

NIGHT VISION

MISSION

OUR MISSION IS

TO DELIVER THE TOP QUALITY
ELECTRO-OPTICAL PRODUCTS

TO OUR CUSTOMERS.

WE ACHIEVE THIS GOAL BY

CONSTANT REFINEMENT
OF TECHNOLOGICAL PROCESSES,

USE OF THE MOST ADVANCED

MATERIALS AND MANUFACTURING

EQUIPMENT, AND ON-GOING

SCIENTIFIC RESEARCH.

INNOVATIVE DESIGN AND
CUTTING-EDGE TECHNOLOGIES

EARNED US LEADING POSITIONS

ON THE WORLD MARKET.



Vladimir I. Loktionov,
Director General JSC Katod

KATOD

KATOD JSC, based in Novosibirsk, Russia, belongs to a very small world group of original night vision equipment manufacturers. We deliver image intensifier tubes (IIT) and assembled night vision devices (NVD) worldwide. Founded in 1959, the company has become the world leader in the electro-optical industry with its own original R&D and manufacturing facilities.

Our business profile includes the following products and activities:

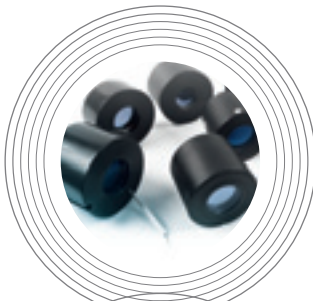


Image intensifier tubes and night vision devices



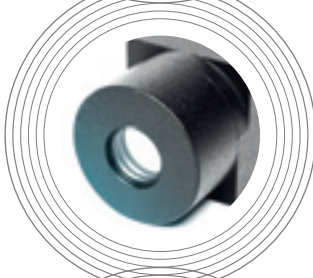
Development and production of high-technology equipment for the manufacturing and testing of image intensifier tubes, their components and assembled night vision devices



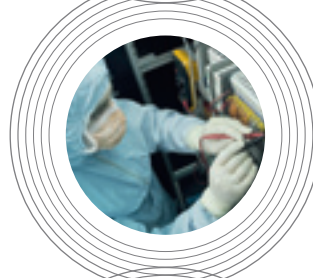
Photomultiplier tubes for special applications



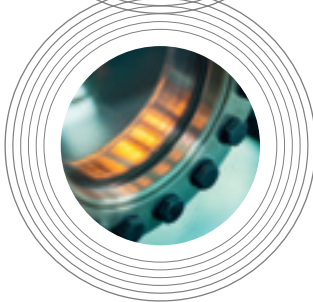
Repairs and modernization of night vision equipment



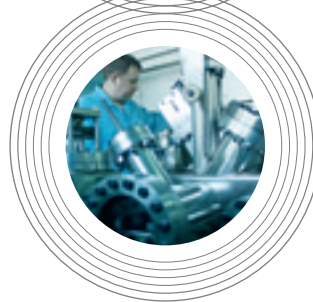
Digital image intensified night vision devices



Commercial turnkey solutions for image intensifier tubes manufacturing with full cycle technology transfer



Development of highly effective photocathodes and production lines for their newest types



Warranty and after-warranty service

KATOD IN FACTS AND NUMBERS

50+ years

in the electro-optical
industry

Renowned
Russian
manufacturer

of image intensifier
tubes and night
vision devices

One
of the world
leaders

in IIT manufacturing

Major supplier
of image
intensifier
tubes

to the Ministry
of Defence
of the Russian
Federation

The single company in the world that put into practice mass

production of image intensifier tubes in generations 2+ and 3 under one roof

Over 380 IIT modifications

with 10 different photocathode types are manufactured on our conveyors

Over 80 types

of night vision models have been developed and produced at our plant

We export our products

to more than 60 countries on 5 continents

OUR ADVANTAGES

As the original equipment manufacturer, which uses original IIT manufacturing technology and our own unique production equipment, we provide high additional value to our customers. Cooperation with KATOD implies the following advantages:

Flexibility.

We deliver products under either standard or customized specifications.

Competence.

Highly trained professionals, who develop our products in-house, are available for consultations upon customer's request.

Service.

We guarantee qualified warranty and after-warranty service.

Range.

Our plant produces a very wide range of night vision devices and components.

Quality.

This has always been the top priority for us. Our quality control system is certified by national and international authorities.

Delivery.

Broad geography of our cooperation. We are completely free of ITAR restrictions.

Speed.

Our lead production time starts from 10 business days.
Technological coverage.
We are open for any type of cooperation from sub-components delivery to technology transfer.

Scientific research.

We can pursue joint projects of developing new edge technologies with local or international scientific centres.

QUALITY

KATOD's production processes are controlled by three implemented quality control systems, which complement each other and are essential for national and international customers.

ISO 9001:2008

Quality Management System standards with the latest national additions published in 2011 control all stages of our manufacturing process.

GOST RV 0015-002-2012

Military Equipment Design and Manufacturing System standard is the mandatory requirement for deliveries to national Ministry of Defense.

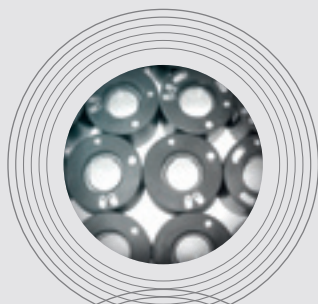
AQAP-2110

NATO Quality Assurance Requirements for Design, Development and Production has been implemented to qualify for deliveries to our customers abroad.

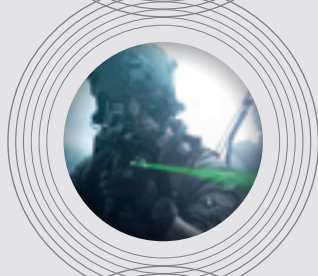
All products undergo extensive multi-level testing procedures. Besides routine environmental tests for extreme temperature, shock, vibration, humidity, high and low pressure impacts, which every produced unit must pass flawlessly, we conduct periodical tests, which are determined by the product life cycle. During these tests*, we control such product features as lifetime, reliability, durability, correspondence to design requirements, extreme electrical and illumination conditions, etc. We thoroughly check all stages of the production process from incoming quality control for materials and subcomponents received from our suppliers to the packaging of the ready-to-go products.



KATOD JSC is a vertically integrated enterprise, which produces electro-optical equipment, including night vision devices, which are used solely for professional applications.



CONVENTIONAL AND DIGITAL
IMAGE INTENSIFIER TUBES
(IIT)



NIGHT VISION DEVICES
(NVD)



PHOTOMULTIPLIER
TUBES (PMT)



TESTING AND MANUFACTURING
EQUIPMENT FOR IIT AND NVD

PRODUCTION

Our plant comprises many complementary production divisions, such as metal, ceramic and glass processing; optics manufacturing; chemical treatment of assembly components; electronics manufacturing; manufacturing of photocathodes and IIT displays; assembly; hermetic encapsulation; and final quality assurance. We fully control all stages of the entire production process from beginning to the end.

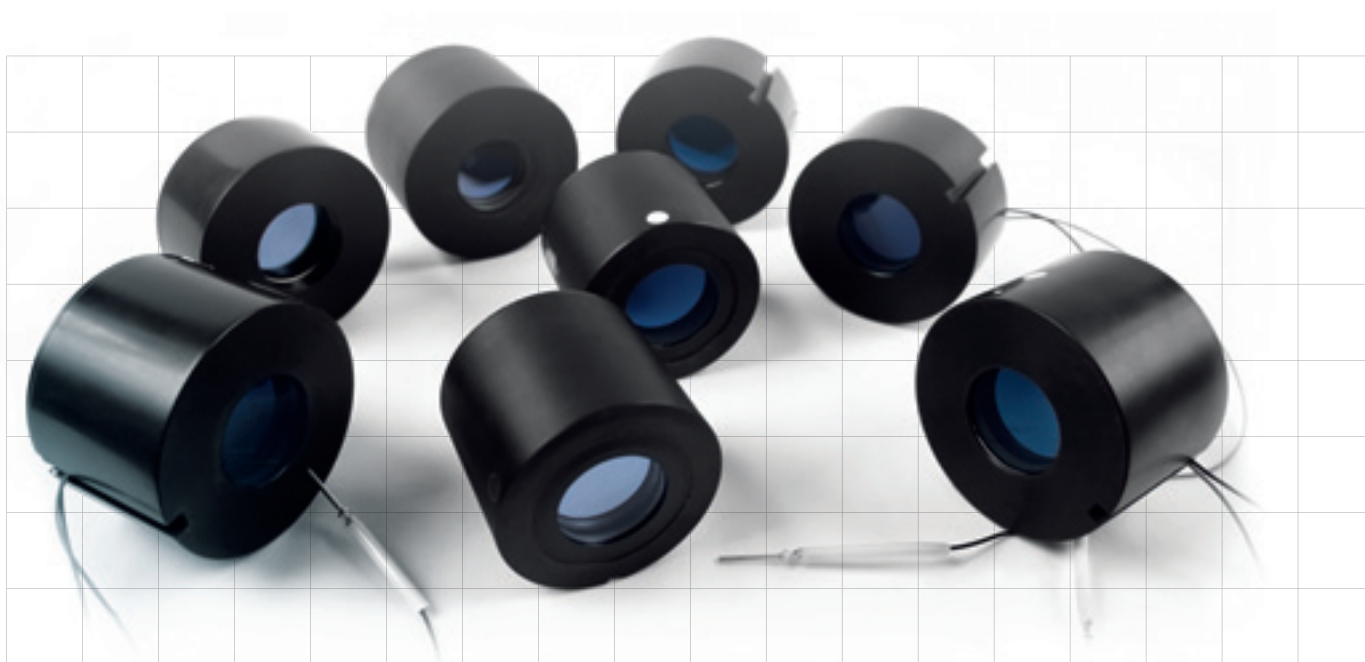
PRODUCTION

IMAGE INTENSIFIER TUBES (IIT)

The most significant segment in our production range is the image intensifier tubes in generations 2+ and 3.

The GEN 2+ IIT are based on multi-alkali photocathode. Such devices work perfectly under natural night illumination (starry skies, light overcast, moonlight), which provides about $5 \cdot 10^{-3}$ lux. NVD, which are equipped with GEN 2+ IIT, are distinguished by an extended lifetime and an optimal price/value ratio.

The GEN 3 IIT are recommended for operation under extremely low light conditions due to the GaAs photocathode, which enables much higher luminous sensitivity (2000-2300 $\mu\text{A}/\text{lm}$ vs. 600-700 $\mu\text{A}/\text{lm}$) as well as a much better signal-to-noise ratio (24-34 vs. 18-20). Parameters of these IIT are higher overall, making them indispensable for professional applications, where maximum image quality and operational range are required.



PHOTOMULTIPLIER TUBES



The task of PMT, opposite to IIT, is not to amplify image, but to detect various, sometimes very weak, signals. These devices are widely used for analysis of short-life processes and registration of weak emissions (up to a single photon), since they provide high amplification together with low self-noise.

The PMT are used most often in astronomy and nuclear physics as main components of scintillation counters.

The PMT produced by KATOD are distinguished by a more advanced microchannel plate amplification principle. Such PMT are more compact and provide higher gain than those based on the conventional dinode scheme. Maximum sensitivity is obtained by using modern multi-alkali and GaAs photocathodes. Our PMT are employed in space, defense and aviation industries as well as in scientific research.

NIGHT VISION DEVICES

For years, KATOD has been producing wide range of original night vision devices based on our image intensifier tubes. We make goggles, monoculars, binoculars, surveillance cameras, riflescopes, night vision attachments and automotive night vision systems. Unique integration of production of all components under one roof allows us to incorporate the most advanced technologies into our designs. The second advantage of such an approach is a simplification of the logistical chain. Financial benefits of our production chain's vertical integration are passed on to our customers.

We pay special attention to development of the digital night vision devices. The combination of CCD array and conventional IIT allows for computerized processing of recorded image, which in turn opens broad technical opportunities for the users.



NIGHT VISION
RIFLE SCOPE
NMP AIR-4^x

PSEUDOBINOCULAR
NIGHT VISION
GOOGLES
ONV-I

TESTING AND MANUFACTURING EQUIPMENT

Among many types of such equipment, the following can be mentioned:

Deposition Equipment

for applying special coatings that provide specific features (adhesion, electrical conductivity, etc.) on metal, ceramic or glass components.

Hydrogen chambers

for thermal processing in hydrogen.

Deep vacuum sets

for IIT production.

Thermal-vacuum equipment

for thermal processing of IIT components in deep vacuum; such equipment can be used for similar applications in various production processes.

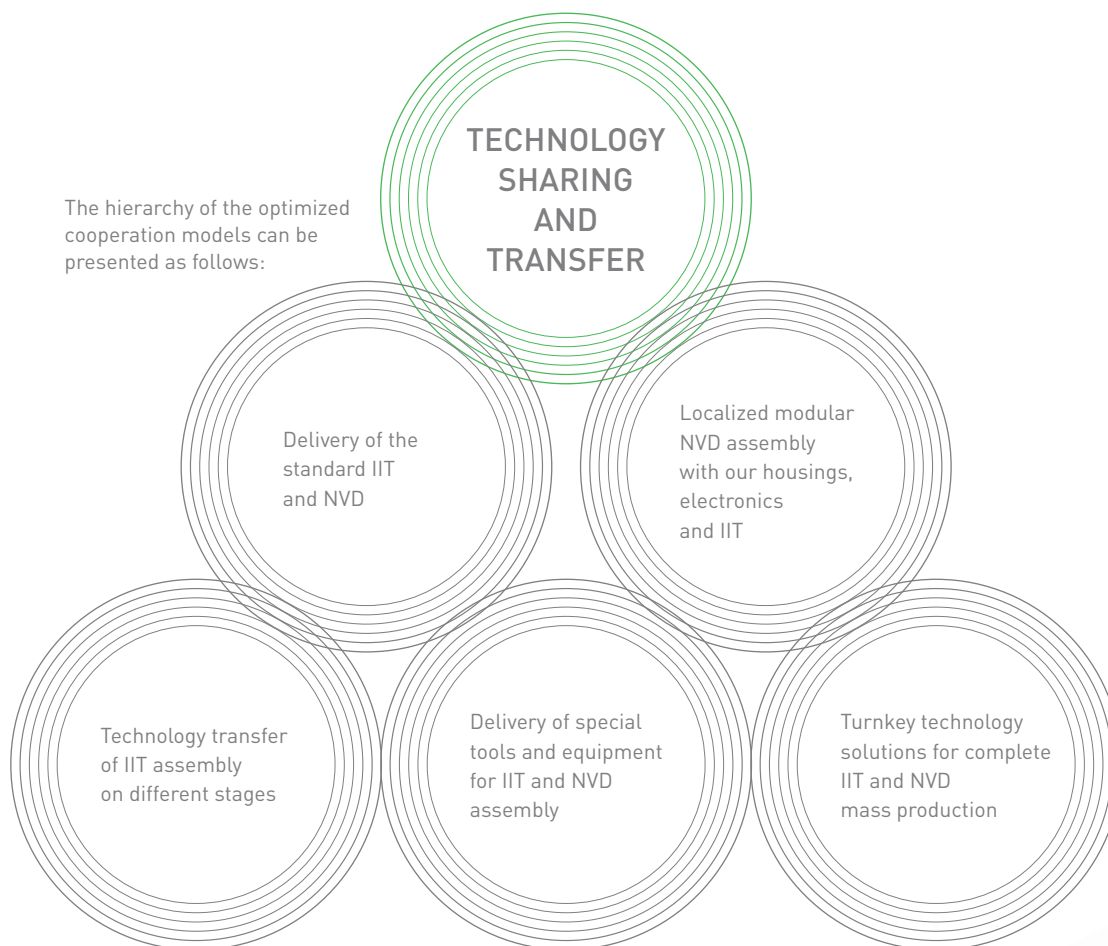
Testing equipment

for measuring of different parameters of IIT and their components (resolutions, signal-to-noise ratio, light gain, luminous gain, etc.) and environmental testing (impact, vibration, cyclic temperature change, etc.)



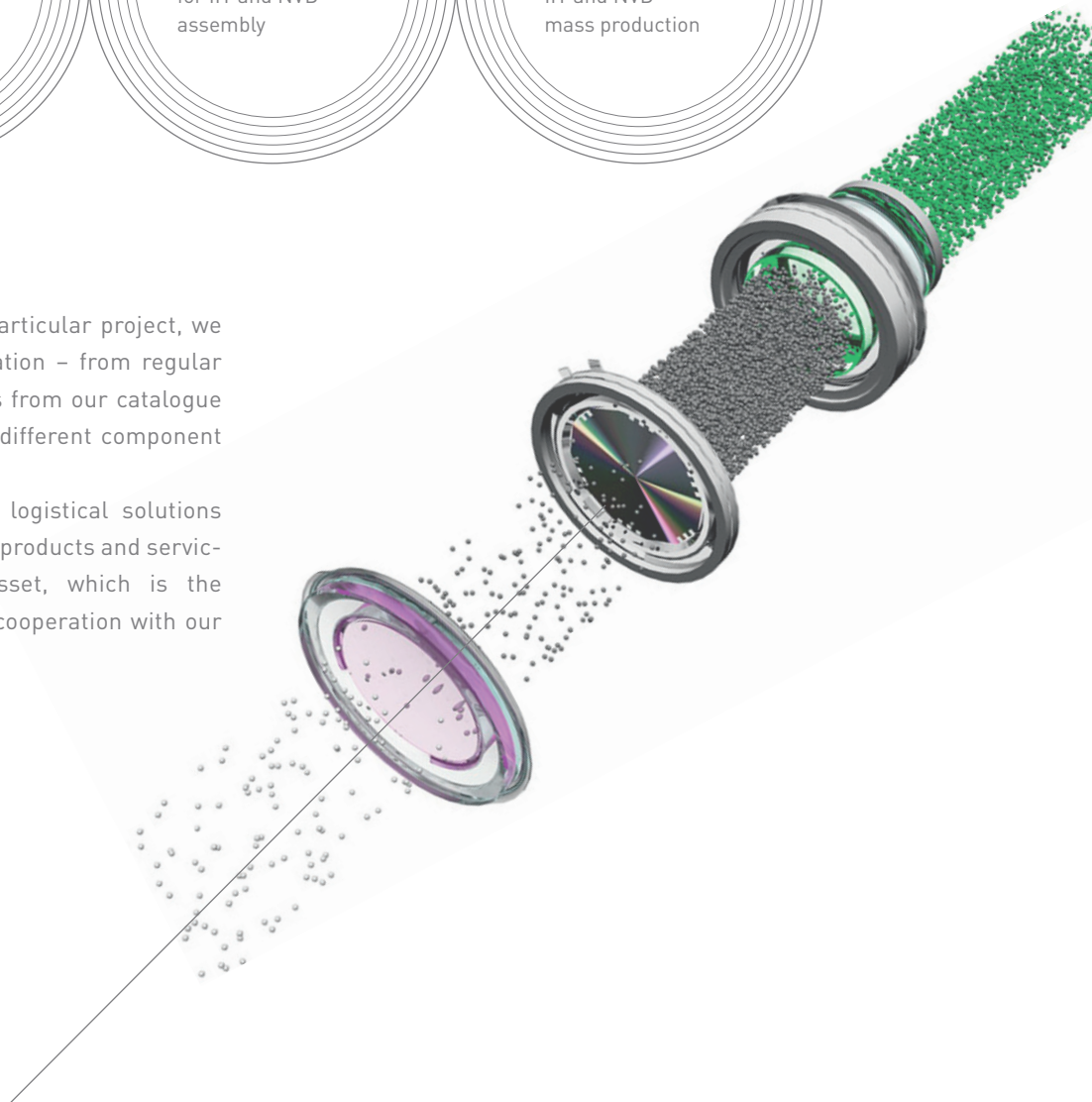
EQUIPMENT

Besides the delivery of IIT, PMT and NVD, KATOD offers unique solutions for high-technology equipment used in our manufacturing processes.



Depending on the conditions of a particular project, we negotiate flexible terms of cooperation – from regular shipments of the standard products from our catalogue to localized assembly solutions on different component levels.

Diversity of the technological and logistical solutions along with the highest quality of our products and services secure our most valuable asset, which is the long-term and mutually beneficial cooperation with our permanent customers.





KATOD
NIGHT VISION

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