

INFORMA

Special edition – product novelties

No. 15 Year 2007

- Roof and façade novelties
- High-rack warehouse
- TRIP – Trimo Research–Innovation submarine ship

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INTRODUCTION

As we head deeper into the New Year, it seems only fitting that this first issue of Informa carries the unofficial theme of innovation – new ideas for a new way of creative construction. Each page is an example of the importance new products and in particular innovation and development play in Trimo’s business strategy, as the company strives to find new ways on ensuring the materials we use are never the limiting factor in creativity.

This issue of Informa showcases Trimo’s new and exciting roof panel for flat and inclined roofs, and which allows large spans to be bridged. Taking in contemporary influences the panels are simple yet elegant, whilst retaining all the building requirements with regards to fire resistance, insulation and ease of installation. Innovative facade system from segmental curved panels allows a variety of different round façade shapes to be constructed and opens design possibilities still further.

With the environment and climate change never far from the news headlines the impact and pressure on the construction industry continues to grow. Trimo has long recognised the responsibility it must take to ensuring that as a modern and forward looking company it has a responsibility to ensure that its activities, directly or as a consequence of, do not impact negatively on the environment. Underpinning all of Trimo’s developments is the core goal to reduce energy use. As you read on, you’ll discover how Trimo’s new development building, known as “TRIP”, tackles the environment issues head on from its design and construction through to the very character of its purpose. But the preservation of the environment is more than just sympathy and concern for the climate; more it is about creating a place where we can feel comfortable and which impacts positively on our well being and our productivity. Combining the social and external environmental needs is the key, which has been expertly accomplished by “TRIP”.

High-rack warehouses are something we at Trimo have become quite the experts at designing. Looking to home first, we are pleased to detail our systemic solution, which can meet even the most demanding requirements.

I’m sure you’ll agree that this year is destined to be one of the most exciting yet and Trimo, with the support of you our partners, will ensure we have the commitment and drive to continue developing and introducing the products you demand – products that challenge both you creatively and which open your mind to endless design possibilities.

Editorial Board of Informa

ROOF AND FAÇADE NOVELTIES

To improve the existing, to surprise buyers with improvements ... to open new fields of creativity. Trimo's development department is constantly walking the path of innovation, because it is aware of the fact that when aesthetics and innovation go hand-in-hand they add value to products and increase the company's recognition on the global market. This time Trimo's development department is doing just that; low-pitched roofs, flatroofs, as well as curved façade panels – the new, technologically improved elements that encourage architectural creativity and are increasing time and cost efficiency.

FLATROOF PANELS - TRIMOTERM SRV

Flatroof panels - Trimoterm SRV are used for roof cladding of industrial, storage, office and commercial facilities. The panels ensure excellent thermal and sound insulation.

Benefits

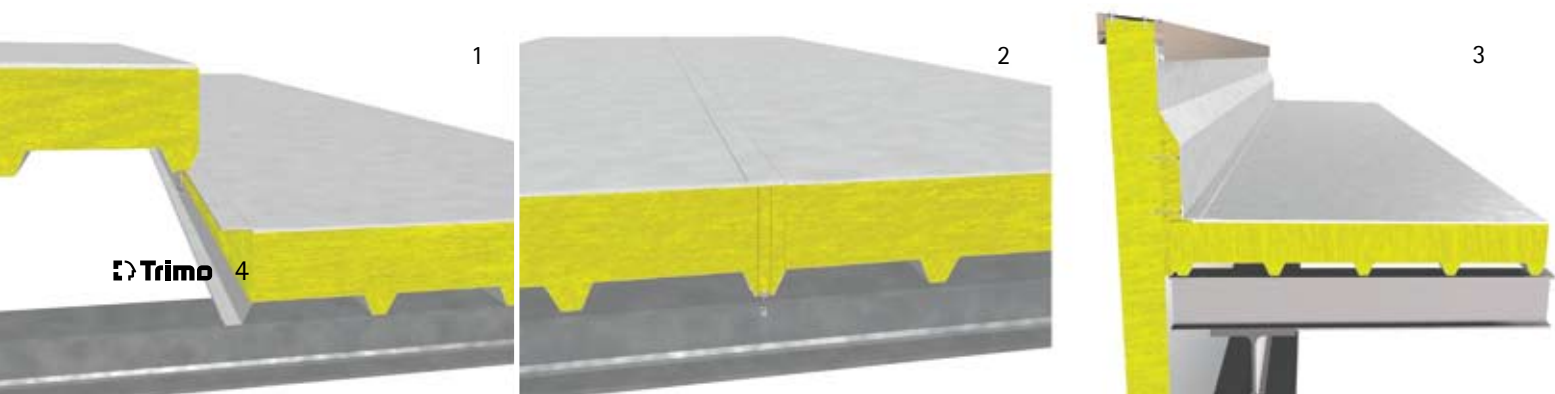
- minimum slope of 2%
- time and cost efficiency thanks to the simple and quick construction
- possibility to lay panels within a minimum of a 15-metre radius (with SRV 60)
- panel thickness from 60 to 200 mm
- sustainability

Trimoterm SRV panels consist of both side galvanized, deep-profiled, painted steel sheet on the inner side, and a PVC (1.5 mm) waterproof membrane on the outer side. The steel sheet and the membrane are bonded to the panel which is made of non-combustible lamellated mineral wool of class A1 (EN ISO 1182).

Technical data

- Inner profile: deep-profiled
- Cover width: 1000 mm
- Panel length: up to 14 m
- Panel thickness: 60, 80, 100, 120, 150, 200 mm

- 1., 2. Construction of longitudinal joint SRV
3. Roof cross-section
4. Roof covered with insulated flatroof panels – Trimoterm SRV



PANELS FOR LOW-PITCHED ROOFS –TRIMOTERM SNV-3L

The low-pitched roof system with Trimoterm SNV-3L panels is used for roof inclination of minimum 3°. It can be utilized to various projects: from commercial, storage, office, leisure to industrial facilities. Trimoterm SNV-3L panels are distinguished by fire resistance and excellent thermal and sound insulation. The panel's cover width of 1100 mm enables greater transport efficiency and saves installation time. The Trimoterm SNV-3L panel has got three trapezoidal shaped profiles, of which one is overlapping.

Benefits

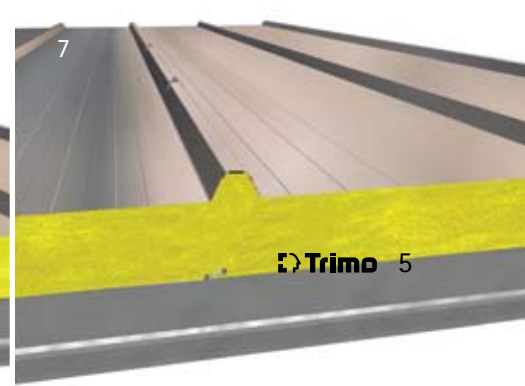
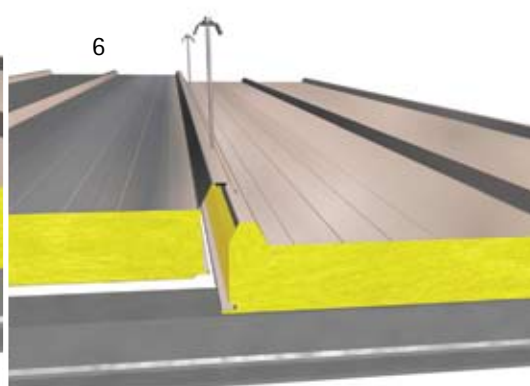
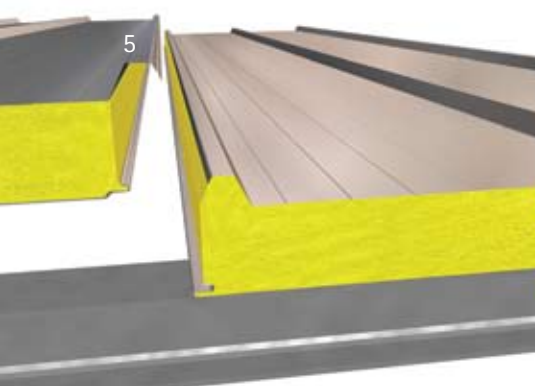
- time and cost efficiency thanks to the simple and quick construction
- attractive appearance of the roof
- possibility to make combinations with the SNV panels
- minimum single-panel roof slope is 5° or 3° with additional sealing
- panels can also be used for the façade
- sustainability

Trimoterm SNV-3L panels consist of both side galvanised and painted steel sheet. The steel sheet is bonded to the panel core which is made of non-combustible lamellated mineral wool of class A1 (EN ISO 1182).

Technical data

- Outer profile: deep-profiled
- Inner profile: s-profile, v-profile, smooth profile
- Cover width: 1100 mm
- Panel length: up to 14 m
- Panel thickness: 60, 80, 100, 120, 150, 200 mm

5., 6., 7. Construction of longitudinal joint SNV-3L
4. Roof covered with panels for low-pitched roofs – Trimoterm SNV-3L



ROOF AND FAÇADE NOVELTIES



1

SEGMENTAL CURVED FAÇADE PANELS – THE SOFTNESS OF CURVES

How to make a beautiful and evenly curved façade on which hand and eye can travel smoothly?

Trimo's development department designed an innovative façade system from segmental curved panels, which allow for the construction of a variety of different round-shaped façades both vertically and horizontally. The (in)visibility of the break line – the biggest aesthetic challenge encountered by many manufacturers, depends on the thickness of the panel, radius, profile and tools. The lines are less noticeable on thicker panels and on those with larger radius.

The new system consists of Trimoterm FTV and FTV INVISIO panels, which come in a variety of thicknesses, modular lengths, and profiles, and with numerous final decorative treatment.

The segmental panel, which is suitable for horizontal and vertical façade, can be curved longitudinally or transversally in regard to the direction of the curving, or it can be concave and convex in regard to the direction of the radius. Biaxial curving of the panel is not possible.

Radius lengths are different depending on the direction of curving and the type of an individual façade element. Trimoterm FTV 60 has the following properties: minimum panel radius is 1.5m when curved longitudinally and 3.0m when curved transversally.

Radius limit values for each panel thickness in the longitudinal and transversal direction of curving are shown in tables.

The new curved façade panels have the following qualities: long life-span, great fire resistance, and excellent thermal and sound insulation properties.

It is proven that a human's creativity is most inspired by the simplest of elements that is exactly what Trimo's panels are like; simple shapes, but of the highest quality. Elements that make it possible to design, construct and accomplish many things. And also to surprise ...

Trimo looks forward to all the surprises in design creativity.

Maja Ivanič

PANEL THICKNESS (mm)	MINIMUM RADIUS (m)
60	1,5m
80	1,9m
100	2,4m
120	2,9m
150	3,5m
200	4,8m

The minimum radius of a longitudinally curved panel with regard to thickness

PANEL THICKNESS (mm)	MINIMUM RADIUS (m)
60	3m
80	3,9m
100	4,9m
120	5,9m
150	7,3m
200	9,8m

The minimum radius of a transversally curved panel with regard to thickness

1. NTC Trnova, Slovakia

2., 3. Mercator, Podbrežje, Slovenia

4., 5. Mesni center, Novo mesto, Slovenia

2



3



4



5



HIGH-RACK WAREHOUSE

1

Trimo has for a number of years been participating in the construction of numerous high-rack warehouses and during this time we have been able to gain a lot of experience in the field of construction of this type of building. Enriched with this experience and knowledge from various other demanding projects, and being given concrete tasks in construction of various high-rack warehouses for incoming and outgoing materials, built for Trimo in the past two years, we have decided to combine "business with pleasure" and simultaneously develop a systemic solution for high-rack warehouses, which could be improved and tested through the above mentioned internal projects, and then offered to our external partners.

We were certain (and the above-mentioned projects prove us right) that the entire palette of Trimo's products - from steel constructions, façade and roof panel systems, to technical knowledge of various fields from steel construction project management and panel statics, to assembly, fire engineering, construction physics, and familiarity with washer issues, to contemporary guidance systems and information support (together with our business partners), was simply ideal for combining them into a unified and optimized system that can be competitive on the market.

Because of this, Trimo is capable of offering its' clients a complete solution - that is a solution, which is not optimized solely in one narrow segment (e.g. project management, assembly, façade and roof systems, fire safety systems, statics for load-bearing constructions, technology ...), but rather a solution, which is optimized in its entirety, as the only way to take advantage of the synergies between individual fields (e.g. a load-bearing pallet construction can simultaneously act as a façade or roof sub-construction, special washer details of a façade system can be an integral part of a solution of an active fire-safety system, etc.). Since the solution largely consists of Trimo's products or those of our strategic partners, the quality and the speed of the execution can be better than when compared with instances where individual products and contractors come into contact for the first time.

In reality, this is not a classical "uniform" solution as we recognize that every location and every customer has specific demands that need to be considered, however, the systemic solution that we have developed allows a sufficient level of flexibility to accommodate these demands

but is at the same time systemized and interconnected enough to come close to uniform solutions benefit-wise - especially in the areas of reliability, speed and economic appeal.

Our customers can see the success of the above mentioned solutions by visiting actual completed high-rack warehouses that we have constructed in our own premises. Soon they will also have an opportunity to see some other projects, which are just being carried out for our strategic customers, and all of them are our best ambassadors of success for the idea of a systemic solution for high-rack warehouses.

Miloš Ebner

1. - 6. Trimo high-rack warehouse, Trebnje, Slovenia

2



3



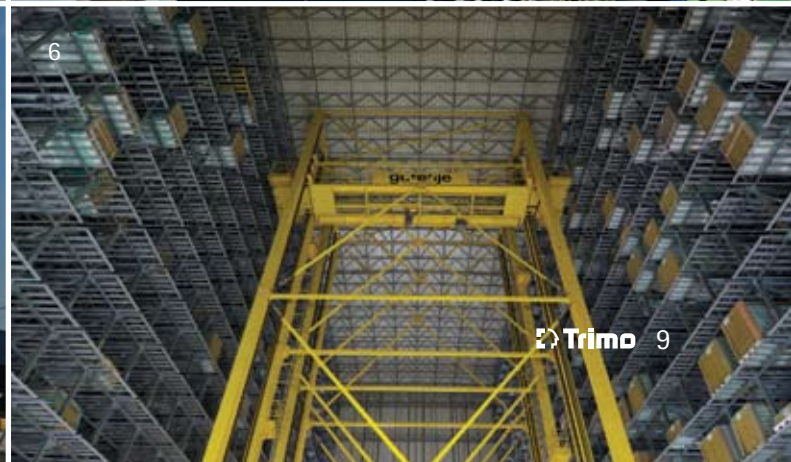
4



5



6



TRIMO RESEARCH-INNOVATION

Just as Captain Nemo used his submarine Nautilus to explore the unknown in Jules Verne's novel "Twenty Thousand Leagues Under The Sea", Trimo can from now on use its own Nautilus to dive into the depths of knowledge, which we have named TRIP or the Trimo Research-Innovation submarine ship.

Housed within TRIP are the departments of Development, Technical support, IT and Quality Control, as well the CBS Institute, which was established a year ago. Due to its proximity to the manufacturing site and transportation routes the construction has an introverted character - it is directed inward towards interior atriums, which ensures it is an excellent working environment with sufficient light and ventilation. Together with our architect, Aleš Prinčič, we tried to incorporate into the design of our new premises all the standards of the contemporary business office design, such as good ventilation, green areas, an interaction and information exchange room, flexibility in the office set up and ability to make subsequent modifications without major construction intervention. Also included is state-of-the-art multimedia equipment (video screens, video conference room, wireless connection, ...), different colour rooms and different ambiances for different types of work, etc.

The principal guideline in choosing the materials for this project was to demonstrate what an extremely appealing and at the same time functional constructional solution Trimo's products can provide. Hence we have used our newest solutions in façades - TrimoRaster and TrimoFusion, iridescent colours and smooth GLADIO panels. The entrance ramps are made of steel plates with a special anti-slide top-coat, on the outside as well as on the inside we used a larger number of different profiles and on the inner-side a visible steel construction was used. We have truly built a showcase building where the newest Trimo products can be seen live and we can be convinced of their multi-purpose applications and have proven that even the most demanding business and other public constructions can largely be made out of our products, while also achieving the highest aesthetic standards.

The architectural design was based on a "think-tank" motif and a research submarine respectively, which offers an inner, thinking, homely, and at the same time an innovative

and stimulating work environment which, with its specific design, encourages team work, information exchange and employee interaction.

»A show - wall« of some of Trimo's most successful products is planned for the entrance ramp, which will be on display in a form of "pictures" to all our visitors and business partners.

The construction also includes three lecture rooms equipped with multimedia for internal and external educational courses, where developers can acquire new knowledge and also transfer knowledge to other employees in and outside the company. There will also be a smaller library and a brain-storming room, which we have named »the knowledge incubator« that will serve as a place for spreading knowledge, developing new ideas and teamwork on development projects. There will also be a smaller prototype workshop in the proximity for the immediate testing of ideas and putting them into practice, which we have named "the ideas laboratory".

The choice and design of offices accommodates the development process. The ideas laboratory, with its very informal atmosphere for generating new ideas and knowledge exchange, »classic« conference rooms for meetings on development projects in progress, quick »meeting points« (purposely without chairs and within the office working space) intended for quick morning operational meetings for handing out assignments, coordination and immediate solving of smaller problems, common communication spaces (halls, atriums) as areas for quick interactions and informal information exchange, and classrooms as places of knowledge dissemination, introduction of employees from other fields to new products and their use.

The whole building is connected to an intelligent house system, which means that entrance control, security, alarm and fire-protection systems, lighting, heating, cooling, air-conditioning, and the energy and

- Project:
Trimo Research - Innovation submarine ship
- Architect: Studio Prinčič & partners, Udine, Italy
- Investor: Trimo, d. d., Trebnje, Slovenia
- Structural designer: Jože Drčar, Trimo, d. d., Slovenia
- Elements:
Steel construction: 70t
Façade: - TrimoFusion - 705m²
- TrimoRaster - 849m²
Roof: - Trimoterm SNV 200 - 1059m²
Ceiling: - Trimoterm FTV 60 - 30m²
- Finished: 2006

SUBMARINE SHIP

water use are all connected to a common computer-guided and optimized system. This system also includes the company's prototype Trimo warm-ventilated roof for the energy efficient use of solar energy which reduces the amount of energy required for ventilation whilst providing a test platform for the entire family of Trimo's solar energy efficient products, which are being developed this year. In summary, we have in front of us a building that not only demonstrates to the outside world that a beautiful and an efficient business building can be built using Trimo's products, but that a building can also provide excellent working environment that enables employees and visitors to feel comfortable in. And at the same time it will be used to test specific concepts of design and business office organisation, which we'll be able to use in the future on other projects.

Proof that we have achieved our intended goal was further proven by the fact that the architect Aleš Prinčič received just before the New Year one of the most prestigious Slovene architectural awards for the TRIP building - "The Golden Pencil", which is awarded by the Chamber of Architecture and space of Slovenia.

Miloš Ebner

1. - 5. Trimo Research-Innovation submarine ship, Trebnje, Slovenia



Gallery



PROJECT ORANGE

Bridgwater, United Kingdom



BALTIKA

Talin, Estonia



BANG & OLUFSEN

Kopřivnice, Czech Republic



ROSSMANN

Łódź, Poland



SANDALO

Sevilla, Spain



HAMMERSEN

Osnabrück, Germany



Trimo

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Engineering and production of pre-fabricated buildings, d. d.

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