

FN-NANO® technology for a healthy environment and against climate change

Clean Buildings, Healthier Air and Safer Climate in Cities

FOREWORD

The future is the age of environmentally friendly technologies and efforts to dispose of the environmental burdens of hazardous substances produced by human activity (harmful, emissions, waste, toxic substances, etc.). These technologies must be not only effective but also economical. For the first time ever, a technology has been developed to combat the effects of climate change, environmental contamination, and emissions. We are proud to announce that it was created in our laboratory!

AMJTJ REVIEW OF 2019



- **We have demonstrated the universal use of FN NANO® technology as a measure for urban cooling (to combat the Urban Heat Island Effect) and air purification**
- **We are part of the Innovation Strategy of the Government of the Czech Republic 2019-2030**
- **We have obtained ISO / CSAF air purification certificates**
- **We are in the finals of the European Business Awards in the category of INNOVATION (out of 120,000 competing EU companies)**
- **HE3DA technology for the first time in the final of NASA iTech competition**
- **GIGAFACTORY completion utilizing HE3DA technology in the Czech Republic**

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- **The Czech Republic is becoming Europe's innovation leader and our company is part of the Innovation Strategy of the Government of the Czech Republic 2019-2030**



**Czech
Republic
The Country
For The Future**

The Government of the Czech Republic is working to ensure that support for science, research and innovation is not just a phrase, but a very concrete activity, driven by the ambition to become one of Europe's innovation leaders and a country of the "Technological Future" within 12 years. An innovative concept has been created that covers national key activities across ministries, sets framework objectives and addresses strategic tools for their implementation. Advanced Materials-JTJ s.r.o. (AMJTJ) is part of this strategy with FN NANO® technology because it provides an effective technological means to protect against climate change and to purify the

atmosphere. One of our projects implemented within this strategy is the compensation of emissions from the Czech Embassy's automobiles in Budapest (the "Nanowall" More at: <https://fn-nano.com/2019/02/20/future-of-the-republic-is-in-innovation>)

■ **FN NANO® technology has so far been the only one in the world to qualify for air purification - for the removal of greenhouse gases and emissions of NO_x, ozone, benzo(a)pyrene and other toxic substances in the air**

- **Cleans the air**
- **Cleans and protects surfaces**
- **Fights climate change**



Nanotechnology functional surfaces FN NANO® are created using multifunctional FN® coatings with an extremely strong photocatalytic effect. Surface functions are activated by daylight energy (extremely effective air cleaning, microbial protection and self-cleaning). Surface functionality in all weather conditions is ten years or more. The FN® layer also has a high reflectance of thermal radiation and cools the surface of buildings.

15 sq. meters compensate for the exhaust of **1 diesel passenger car**

1 sq. meter cleans as much air daily, as a **person breathes in 1 year**

The proposal for compensation for the removal of 1 ton of benzo(a)pyrene is like removing more than 30,000 ton of CO₂



The coating reflects thermal radiation with an efficiency of 20-30% and thus reduces the surface heating due to solar radiation. Under the conditions of global warming, it helps to cool cities in the summer.

The functions of our ecological FN-NANO® technology are based on the use of TiO₂ semiconductor nanocrystals, a purely physical phenomenon – “photocatalysis” and unique morphology of the FN coating.

The coating is compact, does not contain any hazardous substances, nor does it release particles into its surroundings. It uses the pure energy of the Sun to provide its functions. As an example, we can mention the Barrandov noise barrier, which has been cleaning the atmosphere of Prague for six years. Large sections of the wall are painted with FN® coatings remain clean, although they are very close to a very busy intersection where about 30,000 passes per day. cars. And today we can say responsibly that the coating does not lose its ability and efficiency even after 5 years. Exact measurements of wall samples taken by the J. Heyrovsky Institute of Physical Chemistry of the Academy of Sciences of the Czech Republic show that the effectiveness of ecological functions have not decreased even long after the application and the coatings ensure removal of dangerous substances from the air with the same efficiency as when they were new.

For a simple idea, scientists have calculated that:

- one square meter of this wall cleans as much air per day as one person consumes all year
- **converted to automobile numbers, these FN®-coated surfaces eliminate the exhaust fumes from 28 diesel-powered cars. It is as if we completely eliminated these cars. In five years, this wall has removed hundreds of kilograms of nitrogen oxides, dirt and other toxic substances from Prague's atmosphere.**

The use of this technology is also in environmentally friendly buildings and for creating a healthy indoor environment in connection with **LEED** and **WELL** certification as well as projects aimed at carbon offsets. The **US Green Building Council** has accepted our technology in its **LEED certification system** for green buildings.

- We defended our 2016 victory and once again became the national champion in the most prestigious European Business Awards competition representing Czech Republic in the European final.

Advanced Materials-JTJ s.r.o. achieved repeated success from 2016 this year and defended the title of national champion for the Czech Republic in the category of innovation and advanced to the pan-European final

*The European Business Awards is now in its 12th year. Last year, over 111,000 businesses from 34 countries were assessed. Sponsors and partners of this prestigious competition include Inflexion, Germany Trade & Invest and PR Newswire. We are delighted that after 15 years of successful research and commercialization of nanotechnologies, our company can earn a worldwide reputation. Advanced Materials-JTJ Ltd. will now have the opportunity to take part in the finals in December 2019, where the final European winners in all 18 categories will be announced. **AMJTJ has the chance to bring this award to the Czech Republic for the first time.***



Support it by voting at the link above:

<https://www.businessawardseurope.com/vote/detail-new/20/28415>

SUMMARY OF SUBSIDIARY ACTIVITIES - interesting realizations



- HUNGARY HAS A FIRST NANO WALL THAT CLEANS AIR FROM CAR EXHAUSTS

In the presence of the Prime Minister of the Czech Republic Andrej Babiš was at the 5 September 2019 ceremonially introducing our "Nanowall". The Embassy of the Czech Republic in Budapest which, thanks to photocatalytic coating of FN Nano from Czech company Advanced Materials-JTJ, physically decomposes automobile emissions, including greenhouse gases.



Thanks to a special nanotechnology coating applied to the building of the Embassy of the Czech Republic in Budapest, it compensates for emissions from all the automobiles used by its employees.



In the framework of the innovation strategy of the Government of the Czech Republic, the Czech Republic desires to act within their motto: "The Czech Republic: The Country for the Future" to be one of Europe's innovation leaders. The creation of an ecological "Nanowall" with the help of the FN NANO® coating technology at the Czech Embassy in Budapest symbolizes the fulfillment of this strategy.

More information here:

https://www.mzv.cz/budapest/en/economy_and_trade/czech_nanotechnology_eliminate.html
<http://www.nanoasociace.cz/ceske-nanotechnologie-eliminuji-budapesti-emise-sklenikovych-plynu/>

- NANO WALL IN LONDON FOR YEAR-ROUND AIR PURIFICATION FROM HARMFUL EMISSIONS

AMJTJ has also treated the garden wall at the London embassy with its photocatalytic nano coating on the Czech Nano Day. This created the largest UK nano-exhibit. Thanks to the Nano coating, the wall not only remains bright white for many years, but in central London it cleans the air using solar UV radiation and compensates for the negative effects of nitrogen oxides and emissions from approximately ten diesel cars (calculated at 25,000 km / year / Euro 6). The then Minister of Industry of the United Kingdom, G. Clark, also expressed an extraordinary interest in Nano wall (pictured above).



"From the point of view of being visitors to the UK, and at events at the Embassy of the Czech Republic In London, it is only fitting that we have been able to present a practical demonstration of the application of Czech nanotechnology in the form of a wall-cleaning system thanks to the nano coating for ourselves and the London air. Czech nanotechnology expertise is a great fulfillment of the Czech Republic's Innovation Strategy of the Czech Republic and Czech nanotechnologies have considerable potential to improve the environment not only in the UK", said Aleš Opatrný, economic diplomat from the Embassy of the Czech Republic in London.

Detailed information can be found here:

https://www.mzv.cz/london/cz/obchod_a_ekonomika/prezentace_ceskych_kompetenci_v_oblasti.html
<https://fn-nano.com/2019/10/22/nano-zed-v-londyne-uz-cely-rok-cisti-vzduch-od-sklutin/>
<https://fn-nano.com/2018/10/02/prvni-a-nejvetsi-nano-exponat-akce-nanoday-london-2018/>
<https://fn-nano.com/2018/11/08/cesky-nanoden-v-londyne-zaujal-i-clena-vlady-jejeho-velicenstva-2/>

- CZECH CLEANING NANO COATING PROTECTS HISTORICAL MONUMENT IN TORONTO AND CLEANS THE AIR

The famous icon of the city, the Port Credit Lighthouse in Mississauga, is the first historic landmark in Canada to be treated with a special self-cleaning FN NANO® coating. This coating ensures long-term surface protection from dirt and microorganisms.

However, the protective layer not only effectively and long-term prevents the growth of algae and fungi, but also fulfills an important environmental function - it cleans the ambient air of dangerous substances.

The project, which was implemented by the Czech-Canadian company ECOTIP, was greatly helped by the Consulate General of the Czech Republic in Toronto, which has long advocated the introduction of new Czech technologies on the Canadian market.



The new eco-facade of the lighthouse cleans over five hundred million cubic meters of air per year and continues for at least the next decade. This combination of economic and ecological effect can only be achieved with this purely Czech invention and only certified and practice-proven FN NANO® technology.

Details can be found here:

<https://fn-nano.com/2019/07/12/czech-self-cleaning-nano-coating-protects-a-historical-monument-near-toronto/?lang=en>

- IN AN AIRPORT TERMINAL IN LAS VEGAS, PEOPLE ARE NO LONGER BREATHING AIRCRAFT FUMES

Las Vegas, Nevada, USA - July 26, 2019: At the Sunshine and Tailwinds Café, several pilots and executives commented on major changes recently at the airport in northern Las Vegas:

“Not only the facelift that cost Clark County \$ 2 million last year, but also the remarkable feeling of freshness in the interior of the terminal, which is due to the new air purifying nanotechnology. Before we had FN NANO® paint on the walls, the warming up fumes from the engines remained in the room all day. “Now they're gone in 5 minutes”, said Steve Hood, manager of Sunshine and Tailwinds Café on the first floor of the airport.

“When you enter our beautiful Sunlight and Tailwinds coffee shop, you no longer feel fumes from the kitchen and the air is fresher than ever”. “Nano paint is something people talk about”.

<https://youtu.be/FhepOYIJJac>

Details here:

<https://www.amjtj.com/en/news-and-information/airportfumes>

- FN NANO® TECHNOLOGY MAKES MANY POINTS AND HIGHEST EVALUATION - LEED PLATINUM CERTIFICATION

Our contract partner in the US - MACOMA, LLC, MACOMA Building, 3920 E. Patrick Lane, Las Vegas, NV 89120 has earned the highest LEED Platinum certification.

Nanotechnology of multifunctional paints FN (FN NANO) have been used to a large extent on both the building envelope and interiors, which significantly increased the overall rating score.

FN NANO technology significantly increased the overall score of the project for both direct and indirect positive effects on human health, the environment in the areas of Materials and Resources, Energy and Atmosphere, Sustainable sites, Indoor environmental quality and Innovation.



More information at:

<https://fn-nano.com/2019/03/18/technologie-fn-nano-pro-certifikaci-leed-platinum/>

OUR VISION FOR THE NEXT PERIOD:

- **PROJECTS FOCUSED ON AIR CLEANING FROM DANGEROUS EMISSIONS (NO_x, PM_{2.5} and below, PAH, VOC, BaP) TO COMPLETE AND STRENGTHEN THE ENVIRONMENTAL EFFICIENCY OF PLANTING GREENLY IN COMBATING FROM CLIMATE AND CLIMATE**
- **WITHIN THE *PROJECT TRIO GRANT*, WE WORK TO IMPROVE THE EFFICIENCY OF FN-NANO® AIR CLEANING TECHNOLOGY FROM DANGEROUS POLLUTION**
- **WE WORK IN PREPARING COMPENSATION MEASURES USING PHOTOCATALYTICAL TECHNOLOGY FOR DISPOSAL OF DANGEROUS POLLUTION AND EMISSIONS**

New eco-building surfaces with FN NANO® technology already clean billions of cubic meters of air per year, while remaining clean for years. Their ability to reflect heat radiation cools the surfaces of buildings and thus helps to cool cities on hot summer days. At the same time, they reduce the energy demand of buildings for air-conditioning in the summer.

Thanks to nanotechnologies and the energy of the Sun, we are already able to remove hundreds of tons of harmful substances from the atmosphere. By doing so, we reduce the negative impacts of automobile, air and ship transport and industrial production on the environment and human health.

“We see the future in knowledge, determination and creative activity. We create new technologies and find effective solutions for today's world.”

We ALSO recently launched the environmental project, “**AETERIO**”, which enables everyone to actively participate in air cleaning with us.

Our nanotechnology enables the young generation to live in better conditions.

Everyone can start by themselves. With so little effort: it is enough to paint 15 square meters of space and thus eliminate emissions from the operation of the car they drive.

Join us!

More at: www.hithit.cz/aeterio

Press release was published by Advanced Materials-JTJ s.r.o.

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