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GREEN.
CREATIVE.
SMART

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9. - 10. October, 2019



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MINISTRY OF ECONOMIC DEVELOPMENT AND
TECHNOLOGY

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NANOCUT d.o.o.

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GAMMA / NEUTRON FLUX HARDENED PRODUCT



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- LED lighting,
- analog electronic circuits.



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COMPANY PROFILE

NANOCUT d.o.o. was established in year 2014. It is private own small company with extensive knowledge in physics, electronics and mechanical CAD CAM engineering.

In first two years we developed a few models of high efficiency LED lights for industry use, shops and offices.

With own mechanical and electrical workshop we can research, develop and produce medium quantity LED lights in very short time.

We also develop and manufacture all LED drivers ourselves.

OWN PRODUCTION FACILITY

MECHANICAL EQUIPMENT



EQUIPMENT FOR ELECTRONIC



OUTSOURCING POWDER PAINTING



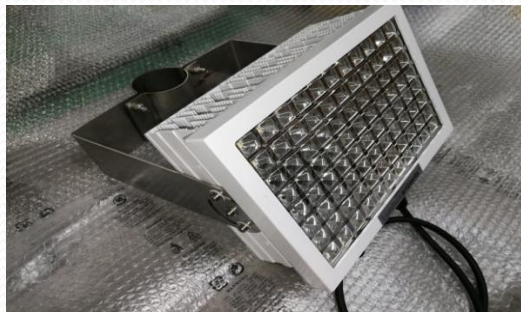
ASSEMBLING



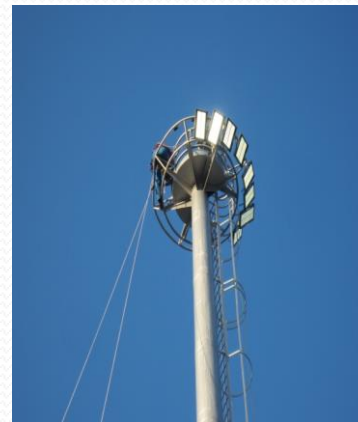
METAL CUTTING EQUIPMENT



OUR STANDARD LED LIGHT MODELS



FOCUS/GAMMA REFLECTOR



CRACK TEST UV-365nm



FLAT LINE/GAMMA



STADION REFLECTOR/GAMMA



STR ULTRA/GAMMA



LINEAR/GAMMA

CAN LED LIGHT WORK INSIDE RADIATION AREA

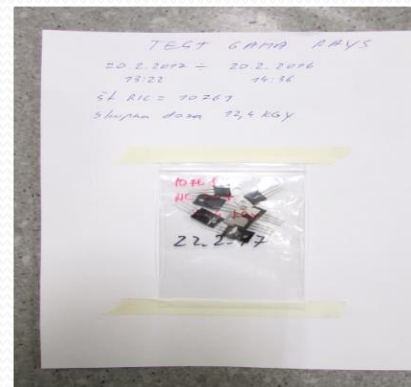
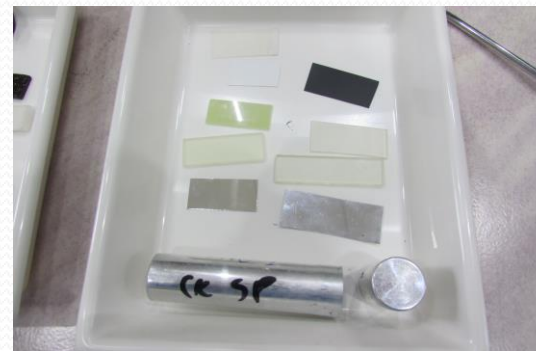
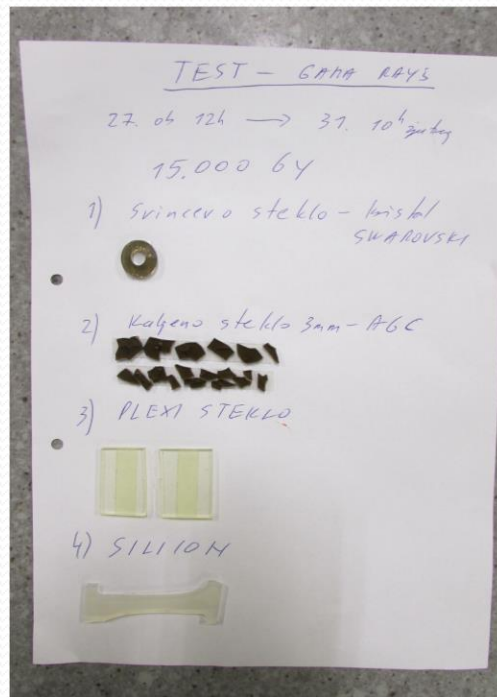
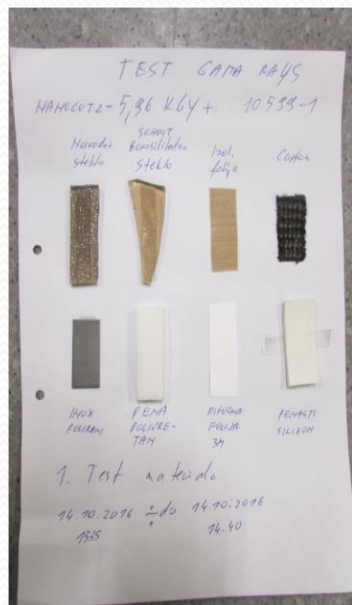
First we signed agreement with Jozef Stefan Institute, who owned 250 KW TRIGA research nuclear reactor.

In this reactor all components can be tested on GAMMA radiation and Neutron flux to very high level.

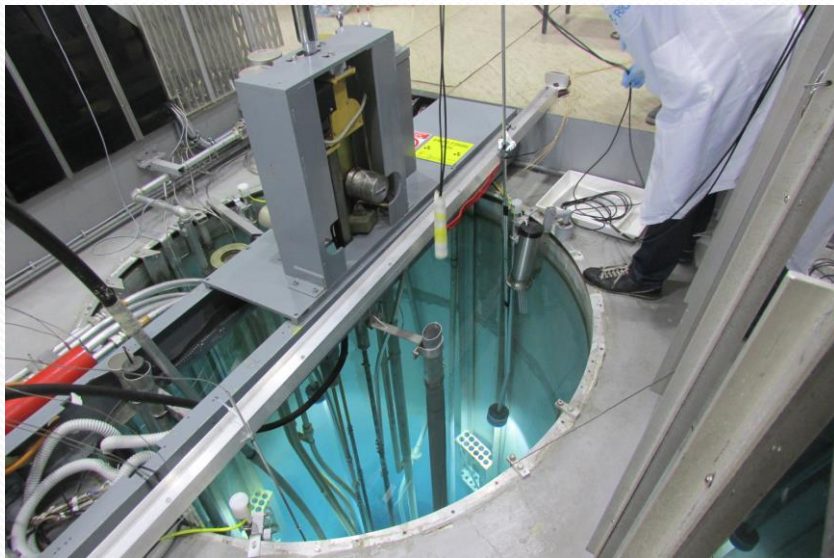
As we saw potential customers in Nuclear industry we started to test standard LED drivers. Results were very bad. They survive Gamma dose 50 – 200 Gy.

We started tested, inside reactor, all components used in LED light.

Component Testing inside TRIGA reaserch reactor



LED driver testing inside TRIGA research reactor



LED driver was lowered inside triangle tube, down to the middle of radioactive core.



All technical parameters for LED driver, was controlling all the running time with DEWESOFT measurement instruments.

RESULTS AFTER ONE YEAR TESTING

After all components testing, we saw that mechanical components have no big change on GAMMA dose up to 100 Kgy. The main problems are LED driver components and GLASS.

We need almost two years to develop final circuits with right components for LED driver (PFC stage, constant current generator and other necessary protection function).

We tested LED driver up to 17 KGy. In year 2020 our testing will go further up to 100 KGy and more. It is very interesting that final LED driver works in very wide voltage range.

Starting from AC 20 V (DC 24V) up to AC 360 V (DC 510V).
PFC correction go up to 0.9, and efficiency up to 90%. Output power up to 60 W.

POTENTIAL FOR GAMMA HARDENED LED DRIVER

As we design GAMMA hardened LED driver in same dimension as our standard LED driver, we can use it in all our existing LED lights.

In past two years we already sold around 300 different GAMMA resistant LED lights ,which can be installed in:

- Nuclear power plants, (containment building and other high radiation area),
- SFDS (spend fuel dry storage area),
- LLILRW (low and intermediate level radioactive waste building),
- WMB (waste management building),
- FUSION reactors, Neutron and Proton accelerator,
- Industrial radiography detection area, pharmaceutical industry , medical facilities,
- Nuclear testing facilities.

OTHER GAMMA and NEUTRON FLUX RESISTANT ELECTRONIC COMPONENTS

We are working on finalizing operational amplifier which can work in radiation area with GAMMA dose speed up to 100 Gy and GAMMA dose up to 100 KGy.

We expected that we can sell product up to the end of year 2020.

Thank you !

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RADIATION HERDENE
POWER PWM CONTROLER