

24.10.2022

Construction site 4.0:

Digital solutions for efficient, sustainable construction

The companies and holdings of Umdasch Group Ventures will present their revolutionary solutions for the construction industry at bauma 2022

Digitalisation is advancing at a rapid pace in many sectors and the construction industry is no exception. Indeed, digitalisation is the catalyst in the drive to make construction sites and projects economic, efficient and fit for the future. Umdasch Group Ventures will be presenting two digital construction industry trends at bauma 2022 in Munich: 3D construction printing and construction progress tracking software based on 3D computer vision. Umdasch Group Ventures will be joined on their stand by the Group's other companies and holdings Concrefy, CONTACT, NeoTwin and NEULANDT, which will also be presenting their innovative solutions for the construction industry of the future.

Umdasch Group Ventures is always one step ahead of what the future construction industry needs. The Umdasch Group Future & Innovation Hub develops innovative solutions, taking them from conception right through to market readiness. Product development is led by the principles of using resources sparingly, ensuring profitability and delivering environmentally friendly solutions. The ultimate objective is to make construction processes and the construction site as safe, successful and efficient as possible by exploiting state-of-the-art technologies. Summarising Umdasch Group Ventures' future-focused approach to development, COO Johann Peneder says: *"The digitalisation of construction is the industry's answer for the future. Our aim is for our innovations to open up the full potential of modularisation and automation on construction sites, as well as digitalisation and data management within the construction sector. To this end, our development focuses on the entire construction life cycle."* Umdasch Group Ventures will be presenting two of their innovative new solutions at bauma 2022 between 24 and 30 October 2022.

Digital 3D construction printing: Optimal resource flow, lower energy consumption

Using resources sparingly is a key factor in reducing the carbon footprint of the construction sector. And this is exactly where Umdasch Group Ventures new construction method of 3D construction printing comes into play!

- **Greater efficiency due to digitalisation:** From the initial sketches to the printed elements, the 3D construction printer results in a shorter and fully digitalised process. The optimised 3D component model is converted into individual print layers and imported directly into the printing software.

- **Cost and material savings:** The commercial success of the 3D construction printer relies on the use of local aggregates for the concrete, with a maximum grain size of 12 mm. Raw materials for the 'printing ink' are carefully selected and analysed in the laboratory at Concrefy, the Umdasch Group Ventures company specialised in concrete technology. The mobile dosing and mixing unit, which was developed in-house specifically for 3D concrete printing enables the preparation and regulation of the optimal printing mix.
- **Diverse range of applications:** Due to a general approach of ensuring portability and the smaller, lighter components used in the printer technologies, 3D construction printing from Umdasch Group Ventures is suitable for many applications on the construction site.
- **More sustainable construction:** This resource-saving, sustainable and economic construction method material is only used where it is necessary for structural reasons.

Digital 3D construction progress tracking software: a better overview of construction projects plus increased efficiency

The new digital construction progress tracking software from Umdasch Group Ventures uses artificial intelligence (AI) and 3D computer vision.

- **Intelligent camera:** The camera is installed at the highest point on the construction crane to ensure an all-round view of the site. AI technology detects both physical objects and people.
- **Privacy zones:** Areas outside the actual construction zone are pixelated at all times in compliance with data protection regulations. People are made unidentifiable at the beginning of the digital process in order to protect personal privacy.
- **Spatial detection:** Umdasch Group Ventures' 3D construction progress tracking software is unique in its capacity to mimic human vision. The use of two cameras, instead of just one, enables the spatial position of physical objects and people to be determined.
- **Digital integration:** The spatial position is clearly portrayed in the 3D building model and tells the user which component is currently being produced and which component has been assembled into the building.
- **Field tests:** The system is currently undergoing a field test in Linz. Before that, it was trialled on a site in Kufstein by RIEDERBAU and AGA-Bau, where it was used for the construction of the shell of a residential and commercial property containing 13 flats and 2 offices. Those in charge of the project have now integrated the functionalities in the ongoing construction process in certain parts of the project. Their experience with the product, opportunities for optimisation and potential of the 3D computer vision is discussed in close collaboration with the developers from Umdasch Group

Ventures. The feedback from these discussions is incorporated into the continued development of the system.

Images

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Images of digital 3D construction printing:



Digital 3D construction printing onsite

The 3D construction printer from Umdasch Group Ventures can be used for prefab and directly onsite at the construction site thanks to its innovative technology and light, compact design.

Image: bauma-ugv-01.png

Copyright: Umdasch Group Ventures



Digital 3D construction printing onsite

The 3D construction printer from Umdasch Group Ventures can be used for prefab and directly onsite at the construction site thanks to its innovative technology and light, compact design.

Image: bauma-ugv-01_1.png

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Images of 3D digital construction progress tracking software:



AI-based camera

The camera is installed on the crane – the highest point on the construction site. This provides an overview of the construction site during the entire shell construction process, which can be accessed anytime, anywhere.

Photo: bauma-ugv-02.png

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Comprehensive data protection-compliant monitoring

Public areas are pixelated and people anonymised by KI technology so that filming is compliant with personal privacy and data protection regulations.

Photo: bauma-ugv-03.png

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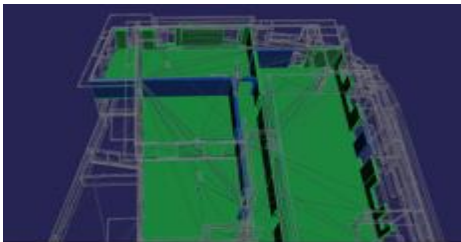


Real-time tracking and analysis

AI technology recognises relevant objects and people in real time. Construction processes are recorded by 3D computer vision intelligence and the data is automatically transmitted to the BIM model.

Photo: bauma-ugv-04.png

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Current status can be monitored from anywhere

The live view providing the current status of the construction site can be accessed anytime, anywhere. The automatic transfer of data to the 3D building model provides instant information on construction progress.

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bauma 2022 information:

Umdasch Group Ventures – the Umdasch Group's innovation hub for construction and retail industry solutions – will be sharing an **exhibition stand** with the Group's other companies and brands:

NeoTwin – the building owner platform designed for the entire building life cycle,

NEULANDT – with the portable precast plant N3P,

CONTACT – designed for the digital construction site, and

Concrefy – the concrete technologists.

The adjacent stand will be hosted by **Doka**, formwork technology experts within the multinational Umdasch Group.

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Build and manage more intelligently: the real-estate platform for building owners, investors and real estate asset managers

**NeoTwin presents ground-breaking project and real estate management solutions
at bauma 2022**

Productivity, efficiency and sustainability are the factors that determine the profitability and long-term viability of constructing, renovating and operating a building. The challenges that this presents for project managers and real estate managers face can only be overcome by digitalisation. At bauma 2022, NeoTwin will be presenting an innovative solution that enables the digitalisation of the entire building life cycle: the prometriq platform for building owners, investors and real estate asset managers.

The Munich-based prop-tech company NeoTwin, part of Umdasch Group Ventures, has developed a platform to control projects and manage real estate assets by digitalising the entire building life cycle. All processes and data are consolidated on a single, central platform. Many building owners and investors are facing challenges resulting from digitalisation, e.g. BIM, and current standards, such as ESG. The prometriq platform from NeoTwin is a tool that supports the BIM methodology and integrates ESG-related data and information. At bauma 2022 in Munich between 24 and 30 October, NeoTwin will be presenting its future-oriented solutions that enable project managers and real estate asset managers to overcome both today's challenges and those of the future.

The real estate tool for managing the entire building life cycle

The construction and continual upkeep of real estate and infrastructure is time- and cost-intensive, not to mention the significant risks involved. The most powerful lever to ensure transparency, which in turn increases productivity and efficiency, is digitalisation. This concept has met with failure in the past due to a lack of tools that allow complete digitalisation and the availability of data over the entire building lifecycle. The new prometriq platform from NeoTwin closes this gap. The application, which has been specifically designed for the needs of constructors, investors and real estate asset managers, enables productivity to be increased by real-time KPI-based and analysis-focussed monitoring and controlling along the whole lifecycle – from the planning phase to demolition.

Optimisation of time, costs and quality: NeoTwin's prometriq platform in use

Sibiu County in Romania has invested in the future-oriented project- and asset management-platform from NeoTwin. Together with ACC Infrastructure SRL, NeoTwin is supporting Sibiu County with the construction of the new County Hospital. The construction process will be based on BIM methodology. The constructor and investors are leveraging the full potential of NeoTwin's prometriq platform to manage the project, including the planning, management and control processes.

- The project is currently in the tendering phase, during which NeoTwin is providing expert knowledge to create the transparency required to increase the speed and efficiency of the procurement process.
- The purpose of using NeoTwin for the new hospital build is to ensure that both the constructor and operator have access to comprehensive data over the entire building lifecycle – from the construction phase to the everyday operation of the facilities.
- This is achieved by consolidating all relevant information and processes on the NeoTwin prometriq platform so that all parties have access to the latest KPIs concerning costs, time and quality to enable an efficient reporting and controlling system.

Images

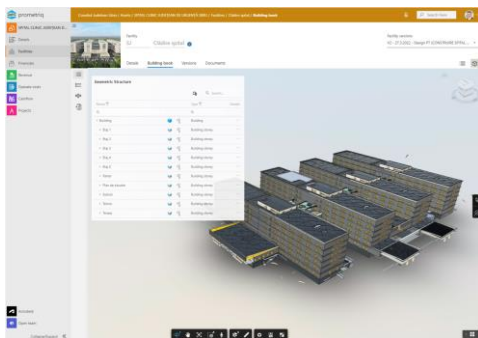
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Rendering the new County Hospital, Sibiu

Photo: bauma-mn-neotwin-01.png

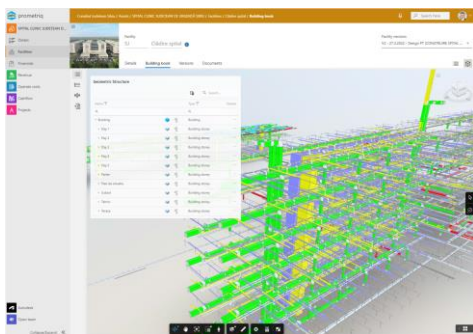
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BIM coordination model for the new County Hospital, Sibiu

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BIM MEP model for the new County Hospital, Sibiu

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Creating living spaces: new technologies for urban and housing planning

NEULANDT will be presenting the innovative portable precast plant N3P at bauma 2022

As we move towards the future, one of the most urgent demands is the creation of affordable housing and living spaces. The industrialisation of the construction process is key to overcoming this challenge. NEULANDT is paving the way for this transformation with its portable precast plant N3P, which enables the production of concrete elements directly on construction sites. It will be presenting this solution at bauma 2022.

NEULANDT (*neu* meaning 'new', *land* meaning 'land') has made it their mission to transform land into living spaces that create social, economic and ecological value. Every day. Everywhere. To enable this, NEULANDT has developed the portable precast plant N3P, which enables precast concrete elements to be mass-produced on construction sites. The plant's innovative butterfly technology, based on hinged steel formwork, enables efficient, sustainable and economic construction anywhere in the world. At bauma 2022, which will take place in Munich between 24 and 30 October 2022, NEULANDT will be demonstrating how its portable precast plant optimises the efficient planning of production process cycles.

The future-oriented solution for efficient construction

The portable precast plant N3P allows precast concrete elements to be produced anywhere in the world, without the need for costly, time-consuming transport. Each element is prepared, formed, poured and assembled directly on the construction site. The cost and time savings on an N3P construction site are great, compared to a conventional construction site. Time savings are primarily the result of the standardised production process based on butterfly technology. The flexible hinged butterfly formwork enables wall and ceiling elements, including box-outs for openings, reinforcement and built-in components, to be prepared ergonomically in a horizontal position, before the concrete is poured in a vertical position in the battery. The cost savings are achieved by the advance planning and scheduling of precast member production directly on the construction site, using local labourers who have been trained in the technology. Standardised procurement, production and control processes result in a high level of quality. Financing times are also significantly shorter.

Innovative technology, wherever it's needed: NEULANDT 3P in use

The N3P enables NEULANDT to create affordable housing and living spaces, even in parts of the world where urban planning faces the greatest challenges and access to living spaces is extremely restricted. A prime example of this is currently the Ivory Coast. Since summer 2022, the N3P with patented butterfly technology has been in use for the very first time on a construction site in Africa, south of the Sahara. What does this mean for the Ivory Coast?

- **Quicker, more efficient construction** By the end of the year, the N3P will be able to produce 1,000 m² precast concrete elements (1,000 m² reinforced concrete wall elements) per day.
- **Regional added value:** A total of 100 local workers will be hired and trained by the NEULANDT team. This produces jobs and income for the local citizens, as well as knowledge transfer and added value.
- **Local funding:** Investors will be provided with comprehensive support. NEULANDT provides consultancy services and helps with financing, planning, engineering services, assembly and delivery of materials.
- **Future-oriented cooperations:** Stakeholders and interest groups in the construction industry are given an initial insight into the industrialisation process, including knowledge sharing and support during their own industrialisation process. The overall aim is to work together in the social and commercial fields.

The portable precast plant N3P from NEULANDT will serve many purposes on the Ivory Coast. Besides the production of precast concrete elements, it also means that training is provided to local workers. It will also be a place where stakeholders can share knowledge about the industrialisation of the construction industry and swap experiences of major construction projects.

Images

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N3P site

Photo: bauma-neulandt-01.png

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Positioning the roof structure with a crane

Photo: bauma-neulandt-02.png
Copyright: NEULANDT



Positioning the roof structure with a crane

Photo: bauma-neulandt-03.png
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Positioning the tarpaulin with a crane

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Design of the battery inside the tent

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Digitalising the construction site: new construction project management software CONTACT presents its construction site software at bauma 2022

The construction sector faces increasing demands and growing pressure. Price pressure, complex customer specifications, a shortage of resources and bottlenecks all challenge the smooth running of construction projects – and all of these can be overcome with digitalisation. CONTACT will be presenting Sitelife – the innovative construction site software that enables the seamless digital planning, tracking and analysis of entire construction projects – at bauma 2022.

Experts in construction site optimisation and digitalisation, CONTACT, part of Umdasch Group Ventures, has developed the innovative and reliable construction site software Sitelife in association with the construction consultancy specialists b.i.m.m. The software enables construction companies, construction managers, foremen and project developers to manage construction sites and all subcontractors digitally – from the digging of the foundations to final handover. A simple plan, model-based tracking and a situation-specific analysis will provide an overview of the entire construction project. CONTACT will be presenting its construction site software for civil engineering and infrastructure construction projects at bauma 2022 in Munich, between 24 and 30 October.

Sitelife keeps track of construction work

The software has recently been launched onto the market and is already being used by many companies, including the BODNER Group, RIEDERBAU, Tecklenburg GmbH and Thomas Lorenz ZT GmbH. *“Sitelife helps to present complex problems clearly using a visual 3D model. Construction progress can be recorded directly on the model, which allows you to gather endless amounts of data from the construction site. This allows you to prepare predictions for the future and continually verify whether these are still applicable,”* says Christian Kirchner, Director of the General Contractor Technical Real Estate Development Division at the BODNER Group, explaining the Group’s successful implementation of the software.

Planning, tracking and analysing projects, including all subcontractors

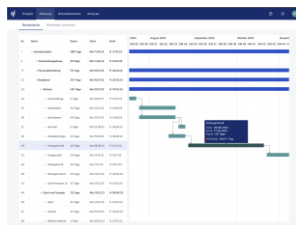
Sitelife is a digital construction site management tool designed for those in charge of construction processes. Since its market launch in June 2022, the software has been continuously optimised by a team of top developers, construction experts and IT specialists.

CONTACT focusses on usability optimisation and continued development of the different modules.

- **PLAN deadlines, time and materials:** Create, import or adapt construction schedules: online access for construction managers anytime, anywhere; integration of the model with the construction schedule; resource forecasting for each process step to ensure quicker, better responses; planning of material usage; simulation of different scenarios, depending on the length of different process steps.
- **TRACK projects with the digital construction logbook:** All data and photos consolidated in a central tool; time savings due to the digital approval process and the integration of invoicing with the bill of quantities; documentation of construction progress on the model, or on specific parts of the model; optional integration of specific model elements.
- **ANALYSE construction progress and productivity:** Keep track of construction work in a matter of clicks, based on automated real-time analysis of construction progress based on target vs. actual performance, number of construction elements completed and number of manpower hours; identification of optimisation potential and opportunities; reliable database aids decision-making. Additional in-depth analysis of construction-related data: target vs. actual comparisons of manpower hours (listed by building section and by group in the bill of quantities), machinery use (listed by subcontractor and type of machine), target vs. actual comparison of completed components.

Images

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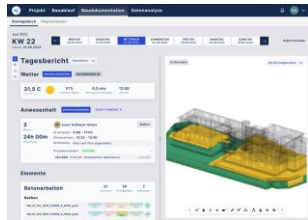


The Sitelife PLANNING module

Digital construction schedule, including all deadlines, time and material planning

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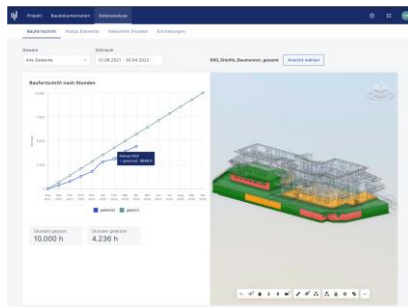


The Sitelife TRACKING module

Tracking of daily progress and events with a digital construction logbook

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The Sitelife ANALYSIS module

Analysis of construction progress and productivity.

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24.10.2022

Value engineering in the field of concrete production: increase production efficiency with factory production control

**Concrefy launches a new portal specialised in the production and upkeep of
concrete at bauma 2022**

Real-time information on the temperature, degree of maturity and compressive strength of concrete is critical during production, as is data regarding carbon emissions with regard to climate protection. Digitally monitoring the performance of freshly poured concrete adds value for the construction and precast industry by enabling an increase in efficiency, profitability and sustainability with regard to the concrete production process and the actual concrete. Concrefy will be presenting its exclusive portal and new software at bauma 2022. These future-oriented tools for managing the production and maintaining the quality of concrete also play a key role in significantly reducing energy consumption and carbon emissions.

Concrefy is an international centre of excellence for building materials technology. As a member of Umdasch Group Ventures, Concrefy specialises in the development and implementation of next-generation technologies for concrete production and construction engineering processes within the construction and precast industries. Factory Production Control is Concrefy's innovative Decision Support Tool for monitoring the performance of freshly poured concrete in the precast factory, providing the user with all relevant information about the concrete production process. The tool enables easy management and monitoring of production processes using the app on a mobile phone, tablet or PC. The myConcrefy portal features a dashboard showing current and performance data in real time. At bauma 2022, which will take place in Munich between 24 and 30 October, Concrefy will be presenting its ground-breaking tools for managing the concrete production process in the construction and precast concrete industries,

Innovative Decision Support Tool for boosting the efficiency and profitability of concrete production in the precast industry

Concrefy's Factory Production Control is the digital solution for the precast industry and enables the industrialisation of concrete production processes. This tool digitalises information streams to enable concrete production to be more efficient and profitable. This unique IIOT platform can be connected to any ERP system and simultaneously carries out digital monitoring, controls quality, reduces energy consumption and carbon emissions and optimises the production process.

Real-time information and control via the software's dashboard

Concrefy has consolidated its Decision Support Tools in a modular software package, specifically for decision-making in the in situ concrete production or precast environments. The myConcrefy portal provides a dashboard showing all key data at a glance in real time and enables the efficient control of the concrete production process. The user can access this information anytime, anywhere, using the FPC-app on a mobile, PC or tablet. Alongside the Factory Production Control, the current (and future) features of the portal include:

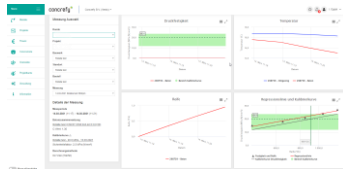
- simulation of different scenarios and forecasts
- a digital laboratory service,
- value measurements,
- asset management tool,
- concrete analysis box,
- water density sensor and
- pressure sensor.

Decision Support Tools enable data to be shared with stakeholders anywhere in the world, in real time. Data is not just gathered and recorded, but also consolidated in real time in the self-learning software portal myConcrefy, where information is evaluated, analysed and presented in various easily accessible dashboards. This brings multiple advantages for precast factories:

- Complex information regarding concrete production displayed clearly and simply in a single tool
- Sites around the world monitored and controlled from a single location
- Decision Support Tools interact across different modules
- Identification of process and mix optimisation potential
- simple management of deviations
- Available and accessible from any location
- High quality and productivity with significantly cost savings

Images

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Dashboard

Real-time overview of the production process, including measurables such as compressive strength, degree of maturity and temperature of the concrete, to enable tracking and monitoring of progress

Photo: bauma-concrefy-01.png



Dashboard scenario simulation

Optimal material composition can be achieved by comparing different mixes and variables (temperature, construction site costs, cost of mix)

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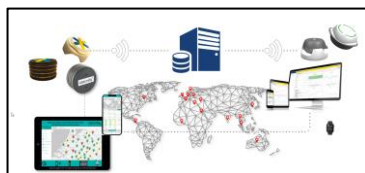


Dashboard

Failure reporting tool for the management to optimise production steps

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Digital solutions

Decision support tools & sensor technology sites around the world monitored and controlled from a single location

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About the Umdasch Group

The Umdasch Group, founded over 150 years ago in Austria, is a family-managed multinational group of companies. The innovative strength and expertise of the Umdasch Group, consisting of Doka (a global market leader in formwork technology), Umdasch The Store Makers, (specialists in shopfitting and retail) and Umdasch Group Ventures (the innovation hub for the construction and retail industries), is represented globally in more than 170 locations on 5 continents, and employs almost 8,300 people.

www.umdaschgroup.com

About Umdasch Group Ventures

Umdasch Group Ventures is the technology driver within the Umdasch Group, developing new, disruptive solutions and business models. The company invests in mature start-ups and young enterprises that provide potentially disruptive business models and/or unique technologies/services in the fields of construction and retail. The aim of the innovation hub is to continue developing their own ready-to-market business models and portfolio of strategic investments, to establish these on the market and drive market growth.

www.umdaschgroup-ventures.com

About NeoTwin

NeoTwin provides a platform for controlling projects and managing assets throughout the entire building life cycle. The Munich-based prop-tech company in which Umdasch Group Ventures has a 51% share addresses the major challenges in the construction and real estate sectors. NeoTwin is a central tool for managing entire real estate portfolios, construction projects and renovation projects, and has primarily been designed for constructors in the public and private sectors, as well as owners and operators of buildings, regardless of the types of building and their use, and infrastructure operators.

www.neotwin.com

About NEULANDT

Since its founding in 2019, NEULANDT has specialised in the active development of future-oriented construction solutions. N3P – the portable high-performance plant for the industrial production of precast concrete elements resolves many global challenges. A subsidiary of the Umdasch Group Ventures innovation hub, NEULANDT is setting new benchmarks and

designing tomorrow's living spaces for hundreds of people. Being a member of the Umdasch Group, NEULANDT has the backing of a strong group of companies and benefits from long-standing experience and expertise in the construction industry.

www.neulandt.build

About CONTACT

As a corporate start-up, CONTACT consolidates comprehensive construction expertise from a wide range of different areas and software development within the one company. CONTACT GmbH was borne out of the innovative strengths of Umdasch Group Ventures GmbH. It specialises in the development of revolutionary concepts for the construction and retail industries.

www.contact.com

About Concrefy

Concrefy is an international centre of excellence for concrete technology, focusing on the construction industry as a whole, specialising in particular in the concrete industry. With over 40 years of first-hand experience in this field, the team of concrete technologists is an expert port of call for all concrete-related issues. A subsidiary of Umdasch Group Ventures and member of the global Umdasch Group, Concrefy develops innovative solutions to optimise industrial production processes and operations in the construction and precast concrete industries – driving greater safety, productivity, transparency and sustainability.

www.concrefy.com