

sikla

THE MAGAZINE

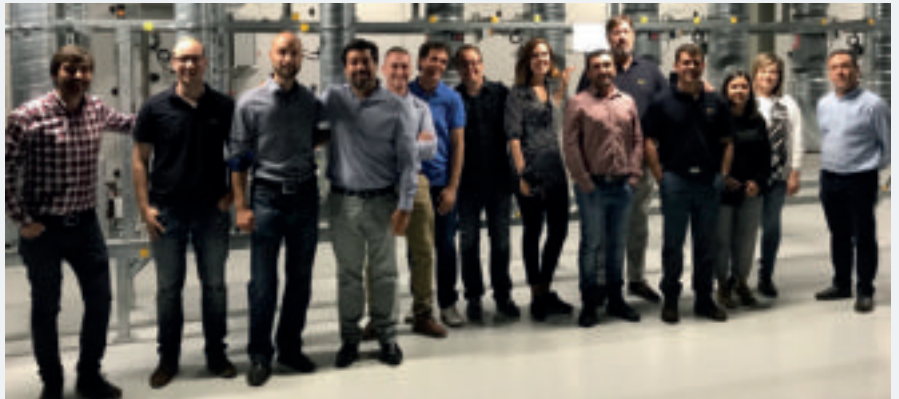
ISSUE 2018/19



Spanish customers visit the German HQ

Staff from the planning departments of Spanish companies received training during a two-day stay in Villingen-Schwenningen. The main topics were new products and the Sikla BIM software applications. Support was provided by application engineers and sales staff from Sikla Sistemas de Soportación S.L., based in Madrid.

Ample opportunities for the personal exchange of experience and networking between the various companies were also provided.



Sikla project visit to medical technology manufacturer Aesculap

Sikla Polska is awarded the “Business Gazelle”

This prestigious award is presented annually by the leading Polish business magazine Puls Biznesu to the fastest growing small and medium-sized companies. The ranking was set up in 2000 and is based exclusively on the companies' results of the last three years. The “Business Gazelle” award reflects the company's credibility and good reputation.



Sikla România moves to new headquarters

In June this year, Sikla (România) S.R.L. moved into its new headquarters in the centre of Bucharest.

Managing Director Bogdan Duta: “In order to keep on meeting our customers' requirements for competent advice, technical support and the rapid availability of our products, we decided to relocate to larger premises with our own warehouse.” Customers from the greater Bucharest area now have the option of picking up goods themselves.

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Bogdan Duta and his team

Dear readers,

In our fast-paced, digitised world, companies are confronted with increasingly complex conditions and are continually facing new challenges. We would like to equip you for success and have put together a range of interesting and current topics for you, once again, in this issue.

We too are constantly working to improve for your benefit. With your feedback, we can make the right adjustments to better provide active support with our products and services and to make your work easier in the future. To this end, we have set up a digital customer survey on our website and look forward to receiving your feedback. You can find out more about this in my interview with Achim Münch on page 11.

We have started a new series called "siFramo inspires our customers" in this issue and would like to know their feedback. Become a siFramo ambassador and report back on your siFramo project. If you are interested, please contact your customer advisor.

In any case, I look forward to hearing from you – whether via our customer survey or as a siFramo ambassador.

Kind regards

Manuela Maurer
Marketing Communications Manager



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Sikla High Corrosion Protection (HCP)

Optimum corrosion protection with proven coating processes



*Dominik Zanker (M.Eng)
Product Manager Simotec*

Generally steel components need to be protected against corrosion in order to guarantee their integrity throughout their planned service life. If corrosion damage occurs and remains unnoticed, it can have a dangerous impact on the components or even the entire system.

For load-bearing structures, in particular, it is important to focus on ensuring unrestricted and safe use during the planned service life. To meet this requirement, tender documents and contracts often specify certain coatings or coating systems, even though no specific knowledge of the local atmosphere, microclimate or macroclimate is available. The latest innovations in surface and coating technology are often unconsidered.

It is therefore vital to gain an overall view of the requirements of the site. This includes analysing the local climatic conditions at the place of use, in accordance with DIN EN ISO 12944-2 (Table 1: Corrosivity categories for typical environments [...]). This standard defines six categories, which range from “very low” to “very high” and correspond to the relevant environmental conditions.

Corrosivity category	Corrosion exposure	Exterior	Interior
C1	Very low		Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels.
C2	Low	Atmospheres with low level of pollution. Mostly rural areas.	Unheated buildings where condensation can occur, e.g. depots, sports halls.
C3	Medium	Urban and industrial atmospheres, moderate sulphur dioxide pollution. Coastal area with low salinity.	Production rooms with high humidity and some air pollution, e.g. food-processing plants, laundries, breweries, dairies.
C4	High	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal ship and boatyards.
C5-I	Very high	Industrial areas with high humidity and aggressive atmosphere.	Buildings or areas with almost permanent condensation and high pollution.
C5-M	Very high	Coastal and offshore areas with high salinity.	Buildings or areas with almost permanent condensation and high pollution.

This does not take into account any special external influences, such as thermal, chemical, microclimatic, mechanical or construction-related factors, which could shorten the service life of the corrosion protection. It is therefore essential to analyse the climatic conditions on site and, if necessary, to take them into account when selecting the right corrosion protection or when determining the corrosivity category. Sikla can provide you with support and advice based on many years of practical experience. Please do not hesitate to contact us.

Coatings are properly assigned to corrosivity categories after carrying out a salt spray test. A certain number of hours in the salt spray without formation of red rust is specified.

Protection period after x hours of salt spray testing (cf. DIN EN ISO 9227:2005-10)

Corrosivity category	Corrosivity	Protection period [class]	Protection period [years]	Exposure to salt spray [h]
C4	High	Short	2 - 5	240
	Moderately aggressive	Medium	5 - 15	480
	Interior/exterior	Long	> 15	720
C5	Very high	Short	2 - 5	480
	Aggressive	Medium	5 - 15	720
	Interior/exterior	Long	> 15	1,440

Sikla components with the HCP protection system are assigned to corrosivity category C4 long. The HCP protection system withstands more than 720 hours in the salt spray test without formation of red rust.

Overview of HCP protection systems

Hot dip galvanising (of fabricated articles) according to DIN EN ISO 1461

A proven and well-known corrosion protection coating, which is used in categories up to C4 and C5. Tenders and projects often specify a minimum layer thickness. Less well-known is that the standard determines and specifies the layer thickness in relation to the thickness of the material being coated. The layer thickness ranges from 45 to 85 μm .

Hot dip galvanising is unsuitable for more delicate forms (such as small drilled holes or blind hole threads). Hot dip galvanising may also be unfavourable depending on the design. During the necessary pickling and subsequent drying process, acid residues can remain trapped in joints and gaps. After hot dip galvanising, these residues are not visible and lead very quickly to the formation of red rust and to "rust bleeding" from the gap after exposure to moisture for the first time.

Zinc layer thicknesses according to material thickness (cf. DIN EN ISO 1461:2009-10, Table 3)

Thickness of base material [mm]	Local minimum coating thickness [μm]	Average min. coating thickness [μm]
> 6	70	85
> 3 to \leq 6	55	70
\geq 1.5 to \leq 3	45	55

DIN EN ISO 14713-1 (Table 2) indicates practical values for zinc losses [$\mu\text{m}/\text{year}$]. The achievable service life can be inferred from this.

Loss of thickness rates for galvanised articles according to corrosivity category (cf. DIN EN ISO 14713-1:2010-05, Table 1)

Corrosivity category	Loss of thickness [$\mu\text{m}/\text{year}$]	Service life of corrosion protection (galvanised articles) for base material thickness > 3 to \leq 6 mm with a local minimum coating thickness of 55 μm [years]
C1	\leq 0.1	> 100
C2	0.1 - 0.7	> 100 - 78
C3	0.7 - 2.1	78 - 26
C4	2.1 - 4.2	26 - 13
C5	4.2 - 8.4	13 - 6.5

Zinc-nickel coatings according to DIN EN ISO 19598

This coating was originally developed for the automotive industry, which has stringent requirements for corrosion protection against exposure to temperature, salt and climatic influences.

Zinc-nickel coatings are applied using a so-called electrolysis method. This involves applying a voltage to a conductive solution containing metal ions, which causes a metallic layer to form on the electrodes. The cathodes used in the electroplating process are the components that require coating.

The corrosion resistance of zinc-nickel coatings is around 10 times higher than that achieved with hot dip galvanising. For this reason, the layer thicknesses can also be reduced by a factor of 10 (about 8 to 10 μm).

Properties of zinc-nickel coatings

Type of surface protection	Coating thickness [μm]	Loss of thickness/year in comparison to galvanised fabricated articles	Minimum test duration of salt spray test with no corrosion on base material [h]
Galv. zinc/nickel alloy coating	8 - 10	1/10	720

Zinc flake coatings according to DIN EN ISO 10683 and DIN EN 13858

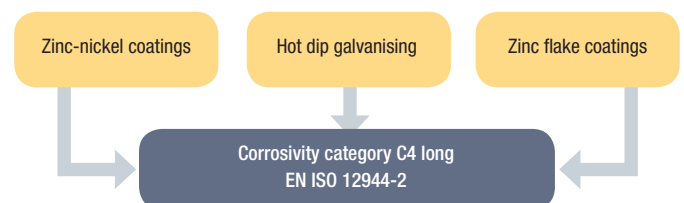
These also have their origins in the automotive industry. They have also been used in the construction industry for quite some time, for protecting components made of high-strength steel (such as screws with strength class >10.9, high-strength nuts, structural parts with tensile strength >1,000 N/mm² etc.). The background to this is the risk of hydrogen embrittlement when using galvanic coating processes.

The layer thickness of 5 to 15 μm is also significantly reduced in comparison to hot dip galvanised components, since the resistance to corrosion is much better. This type of coating is called cathodic protection, whereby the coating "sacrifices" itself to protect the base metal. There is no undermining of the corrosion protection.

The excellent properties of this coating system have been tested and confirmed by MPA Stuttgart.

Type of surface protection	Coating thickness [μm]	Loss of thickness/year in comparison to galvanised fabricated articles	Minimum test duration of salt spray test with no corrosion on base material [h]
Zinc flake	5 - 15	1/10	720

Sikla components with the HCP protection system always comply with corrosivity category C4 long and with the requirements of DIN EN ISO 12944-2.



siFramo catwalks – Highlight of the new Exhibition Hall 12 in Frankfurt

Since the foundation stone was laid in October 2016, an impressive building has been constructed on the last remaining space on the trade fair grounds. It houses an exhibition area of 33,600 m², spread across two levels, with space for 11,800 visitors.

The new exhibition centre in Frankfurt's Europaviertel (European quarter) has an interior area equivalent to five football pitches. The gigantic building has taken only 22 months to construct. The building's structure is so strong that heavy goods vehicles can be driven on the upper floor, which has a bearing capacity of 33.3 kN/m².

The trade fair has invested around 250 million euros in Hall 12. The technical systems for the building accounted for 40 % of the investment volume, which clearly demonstrates the extent of the building services. At the end of 2016, Sikla was awarded the overall contract for delivering the support system. The ENGIE subsidiaries in Cologne, Stuttgart, Munich and Dresden were responsible for the technical building services equipment.

Predictable construction progress thanks to prefabrication and final assembly

There are power supply centres located on the intermediate levels of the entire outer ring of the building and in the basement of the exhibition hall. For the power centres in the basement alone, with a total area of 1,400 m², it was possible to construct all of the secondary steel construction for the building services with siFramo. Approximately 250 siFramo modules were installed within the 600-m-long service passages. The modules (h: 3.00 m x w: 2.20 m) weighed 125 kg. The modular planning, scheduling of structured assembly processes, and the considerable time savings achieved due to pre-assembly gave the system a clear advantage over conventional assembly. Our customer was impressed by the associated reduction in construction time and the consistent quality with no waste or residual material.

View into a supply passage



Maintenance and inspection walkways – siFramo catwalks

When visitors look up towards the hall ceiling, they see an impressive catwalk construction, on all levels of the hall. These modules were manufactured in the Sikla factory from siFramo, gratings and a high-quality railing system. Compliance with the relevant standards and specifications (e.g. DIN ISO 14122-3:2016) was ensured and verifiable structural analyses were carried out, which were then evaluated and approved by the investor's authorised structural engineer. The necessary special parts were designed, calculated and produced in record time.

Our basic concept of creating a uniform design with as few variants as possible was perfectly executed. Only two types of module were used for the basic catwalks, plus an additional element for any tolerance compensation. The installation of the ventilation and air-conditioning units provided by the customer for completion of the modules involved moving loads of up to 1.4 t. To facilitate assembly, we designed auxiliary structures and assembly tables and used suitable lifting equipment. If you wanted to walk along all 22 catwalks, you would have to cover a distance of 1.8 kilometers.

Installation of the siFramo catwalk modules



siFramo catwalks

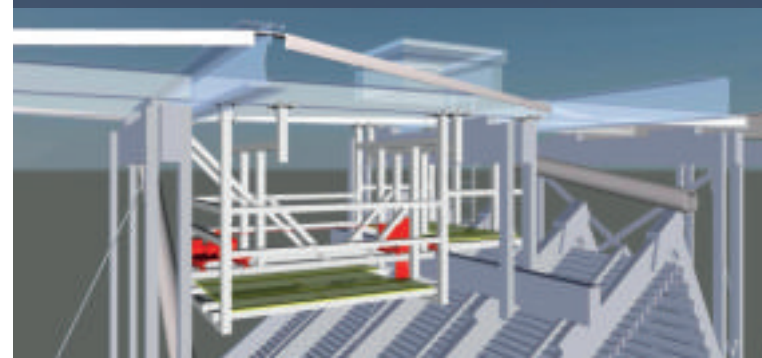


One of the criteria for the award of the project was that Sikla would carry out the installation work for the Sikla modules. Between December 2016 and March 2018, Sikla managed and implemented the assembly of the catwalks and the modules in the supply passages with the help of a partner company.

Special modules for a work of art

The Sikla support systems were used to implement numerous standard and special solutions. The siFramo construction for suspending a work of art in the north foyer of the hall is also worth mentioning. For the winch system, an elaborate construction was installed that meets both the aesthetic and functional requirements. A maintenance platform for inspection work was built at a height of 22 metres in the style of the siFramo catwalk modules.

Sikla construction and maintenance platform for the work of art



More than 20 kilometres of siFramo beam sections were manufactured for the project, and around 300 tons of Sikla fastening materials were supplied and installed.

Sikla Project Management provided support to more than 40 members of the client and the subcontractor teams. Between 300 and 400 fitters worked every day on the building services installation. In order to ensure good quality support and management, Sikla's technical project supervisors were on site on a weekly basis. In addition to providing support and planning services, we also held training sessions for fitters and made a goods depot, storage containers and multi-storey site office containers available.



Torsten Schmalzried
Project Engineering

Modern and pioneering building design with Sikla BIM software applications

BIM changes the building design, construction and operating process and makes it more efficient and transparent. The basis for this is the digital building model. Efficiency is improved by working on the model and the data, which are used in conjunction with special software for the planning, calculation, simulation, testing, tendering and subsequent operation of the building.



Using the two Sikla CAD applications **SiCAD4TRICADMS** and **SiCAD4Revit**, you can incorporate and configure our products in your CAD systems.

SiCAD4TRICADMS

TRICAD MS is a planning tool for building services and for digital factory planning. The heart of this application is MicroStation from Bentley Systems. BIM planning has proven itself for use in large-scale projects thanks to a fully integrated CAD data exchange platform (Projectwise).

SiCAD4TRICADMS is used as a component database for placing the beam sections. Graphical data and information on the brackets, connecting components, accessories and pipe-enclosing elements are exported from the Sikla CAD library. The components are exported with an additional text file. The text file gives the user active control and specifies the method of placement. The STA F 100 end support, for example, recognises which components can be used for primary and secondary connections. If the components are combined incorrectly, the user receives a warning message. If the components are assembled correctly, the connections recognise their positions automatically and the beam sections are shortened accordingly so that the special support can be created with the required dimensions.

Placing the components and their associated information allows a material list, including all automatically determined fastening elements, to be generated in Excel format. **SiCAD4TRICADMS** also offers the option of automatically generating drawings of the planned special supports.



User interface



siFramo special support

Since the introduction of TRICAD Version 2017_5, **SiCAD4TRICADMS** is available, with some restrictions, to all TRICAD users with the 3D Heating, 3D Sprinkler and 3D Piping modules. Patches are required for better use with this version. For version 2018_0 and later versions, these patches are integrated.

SiCAD4Revit

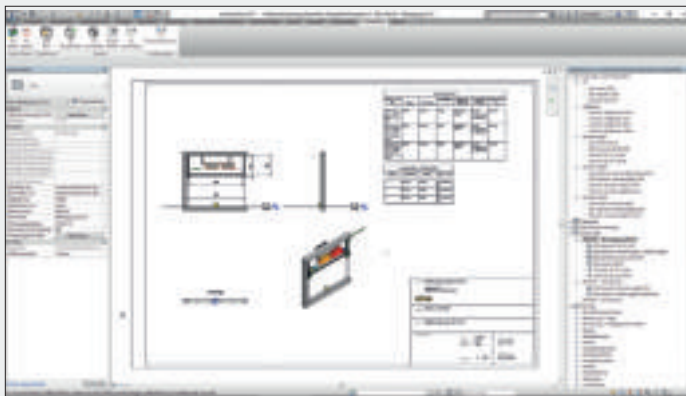
The Autodesk Revit add-in **SiCAD4Revit** is aimed at specialist planners of technical building services and fastening technology. Sikla constructions can be configured and placed effectively within a Revit planning environment. Assembly drawings and material take off lists (MTO) can be exported and used for ordering purposes.

The level of graphic definition (LoG) shows as much detail as necessary. Illustrations with holes and screws are only required in exceptional cases (e.g. for photorealistic images or videos). The level of information (LoI) includes all the necessary alphanumeric information required for the relevant design.

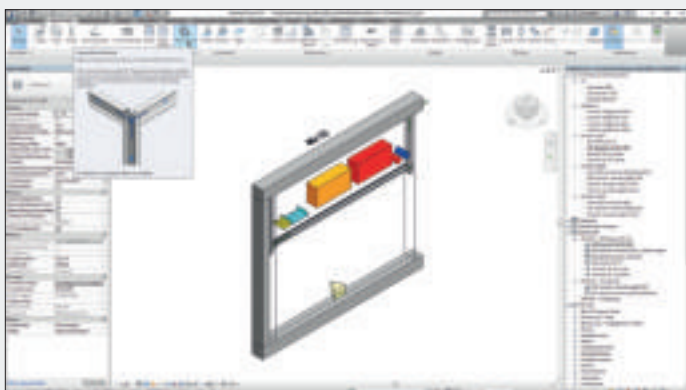
The basic functions of **SiCAD4Revit** simplify the creation of Sikla modules, which are made up of channels, connectors and pipe supports, and take into account the particular structural conditions and the building services that are to be installed. Typicals are used here to represent the common types of construction.

SiCAD4Revit is a program that is virtually separate from the main Revit applications. In the Revit environment, only the interaction with the model is established. This includes scanning the model for pipes, existing fasteners, walls, beams etc., as well as placing the Sikla components or setting them up.

An additional function allows the supports to be exported to the RSTAB structural analysis software from Dlubal, which Sikla uses for its structural analysis. This prevents any errors that may otherwise creep in during manual transfer.



Sikla box with connectors



Arrangement plan



*Bruno Pedro
BIM Professional*

siFramo inspires our customers

In recent years, siFramo has been used with great success in numerous projects and for the widest variety of applications worldwide.

Taking this success story as an opportunity, we now let our customers have their say: In this issue, Iztok Stanonik, Investor and Managing Director of Polycom, reports on the construction of new company headquarters in Škofja Loka, Slovenia.



Polycom offers integrated development solutions, ranging from product development and tool development to the manufacture of polymer products for the automotive industry and other sectors.

Iztok Stanonik

» The original design used fastening solutions that I didn't particularly like the look of. When Mr Jantelj from Sikla introduced me to the siFramo system, I was impressed by its aesthetically pleasing appearance as well as its very efficient use of space. Also, the system could be assembled much faster than with traditional fastening solutions. With its HCP coating, the system offers much greater protection from corrosion than galvanised material. I'm glad we chose Sikla and siFramo – also because we were able to purchase the system and installation as a complete service from a single source. «



The two managing directors: Iztok Stanonik from Polycom and Ignac Jantelj from Sikla Slovenia



Would you like to appear as a siFramo Ambassador in our next issue? Please contact your Sikla customer advisor. We look forward to learning about further great projects using siFramo.

State-of-the-art international quality management

ISO 9001 provides a basis for standardised processes that conform to specifications. The transition period for switching from the previous 2008 version to the 2015 version of the standard ended in September this year. This is why the focus of our QM activities has been the conversion of the management system to the new requirements.

**Interview with Achim Münch,
Head of Management Systems/Quality Management**

What developments are you aware of in the field of quality management?

A. Münch: We're seeing a clear trend towards product approvals and documented product quality. Our customers want to be sure that our products meet a uniform and verifiable quality standard.

Also, the topic of safety is becoming increasingly important. We address this by designing and producing our load-bearing systems, such as siFramo, to comply with EN 1090. Our pipe supports are another example of this, since we subject these to external monitoring on the basis of the voluntary "TÜV Rheinland LGA tested Quality" certification.

So our customers' expectations go far beyond product quality alone?

A. Münch: Yes. Take the principle of just-in-time delivery, for example, which we know from the automotive industry. This is also increasingly finding its way into the construction industry. Now it almost goes without saying that the goods ordered today will arrive at the construction site tomorrow, in the right quantity and at the right time. This presents a challenge for logistics and warehousing. Here we use process orientation, as required by ISO 9001, to design our processes efficiently. Risk assessments and process analyses help us to further develop the processes on a continuous basis.



Manuela Maurer and Achim Münch

Our aim is to continuously improve Sikla products and services with a view to making our customers' work easier. How do we incorporate customer feedback into our development processes?

A. Münch: The first thing is to find out what the customers need in order to then evaluate customer satisfaction in a second step. We use various channels for this purpose. One of these is the digital customer survey, which was launched this year and is now a permanent feature in our website, under the "*Customer Feedback*" link. This type of customer survey is gradually being introduced for all of Sikla's international subsidiaries.

Your opinion is important to us! Please take this opportunity to send us your feedback by taking part in our online customer survey, if it is already available for your country.

Fire-Proof Support Solutions – The Sikla Fire Protection Guidelines

The comprehensive guidelines, standards and legal regulations dealing with preventive fire protection are always being changed and updated. This is a constant challenge for fire protection engineers, experts, testing institutes and authorities.



The Sikla Fire Protection Guidelines consider all the most recent information relating to standards, product test results and cooperation with testing authorities and organisations in Germany and abroad (RAL/ MPA/ IBS), and provide clear up-to-date guidance.

Detailed tables provide information on permissible load bearing capacities, including deformations of numerous Sikla products and assemblies in a fire situation, based on a fire resistance period of up to 120 minutes. This ensures that the protection objectives are communicated to all parties involved in the planning process and that approved supports are installed.

This table, titled 'Sikla Fire Protection Guidelines', provides detailed data on permissible load bearing capacities and deformations for various Sikla products and assemblies under fire conditions. It includes columns for product types, fire resistance periods, and load-bearing capacities.

This table, also titled 'Sikla Fire Protection Guidelines', provides detailed data on permissible load bearing capacities and deformations for various Sikla products and assemblies under fire conditions. It includes columns for product types, fire resistance periods, and load-bearing capacities.

Tables showing fire load values

The limitation of deflection as a criterion of the load bearing capacity in a fire situation according to DIN EN 1363-1 has been implemented. The current draft of DIN EN 1363-1:04-2018 will consider this criterion of load bearing capacity in even greater detail. The calculations based on DIN EN 1993-1-2 within the confidence interval "The plane sections existing before bending remain plane after bending" will be realistic if knowledge of additional deflection surcharges is available. It has to be emphasised that deformation of a support structure resulting in a "funicular polygon" indicates failure and lies outside the confidence interval. These types of installation are not acceptable as state-of-the-art and cannot be approved.

We are your expert partner, also in relation to fire protection. Please don't hesitate to contact us.

