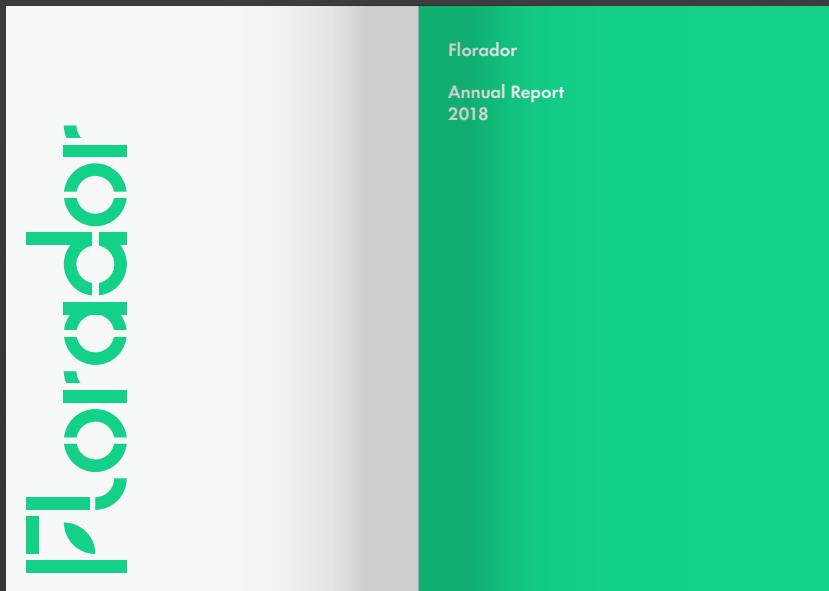
Cities are currently facing socio-economic and environmental challenges of the highest order. We are strongly committed to reindustrialization driven by technology and innovation, which enables us to attract new eco-efficient businesses that create good jobs. The Zona Franca Industrial Estate and, by extension, the whole of the economic platform of the Llobregat delta, are at the vanguard in the commitment to a plural economy and lower environmental footprint.

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After having spent several years exporting flowers in South of America, Steven decided to use his knowledge of the market to import flowers from South America around the world under the best possible conditions.

To do this, Florador selects the best flower farms and studies the working methods of each one in order to evaluate their professionalism. Florador has thus established the best collaborations with the best suppliers. In addition, Steven has managed to guarantee the best connections for rapid transportation and quality using aircraft and refrigerated trucks that guarantee the cold chain.

Finally, the Ecuadorian climate as well as the Colombian one is ideal throughout the year, creating a positive impact on the quality and growth of the flowers. In addition, the plantations of our suppliers are located at high altitude, allowing the roses to enjoy a maximum of sunlight. Florador only buys from farms which have positive environmental and social practices, thus contributing to its surroundings and to the country.

Steven Brauns
CEO & Founder

A black and white portrait of Steven Brauns, the CEO and founder of Florador. He is a man with a beard, wearing a light-colored button-down shirt, standing with his arms crossed against a concrete wall.

Florador Products

A white icon on a green background, featuring three stylized flower heads arranged in a cluster, with a small leaf at the bottom.

Ecuadorian flowers are considered as the flowers with the best quality in the world. This can be reflected on its growing demand over the years and its positioning as the second exporter of flowers worldwide, where its protagonist is the rose.

Currently, there are around 400 varieties of Ecuadorian roses and approximately 629 registered flower farms in Ecuador of which 471 harvest roses.

The Ecuadorian roses are specifically characterized by its thick and long stems, its large buttons, its wide range of bright colors and most important for the life time they have, which can last an average of four weeks from the moment of its harvest.

6-7

Florador Team

A white icon on a green background, featuring three stylized flower heads arranged in a triangle, with three vertical bars at the bottom.

Procurement

Jose Luis has over 18 years of experience in the Flower Business in Ecuador. His expertise has been primarily on the Commercial and Marketing side of the Industry, as well as Quality Control and Logistics. His incorporation to the Florador Team will guarantee that we will offer only the best quality flowers from previously selected growers, in order to ensure that our customers receive Top Quality Flowers.

Quality Insurance

Andres is the person responsible specialized for our quality control at the airport as well as in the farms in order to ensure that our flowers meet our quality standards before each shipment. He sends an inspection report to each client. If the quality of the product does not meet our standards, we will replace the product.

4-5

Figures 2018

12–14



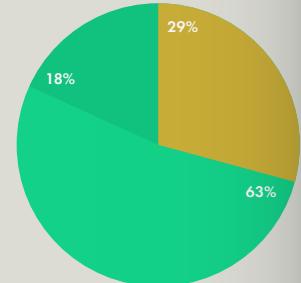
Provider Countries

18–19



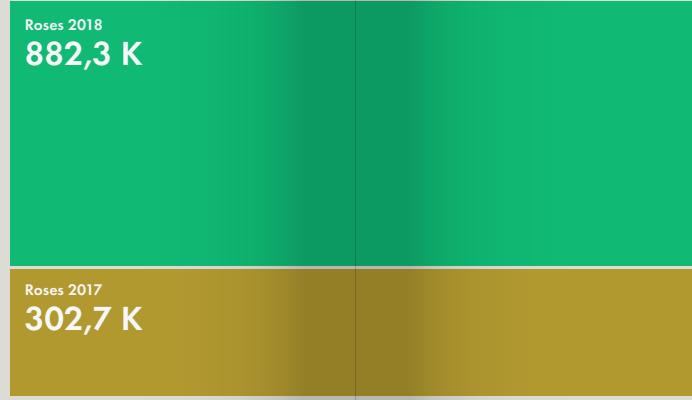
Expected Portfolio duration

14–15

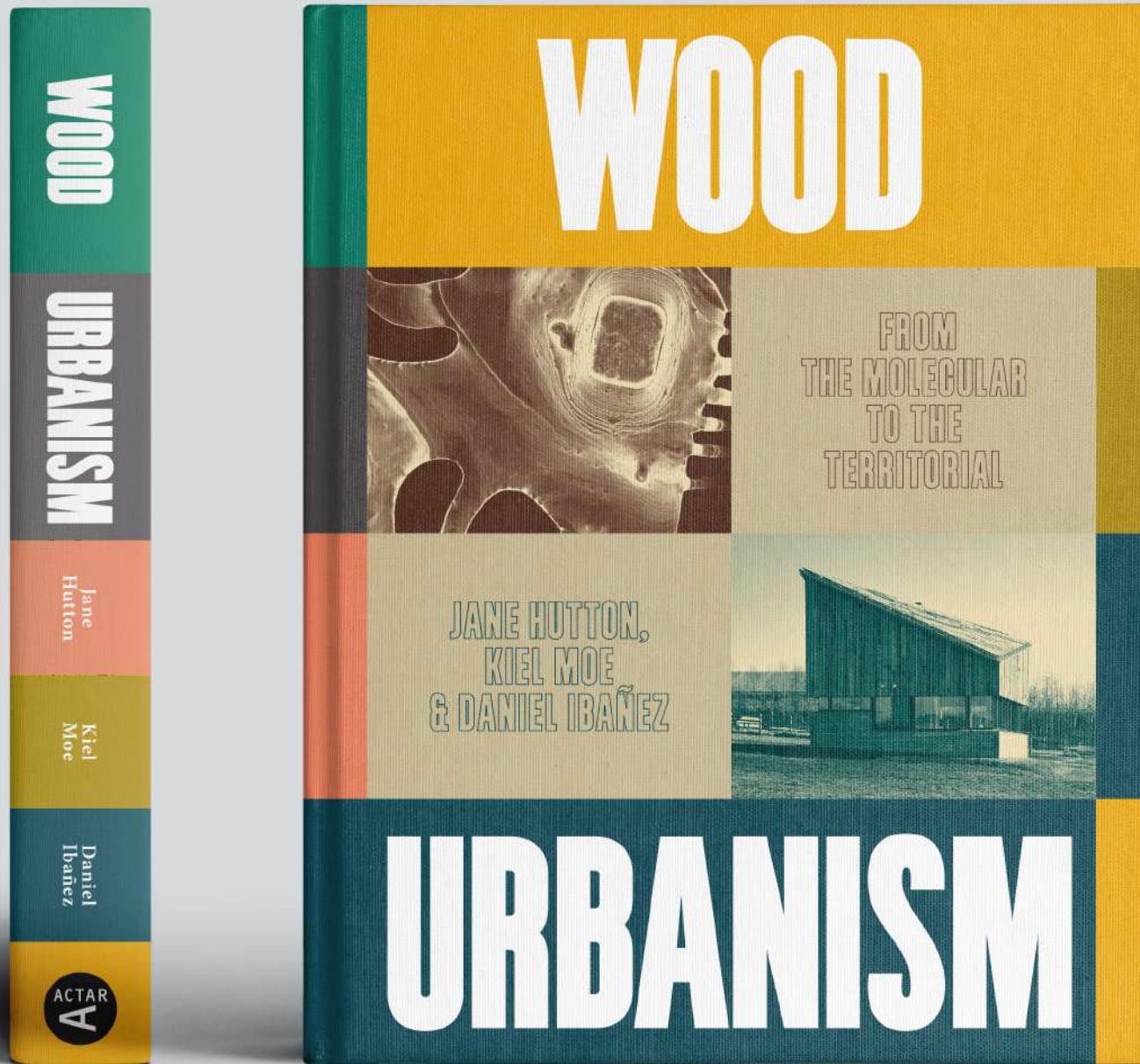


Total Roses Sales

24–26



**EDITORIAL
OTROS.**





Frick Burtscher Holz selecting silver fir and spruce for interior ceilings

Design

The long horizontal massing of the IZM sits within a striking alpine landscape, and it extends nearly a quarter of its mass over the aqua-blue glacial retention ponds, maximizing views to the surrounding mountains. The 120-meter long building with its large ground-level dining space and open office concept serves as the newly consolidated headquarters of the Vorarlberger Illwerke AG in Vandans, Austria. Having occupied the site for several decades in smaller disconnected buildings, the company sought to create a common and energy-efficient office space for all of its 270 employees. Vorarlberger Illwerke AG is the hydroelectric energy generation company for Vorarlberg, and the constructed reservoir where the IZM is sited is an integral part of the regional hydroelectric generation system.

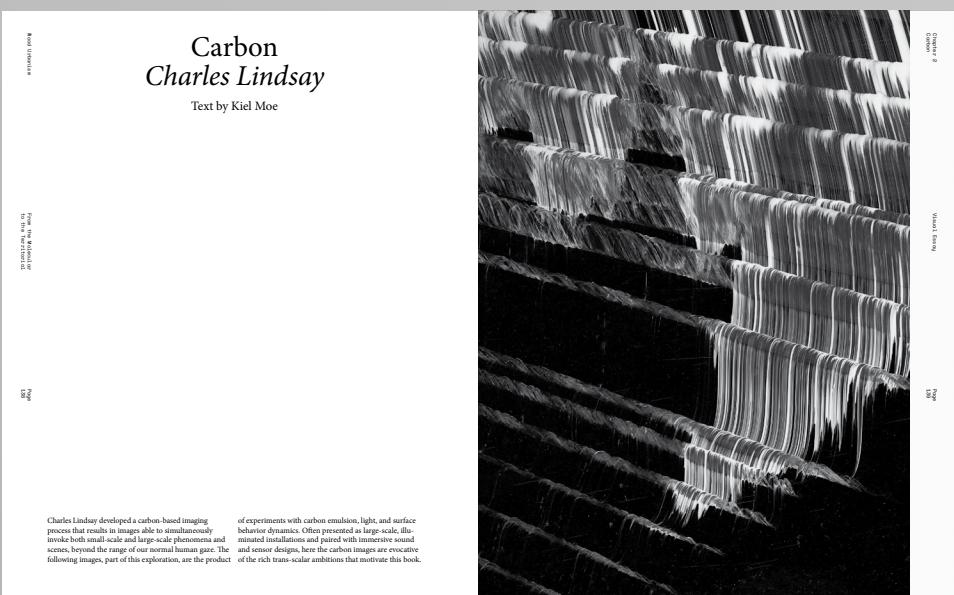
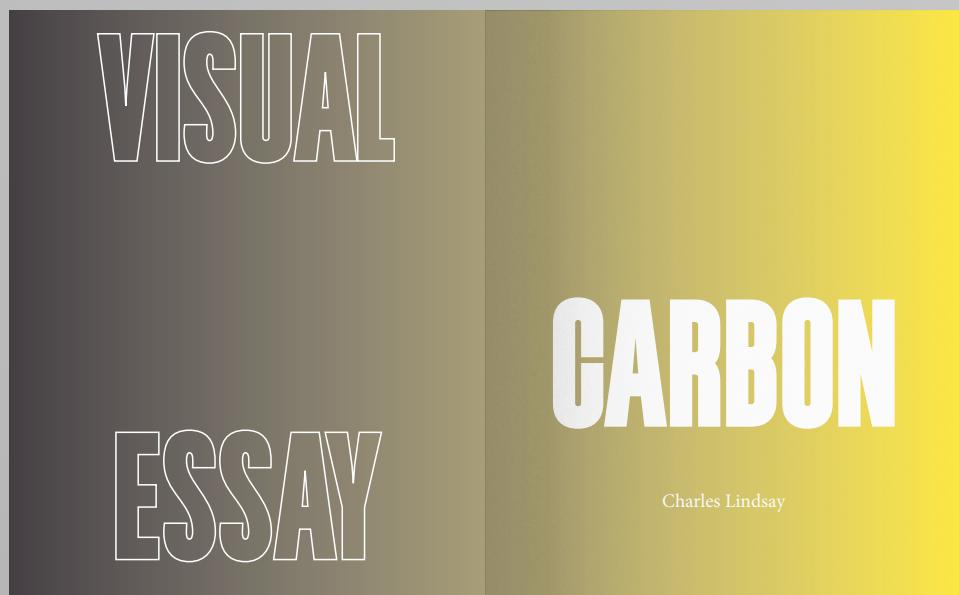
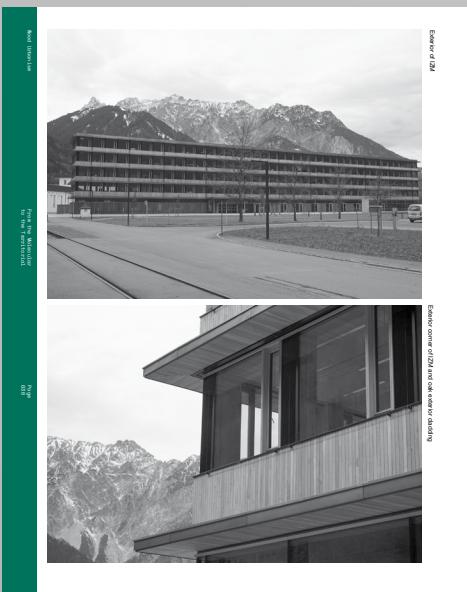
Fabrication

The IZM project is the second generation of the composite timber and concrete deck system first developed for the LCT ONE building. Furthering these concepts, Hermann Kaufmann's team, led by Christoph Dünser, developed the IZM to accommodate operable glazed façade panels, and large floor spans were achieved through the use of prefabricated elements and a continuous steel box beam with central columns running the length of the building. For the structure, spruce from the Montafon Valley was trucked 75 kilometers north to the Mayr-Melof Holz plant in Reuthe, where it was kiln dried, planed, and glue laminated into the large dimension timber beams and columns. Once laminated, the spruce columns and beams were trucked 19 kilometers to the Sohm-HolzBautechnik shop in Büchel, where the façade and floor panels were prefabricated before shipment to the building site. Sohm-HolzBautechnik is typical of the innovative woodworking fabricators in Vorarlberg and has a long running collaboration with Hermann Kaufmann's office.

The prefabricated floor elements are based on a structural concept that distributes the compressive bending forces into the concrete deck and in tensile relationship to the wood beams – a loading of each material in its optimal structural orientation. Utilizing steel jigs and formwork in the controlled environment of the concrete shop, the 8-centimeter concrete deck was poured onto the spruce beams. Bonding between the timber beams and the concrete was achieved through the use of extended screws pre-threaded into the wood, along with a series of interlocking channels routed into the top chord of the beams. The concrete also forms the end header of each composite floor panel, providing continuous fire separation across the entire floor deck. Once cast and finished, the prefabricated timber-concrete panels were trucked directly to the IZM construction site, and just-in-time delivery was choreographed to match the erection schedule.

Exterior

Common in Hermann Kaufmann's work, weathering is managed through the way the exterior façade elements are detailed



The cover features a large, bold, white sans-serif font. The word 'POSITION' is split vertically down the center. The left half is on a dark green background, and the right half is on a yellow-green gradient background. Below the main title, the subtitle 'CARBON TRANSECT' is written in a smaller, bold, white sans-serif font.

POSITION

CARBON TRANSECT

Alan Organschi

BRANCHES KNOTS AND OFF-CUTS

Interview
with
Sean Mahoney

A vertical column of text on the left side of the spread. At the top, there is a small image of a wood sample with a circular core and radial grain. Below the image is a short title and author's name. The main text discusses the history of American forests and the impact of logging.

Specifying Wood(s)
Jane Hutton

The plates of Roney B. Hough's multi-volume masterpiece, *The American Woods Exhibited by Actual Specimens*, and with Captain Ephraim George's 1888 paper, are the most comprehensive ones each plate are transverse, radial, and tangential sections of a single tree species, designed to transmit light, each section under a black paper label with the species name. Each species described is characterized both by its place and behavior in the forest and by its use value as building material and fuel. The plates were originally captured twenty-five species characteristic of different geographic regions. From southern Connecticut into Maine, then westward through the Great Lakes, "one of the most beautiful trees of our American forests," with its heavy, satiny, red-tinged wood, useful for ships' hulls, barrels, and furniture; its resinous oil used for chewing-gum, bath-freshener, and the treatment of dysentery; From Virginia to Texas, longleaf pine (*Pinus palustris*), with its scaly bark and coarse-grained, smooth wood, used for floors, doors, and coarse furniture; and sometimes in "figured" wood was valued as ornament; the species supplied much of the country's demand for timber, fuel, and lumber, and was also used as a diuretic and stimulant). Along the Ohio River, black walnut (*Juglans nigra*), with its easily worked and polished wood, was used for barrels, boxes, and dye, while its astringent leaves were used to treat ulcers, and its nuts were viewed as valuable and delicious.⁴ And from the Pacific Northwest, Sitka spruce (*Picea sitchensis*), Alaska cedar (*Chamaecyparis nootkatensis*), with its incredibly slow growth, produced wood of unmatched durability and strength, which became famous during Hough's time.⁵ Hough's books materialize the vast differences between species – in their forms, habitat preferences, social traditions, construction utility, and aesthetics. To flip through Hough's 244 species samples is to witness an index of American forests as a transitional

moment in their history. Three centuries of clearing for agriculture and woodland conversion followed colonial settlers had decimated the country's forests, and the consequences were undeniable. By the 1930s, the potential economic, environmental, and even climatic implications of this mass deforestation were clear, and "timber famine" was an inevitable.⁶ As a result, a conservation movement grew in response, advocates – both conservationists and industrialists – pushed for legal restrictions on logging, and for a more rigorous description and scientific study of forest ecosystems. Hough gathered his wood samples in the context of this movement, too. He believed that the significance of wood lies in its manifold utility for forest trees, in their ability to regenerate, and in their role in the environment. His work was positioned broadly, relevant for scientists, foresters, builders, architects, and the general public – all involved with different aspects of the forest. Forests were the focus of environmental and sermons on development and the future of the American landscape.

Today, within the building fields, woods are again the source of energy, materials, and inspiration for construction, and material use. Over the twentieth century, widespread farmland abandonment, fire suppression, and overgrazing led to soil erosion and desertification, leading to the dramatic regeneration of American forests.⁷ While wood was widely substituted with concrete and steel following World War II, the use of wood has since become the charismatic material of the sustainable building industry. Its carbon storage, its light weight and strength, its natural beauty, its renewability, and its potential renewability all support claims that wood is the sentinel construction material of the future present. Wood's promising comeback and new relevancy have sparked widespread interest in architecture and design vernaculars, formulators of emerging precedents and practices.



The cover features a large, bold, white sans-serif font. The word 'PROJECT' is split vertically down the center. The left half is on a dark brown background, and the right half is on a light brown background. Below the main title, the subtitle 'CARBON TRANSECT' is written in a smaller, bold, white sans-serif font.

PROJECT

CARBON TRANSECT

Alan Organschi

A vertical column of text on the left side of the spread. At the top, there is a small image of a snowy mountain landscape with a log cabin in the foreground. Below the image is a short title and author's name. The main text discusses the concept of a carbon transect.

Leiserhäuser
Leis (Vals), Switzerland

Project by Peter Zumthor
Photography by Ralph Feiner
Text by Kies Moë

Leiserhäuser in the village of Leis (Vals), Switzerland

In his book *Thinking Architecture*, Peter Zumthor describes the origins of this set of houses in terms of specific material qualities. He wrote that they are "made of wood, not of slates and boards and not out of plywood or veneers."⁸ Many of these qualities are traditional qualities, as when Zumthor invokes the reverse of a "cracking fire in the living room stove" or describes the "sound of wood as a shell for the human body."⁹ The first of the Leiserhäuser was built for the architect's wife, Annalisa, and fulfilled a dream of hers to live in a solid wood house.

Located in Leis (1,528 m above sea level, just above Vals and Zumthor's well-known building), the structure of the Leiserhäuser is an evolution of the

The traditional log cabin: the "Stickschuppen" in Switzerland. Zumthor's project is a smooth planed timbers stack to form walls, and laminated panels made of horizontal logs. In a contemporary version of the adze-hewn log of the traditional cabin, the 11 cm x 20 cm timbers are cut to a regular numerical controlled milled in a factory with all necessary cuts and joints made in the plan. For instance, where one timber butts into another, a finger joint is cut into the wood and the two members together. For exposed corner joints, a finger joint is used, and a wooden wedge pin driven through the joined corner. The pattern of this finger joint detail will often connect as one moves from space to space, from view to view. The timbers

all have continuous, horizontal, double tongue and groove joints.

Another evolution of the log cabin is how these timbers are aggregated. Instead of the traditional log structure yields an enclosed box, here the houses consist of smaller rounded boxes in the corners of the plan. These form load-bearing pillars that accommodate stairs, baths, passageways, and rooms, opening the primary living areas to expansive views of the mountains and the valley in each direction from the house.

Each of the three houses located in the valley typically has an inner layer and outer layer of timbers. In some instances, the cavity is filled with earth; in other cases, they are hollow chinked, in some instances,



Libro
Diseño Interior

Introduction

The Littleton Trials is a project that probed the implications of construction with wood species on the thermal performance of mass timber buildings. The work is situated within a tradition of literature that documents the methods of experimentation and analysis that were used to study wood's thermal behavior with regard to conductivity, diffusivity, and effusivity. The Littleton Trials outlines the physical variables of density⁹ and specific heat capacity¹⁰ and their influence on the thermo-physical exchanges between wood and its environment through conduction, radiation, and convection.¹¹ The literature focuses on one-directional heat exchanges that occur between the ambient conditions and that constitute, in large part, the theories used to describe the thermal behaviors of these within buildings.

The unsteady thermal behavior of wood did not differ from that described by the theory embodied in the existing literature, but rather with the goals of the literature and the agenda of the Littleton Trials, its conclusions, as well as arguments that emerge from those conclusions. These conclusions are based on deductive and inductive reasoning to prove that something must be true because something is actually operative.¹² Our interest is conducting thermal research that would be thermally possible with respect to building with wood. This form of logic is what is described by Charles Sanders Pierce as "...originary in respect to being the only kind of argument which is never ...".¹³ What follows are three abductive thermal inferences made through the process of designing, fabricating, assembling, and monitoring a set of solid wood

huts 26 miles northwest of Boston, in Littleton, Massachusetts. This project is made possible by support from the Software and Information Industry Association, the New England Forestry Foundation, the Massachusetts Department of Conservation and Recreation (DCR), and the Environmental Design Lab at Harvard's Graduate School of Design. We used the basic concept of deductive reasoning and removing them as material defects. Instead of optimizing a single metric, we focused on the performance of different mass materials consisting logically of a range of wood species. The ongoing project is intentionally trans-scalar to reveal forms of thermal feedback that occur both within and outside a building's envelope. In this way, our buildings are only spatially small, while their lessons are large.

Wood Fiber

The thermal behavior of wood is largely a function of the density (ρ) and specific heat capacity (c) of the wood fiber itself; with a given density and specific heat capacity, wood is relatively constant independent of species. These properties are critical to understanding the heat transfer properties of wood: conductivity, diffusivity, and effusivity. One of the most important questions that came out of our fiber-scaled thermal research was "What is wood?" Wood is a cellular solid and, by definition, heterogeneous. It is composed of individual cells and assemblies, pockets of high-density fiber (i.e., "defects") representing vessels, tracheids, and assembles polymer solids with air and water to create a complex material system (see the Thermal Colloquium Visual Essay following this contribution). Following our line of inquiry, we have developed a new metric designed to fit the conclusions of a deductive framework.

Viewed through the lens of deductive reasoning, the numerical ranges that accompanied our results and the material defects associated with the test sampling. Our deductive line of thought now allows us to speculate about the design potential of material variations within these wood species. By identifying and removing them as material defects. Instead of optimizing a single metric, we focused on the performance of different mass materials consisting logically of a range of wood species. The ongoing project is intentionally trans-scalar to reveal forms of thermal feedback that occur both within and outside a building's envelope. In this way, our buildings are only spatially small, while their lessons are large.

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Focusing on inconsistencies within individual species is also critical to reflecting their composition. Across scales of inquiry, inconsistencies aggregated to the scale of a forest or region reflect the "quality" of a species or individual members of a species. Within these forests are numerous samples and assemblies, pockets of high-density fiber (i.e., "defects") representing vessels, tracheids, and assembles polymer solids with air and water to create a complex material system (see the Thermal Colloquium Visual Essay following this contribution).

Following our line of inquiry, we have developed a new metric designed to fit the conclusions of a deductive framework.

To the left, Hut One. To the right, Hut Two



To the left, Hut One. To the right, Hut Two

The Littleton Trials: An Abductive Thermal Inquiry

Jacob Mans, David Kennedy,
and Benjamin Peek

pp. 102-113

pp. 114-125

pp. 126-137

pp. 138-149

pp. 150-161

Source: Gavin Ruedas

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This glossary collects a variety of terms, concepts, and ideas that emerged in the course of our research and teaching on Wood Urbanism. Like a book, this set of selected glossary entries spans from the most technical to the most abstract. They have been core to many design projects and offer key metrics and point to directions for further research. The aim here is to cycle more quickly through a variety of terms as a way to help reason and improve the potential of wood from the molecular to the territorial.

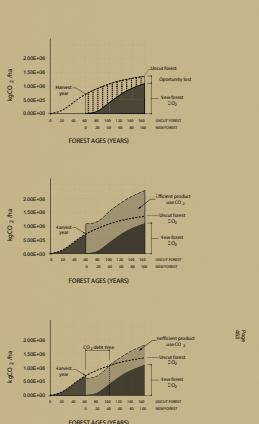
Aberrations

In the industrialized world, homogeneity has become a primary goal of design. Materials that produce building materials. Materials like wood, which were once harvested and were inherently heterogeneous, have been placed into broad categories that correspond to the grain of the material's grain. The insistence on a homogeneous product tends to move away from the natural grain. The remaining wood will be rot-resistant because only the living tree is vulnerable to fungus.



Building Products, Forests, and Carbon

Disciplines such as forestry, architecture, and engineering invite system boundaries based on disciplinary constraints. Using carbon as a unit measure synthesizes these disciplinary constraints. The work of Oliver et al. (see below) demonstrates that the calibrated use of wood in building products sequenced more effectively than the old-growth conservation approach. An old-growth forest (up gradient) is likely to be more carbon-rich than a young forest (down gradient) for storing carbon. A forest that is cut and harvested timber for building products (middle graph) stores more total carbon than one that is cut and the harvested timber is used for fuel (bottom graph). The timber harvest makes way for the new forest, which is less dense and grows faster than an older forest. Pulses of building and forest harvesting should be synchronized—that is specified—to maximize carbon sequestration, forest biodiversity, and architectural durability.



Source: Chadwick Dearing Oliver, Nadia T. Nasar, Bruce R. Lipman, Michael B. McRoberts, "Carbon Footprint and Biodiversity Mitigation with Wood and Forests," *Journal of Sustainable Wood and Forests*, 2014, pp. 261-268.

pp. 150-161

Source: Gavin Ruedas

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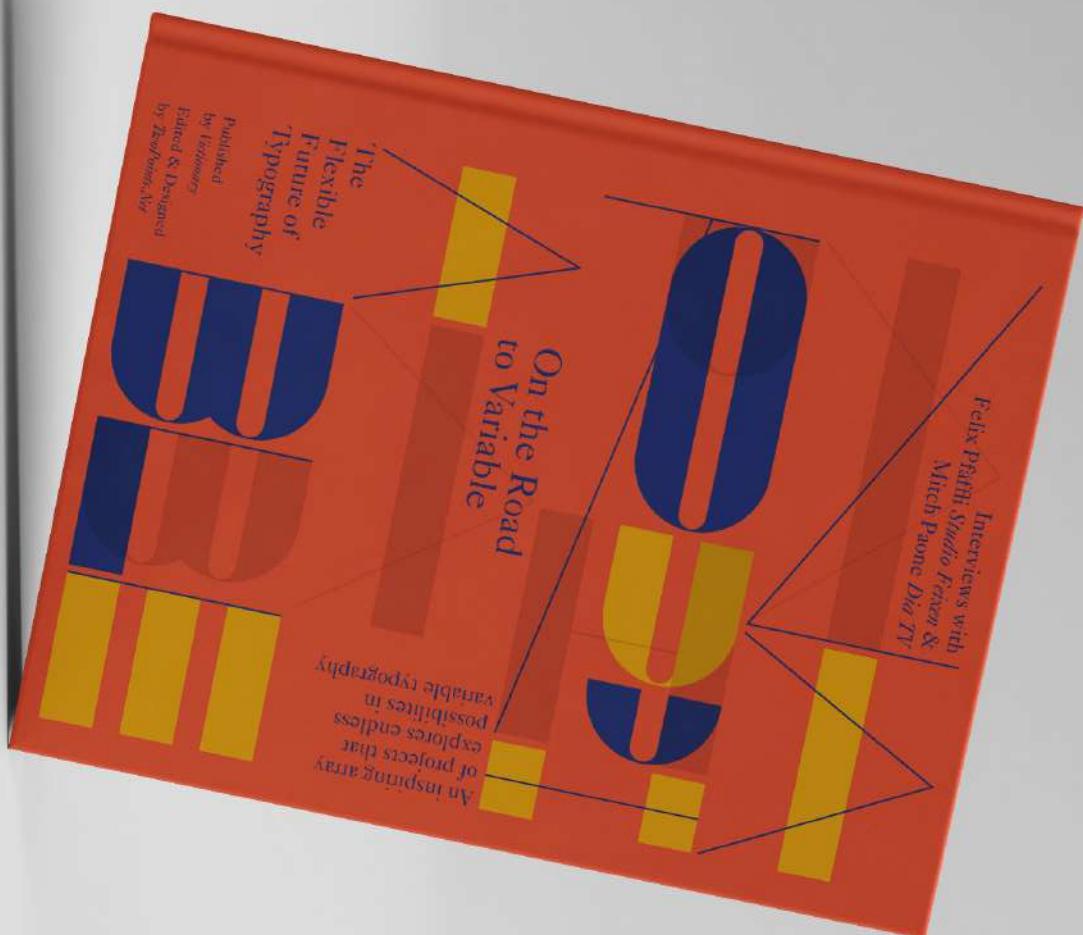
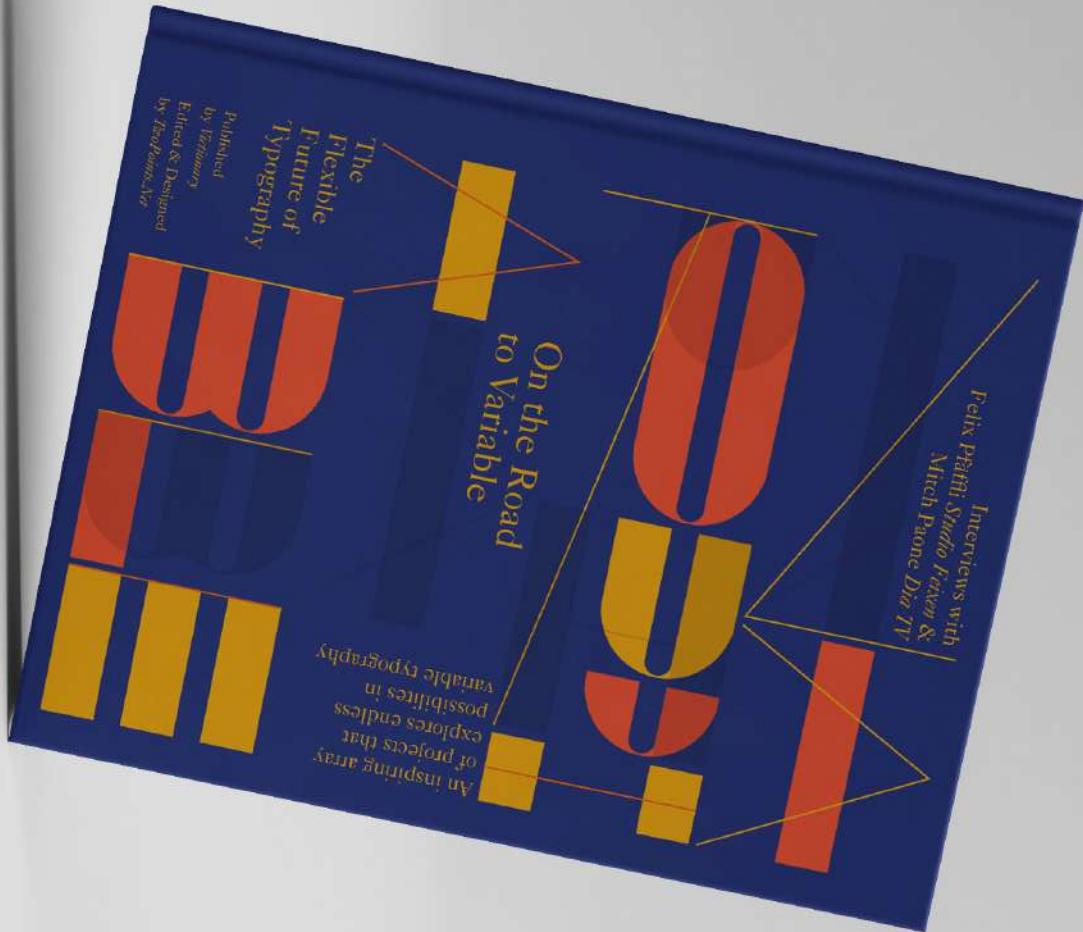
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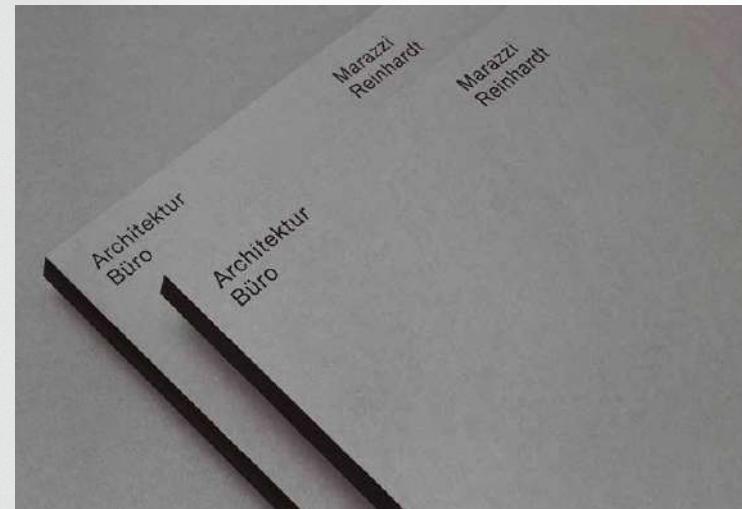
M a r a z z i R e i n h a r d t

2012 — Visual Identity
Client: Marazzi Reinhardt
Typeface: Union, Radim Peško
Design: Bureau Collective

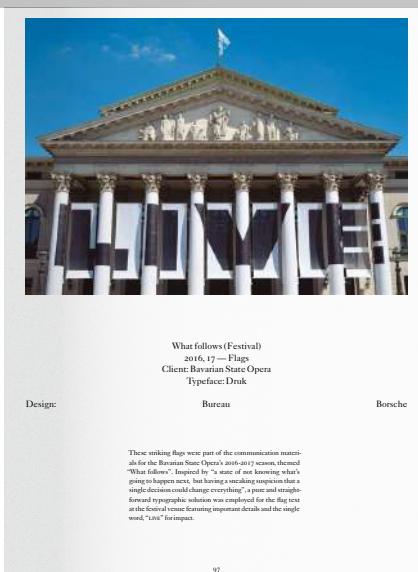
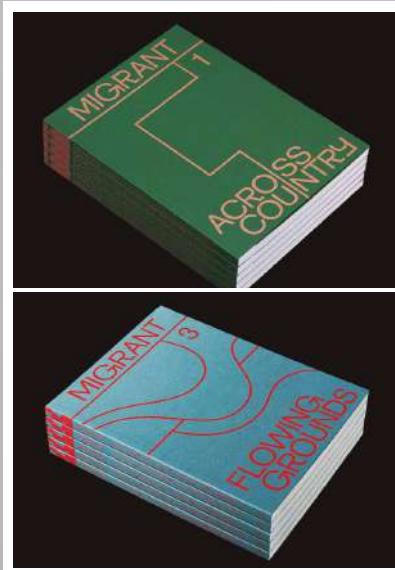
Sergio Marazzi and Andreas Reinhart are two talented architects based in Winterthur, who founded their own studio, Brand 3, in 2002. For its 10th anniversary, they sought to develop a new, grown-up visual identity and decided to rename it to Marazzi Reinhardt after a period of intense evaluation and analysis.

Sergio and Andreas' work is characterised by the use of raw materials throughout their projects, where they stage and transform every object under an urban light by seamlessly integrating the environment and understanding how to combine existing elements with the new. Due to this meaningful approach, Bureau

Collective's design concept for the visual identity was based on a very simple, clear and flexible grid. Doing without a logo for a sense of authenticity, each branded collateral was divided down the middle to define the position of the text or respective title in a consistent manner. Besides a timeless font in only two sizes, a warm grey tone was also applied throughout the concept, including the studio space, for cohesion. Material-wise, a customised corporate paper made in collaboration with Gmund Paper was used for printed matter, including envelopes, to ensure co-ordination between all the stationery.



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LUDWIK

D:

Milà i Fontanals 14, 2/2

08012 Barcelona

+ 34 678 460 454

T:

E:

elio@laagenciadeludwik.com