

NEWSLETTER

REVISION 8



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IT'S TIME FOR AN ENCLOSURE

NEWSLETTER **Kradex**

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Airtight enclosures of the ZP line

The new line of airtight enclosures has already found its place in our catalogue and has become a permanent element of the assortment of products offered by the majority of our distributors and wholesale buyers. The family of products grows every month and it certainly cannot miss a model with a formed in place foam gasket (FIPFG), just as it is the case with other types of airtight enclosures. This solution has become very popular and appreciated by our customers. A FIPFG seal not only improves the quality of a product but also saves time during assembly.



The enclosures also come with additional accessories, such as dedicated mounting plates and DIN rails, as well as the latest additions of hinges and mounting brackets.



A FEW WORDS ABOUT THE LATEST ACCESSORIES

The already mentioned hinges and mounting brackets are additional accessories, which further improve working with the enclosure. The brackets make it possible for the device to be attached to the wall without having to open the cover, which comes in handy, when it is necessary to install the device in unfavourable conditions (e.g. in tropical climate), or when the enclosure has a warranty seal.

The hinges are equipped with a lock, which retains the cover in the open position, if the cover opens upwards. The hinges are available in two versions: with or without a lock.

Currently, the aforementioned accessories are available as an additional option for the ZP240.190.105 enclosure, and they will soon be ready for other types of enclosures, as well.



ANOTHER AUTOMATICON 2019 IS ALREADY BEHIND US

We were present as one of the exhibitors at the Automaticon International Fair for Industrial Automation, just as we do every single year. During this year's edition, we demonstrated new products and a number of new services. Our stand was slightly modified to make such demonstration more convenient and attracted lots of people, which testified to the long time unabated popularity of products. We hope that every single visitor has found in our product assortment an interesting solution matching their applications.



NEW PRODUCTS COMING

The development of our product catalogue has been very dynamic lately. In addition to the airtight enclosures, we will soon expand our catalogue with a new DIN rail enclosure of the new ZD line with panels for various applications, and also another model of an all-purpose enclosure. We try to develop our products based on an analysis of the needs of both our clients and the market. We take a close look at every comment, need or idea. We see information collected during meetings with our a sales person as particularly important to us. Suggestions for solutions are discussed during meetings attended by representatives of the Design, Sales, marketing, and Customer Service Departments. Such meetings often take many long hours, sometimes even days, but the fruit of such hard work of all the departments is guidelines for designing new enclosures. Naturally, this is merely a starting point for our work.

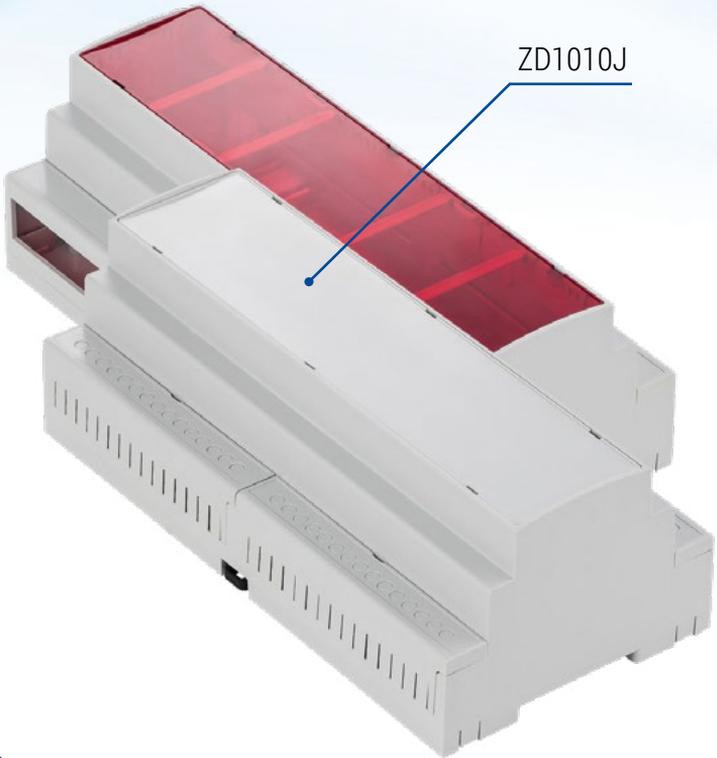
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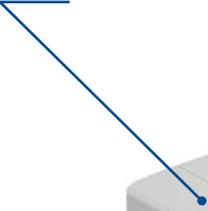
Today, we are happy to announce the coming of two brand new products, which is a result of that long conceptual work.

ZD1010 – It is a new series of enclosures intended for DIN rails, based on state-of-the-art design of removable panels, which facilitate adjusting to various requirements applied inside electronic modules. The following panels will be available for enclosures: full model, all-purpose model, and a model installed under sockets and plugs. The 10M version is currently ready for production, and soon the 9M and 6M models will be available. Another new product is the already mentioned compact and slim Z130 all-purpose enclosure, 56x31x27, made of ABS. Its scope of applications includes: galvanic protection, mechanical systems, filters, separators, converters, adapters, and fuses.

Ask our office and sales person about both products soon.



Z130



STRENGTH IS IN A TEAM

The development of the product catalogue requires not only working on the manufacturing part, but also making sure that sales bloom. New products in particular require attention, appropriate materials, and good presentation. We also need a dynamic team, in order for all that to get to our clients in due time. Most of you have already met our new sales person. But since our newsletter is a special place, we certainly could not miss introducing the new member of our team here.

Jarosław Owczarek is a person you can come to with your questions, suggestions and ideas, as previously mentioned. Jarek joined our team a few months ago, and since then he has already become familiar with very interesting concepts you so willingly share with us. The development of the product catalogue is one of the most important tasks that Jarek has taken on his shoulders, and we do hope that further fruitful cooperation with our partners will result in other original solutions.

A FEW WORDS ABOUT FILM COATING

Our Production Department has already gained a number of competences :) We have recently added an automatic welding machine to the collection. Thanks to it, we can coat enclosures more efficiently, i.e. up to 2,000 pieces per hour. This is yet another improvement to speed up the preparing of products for shipment and ensure their constant availability in stock.



Build your own smog sensor!

Our products are used in many fields of application. When clients inquire about applications, we quite often reply that the list is virtually endless. And sometimes we receive such exciting news about the application of our enclosures, as the one we got from Nettigo. See below for a brief presentation of the company, their idea, and a very important problem that concerns us all.

Nettigo - 10 years of Arduino in Poland.

Nettigo is a Warsaw-based company created by a group of enthusiasts of electronics, who have been part of the Polish community of hobbyist-inventors for many long years. In 2009, we adopted the following motto: "Discover the arcana of electronics" – it has been the essence of our activity to this day. The goal is to popularise and facilitate access to technologies related to electronics, automation, and the broadly-defined Internet of Things. We have created over 350 publicly available articles and handbooks containing thousands of photos and diagrams. We've written tens of thousands of lines of code. The core of our commercial activity is the nettigo.pl online store. Our catalogue of products contains around 2,000 items, including the following: Arduino, Raspberry Pi, ESP8266, tools, sensors, modules, accessories, and other electronic components.

The growing problem of smog in Poland

Polluted air is a huge problem in Poland. In Nettigo, we have come to the conclusion that little can be done about it, if public awareness in this subject does not grow. It is not much use to threaten people with fines, to remark, or beg them. The real change must start with educating. Using poor quality fuels, burning

litter, eliminating catalysts, driving old cars with diesel engines... We have the impression that there is connivance of the general public for such practices. How is it possible virtually nobody opposes or pays attention to it. "It's not my problem," - we hear it all the time. And we all inhale the same dusty air into our lungs.

Nettigo Air Monitor

We have been working on developing new versions of the Nettigo Air Monitor sensor in cooperation with Code for Poland, since September 2018. Our main goal is to broaden public awareness through solid analysis of air quality in Poland. There were several design assumptions: an affordable price, easy to build, detailed documentation, open access to the collected data, an open source license for software and hardware.

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The sensor was built on the basis of the precise laser sensor Nova Fitness SDS011. NAM is a development of the concept created by the German Luftdaten.info project. Since its dawn, the project has focused on openness - the entire source code and hardware technical documentation are issued under open licenses. Software, handbooks, diagrams, and designs of subsequent versions of the discs are available on the air.nettigo.pl website.

"Do it yourself" is a way to get cheap sensors!

There is a number of reasons we have decided to distribute Nettigo Air Monitor as a set for self-assembly. First of all, it is consistent with our mission - learning about electronics through practice. Everything is perfectly described and explained. Secondly, it is about maintaining infrastructure - if you are able to build

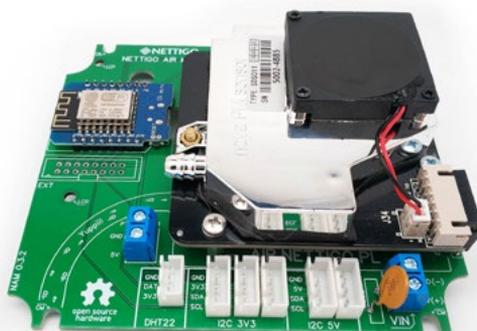
a sensor, you know it through and through.

This way, an appropriately qualified person takes care of the sensor. Thirdly, we have significantly reduced the final price of the device by the cost of assembly and the requirement to obtain costly certification for the finished product. The generated savings make it easy to reduce the price of the finished device 2-3 times, when compared to strictly commercial designs. Finally, a lower price means there are more sensors in the field - and that's what it's all about.

Enclosure

When creating the Nettigo Air Monitor 0.3 series, we decided to enclose the whole thing in an aesthetic casing. We wanted a domestic producer to reduce the carbon footprint of transport. The important criteria we were looking for included durability of the enclosure, resistance to weather conditions, and the possibility of milling holes for the installation of necessary equipment. We have chosen the Kradex Z59 enclosure. Its low price and the high quality of additional services were the frosting on the cake.





NETTIGO

Odkryj tajniki elektroniki

An interview with Marek Teluk

The design engineer of injection moulds



The design of an enclosure is the beginning of the journey for each of our products. It takes a lot of time required for the proper planning of both the appearance and the technical layer, starting from a concept, idea, and function the product is to serve, all the way to the final version. Marek is one of the people in our team watching over this process, meticulously counting, testing, correcting, and drawing.

Get to know him better in our cyclical interview with the employees.

K: How long have you been involved in the designing of injection moulds? Did you develop interest in your current activity already at a young age? Have you always been interested in designing?

MT: I've always been interested in DIY. My father is an engineer, so I went to study at a university of technology. I have graduated from Medical Engineering with a degree in Mechanical Engineering and Machine Design. My specialisation was interdisciplinary studies, so I didn't know exactly what I could do as my future job. My first job (previously I was a business owner as a website and graphic designer) was actually in a medical company. It quickly turned out that I was needed there not only as a design engineer, but also as an operator of milling and injection moulding machine. Wor-

king in the R&D department, I had the unique opportunity to design the detail and mould myself, which I then milled and tested on the injection moulding machine.

It can be safely assumed that I have been designing moulds for 7 years, according to the calendar, but Kradex gave me the opportunity to do it on a full scale, a full-time design engineer, and not as an “all-rounder.”

K: And what were your beginnings at Kradex?

MT: I spent the first weeks at Kradex exploring new software, 2D documentation, and designing EDM electrodes, while the first project was the Z127 enclosure.

K: What are the most common challenges you face in your work?

MT: The biggest challenge is probably to simultaneously meet the expectations of the client, the tool shop, and my boss. The point is that the client is not always aware of the costs of moulding, and that it has to take time. The tool room, on the other hand, often “negotiates” the manufacturing of certain profiles, of course with good intentions - the simpler it is, the easier it is to manufacture and the more confident in operation. This forces the design engineer (and, possibly, the designer of a particular detail) to make concessions, which the client does not always agree to. All of us have a boss above our heads, who has the greatest experience and tries

to protect everyone from all possible obstacles, especially when the mould works, i.e. produces, which is often estimated to last for several dozen years, or even millions of injections (i.e. cycles).

K: What do you value most in your work? Is it perhaps the variety of subjects you're dealing with?

MT: I certainly do appreciate the variety of orders. We have real challenges here, as clients come from different fields of lines of business, starting from industry to consumer electronics, and even... deterring martens, for example. Behind each of the designs there is a smaller or larger team of people, and this always means more or less problems, or ways of cooperation, as we are all different people.

K: Designing is a process that certainly requires proper preparation. How do you usually organise your work, when approaching a new subject?

MT: All formal and financial arrangements and work schedule are certainly the foundation for any project. The client is usually in a hurry and we always try to have more time, because a lot can happen during the creating of an injection mould. It is true that designing a simple enclosure screwed together by four ABS screws and an injection mould is not a problem for a design engineer. However, there are some subjects where you need to stop for a while, think about how to

achieve a certain property or effect, for example great gloss. Then I take to reading, looking, asking around, getting more training. It is further complicated by the fact that Polish literature regarding the field of designing injection moulds is poor. At the same time, one does not find a lot of valuable suggestions about this topic on blogs (although it does happen, too).

K: What would you advise clients, who are considering making an individual mould?

MT: First of all, start with calculations and prepare a regular business plan. On one hand, you need to be careful in estimations, because the cost of a single mould (i.e. a tool for production) is usually within the range of 20-80 thousand PLN (but, naturally, a mould can be much more expensive, if it is complex and difficult to produce). On the other hand, business involves a risk - an individual injection mould offers the most opportunities, the product becomes unique, recognisable, and fully adapted to our needs. Maybe we wouldn't mind, if we bought a rectifier in an ordinary, simple all-purpose housing, but we certainly do like to have a unique enclosure, compact and strictly adapted to electronics and its functions, when it comes to designing a device with a touch screen, for example.

K: Designing is the kind of activity where you need to be up to date with new techniques, trends, and customer expect-

tations. Do you have your favourite methods of broadening your knowledge, magazines maybe?

MT: I've already answered this question a bit earlier, but let me add that one can find a lot of information circulating in the Internet, which helps. It is also worthwhile talking to technologists from companies with which we cooperate, when purchasing plastic materials or standardised parts. We always have a certain know-how in the company. The junior boss gives strategic advice, and he always has some visions, as well as some technical ideas. The senior boss, in turn, is a mine of experience and more technological knowledge. I use the plural form, because Kradex is a family business, and it currently has three generations working here, so to speak.

K: What are the advantages and disadvantages of this profession?

MT: Responsibility is certainly of importance here. If the design engineer makes a mistake, which is not noticed at the tool shop, it will only be visible in a ready production batch. Corrections are an inherent part of the process of creating a product, which, one could say, is an interdisciplinary one, e.g. a detail can even be designed by an artist, then there is the design engineer, the team at the tool shop, and the production team. Mistakes are an inherent part of our lives. However, sometimes a small mistake can cost a lot. One operation ignored in the modelling program (e.g. not enlarging the model due to shrinkage of the material, which occurs

later), can be noticed as late as at the stage of mounting the electronics, and it will turn out that nothing fits, because dimensions are wrong. Such a mould is useless, and this is only one small branch in the tree of the history of creating a model or a mould. The only drawback I see is that it's mostly computer work. There are much more advantages and it is certainly a profession, where you can "move forward", look for the best (new) solutions and, as they say, change the world.

K: What advice would you give to young people, who intend to become designers in the future?

MT: One general advice is to always follow your passions. However, in order to discover your interests, one needs to work a bit and have a taste of different fields of technology. I think that a designer should graduate from technical studies, but they would find it helpful to follow a career path in the American style path, i.e. "going from rags to riches." To become a good design engineer, it would be helpful to work as an ordinary designer, a locksmith maybe, but most of all as an operator of the machines we use in the process of mould creation, such as milling machines, EDM machines, or injection moulding machines. I do not mean full-time jobs and positions in a company, but rather tasks and having some practice. One may think that you do not graduate from a university to become a locksmith. The truth is, however, that you will be a better designer, if you get some skills beforehand, because knowledge and theory are often more important than your skills and experience.

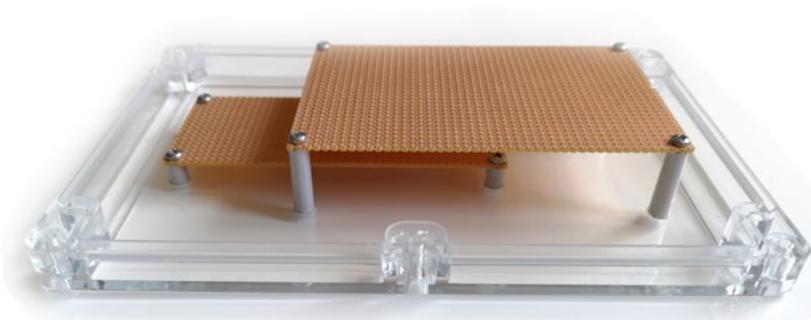
Services combined with products - Part 1

Milling is our flagship service that many of our clients take advantage of. Its dynamic development and customer satisfaction, as well as numerous questions we have received about assistance in the field of other services have encouraged us to start working on expanding the service department. We are going to present ready suggestion in the following issues of our newsletter. As for this issue, let us present:

Additional mounting posts

This solution is addressed to clients, who already have a printed circuit board and want to change their enclosure to a newer or more functional one. Thanks to this solution, we can install two, three, or even several boards in different places inside the enclosure. This option is available for PC and ABS materials.

Additional posts can be installed permanently in any location and in any configuration specified by the client.



New enclosures in our offer.

