

2.8. IMPLEMENTATION OF RUSSIAN DEVELOPMENTS IN STRUCTURES OF LAW-ENFORCEMENT AUTHORITIES OF UKRAINE

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Cooperation between the NIIIN MNPO “SPEKTR” and the Company “TTT” (Lvov, Ukraine) has its origin from 1998. Individual contacts, exchange in data and several technologies has resulted in that currently inspection equipment and surveillance means of some types produced by the NIIIN MNPO “SPEKTR” are supplied in Ukraine in significant quantities. Furthermore, starting from 2005, common developments of prospective technical means for solution of search and anti-terrorism problems are carried out within the frames of the contract on cooperation.

Endoscopic equipment of various types constitutes the lion's share of technical means supplied to Ukraine. Technical endoscopes of all types are of interest. They include fiber-optic, TV, flexible, semi-rigid, rigid (borescopes) systems.

In order to extend functional possibilities of equipment and its adaptation to on-site requirements, endoscopes of traditional design, where endoscope itself and lighting unit are separate and located in different enclosures (fig. 1), were updated and modernized to bring these units together.

In order to reduce weight and over dimensions of instruments, LED's of increased brightness were used as a backlight source instead of halogen lamps. As a result, it became possible to produce endoscope itself and illumination system within the same compact-size enclosure and to apply ordinary AA-size batteries or accumulators as a power supply source. Resulted instruments constitute the ETA series of technical endoscopes (fig. 2). Flexible and semi-rigid endoscopes are produced within this series.



Fig. 1. Flexible ETG endoscope with BOA-20 lighting unit

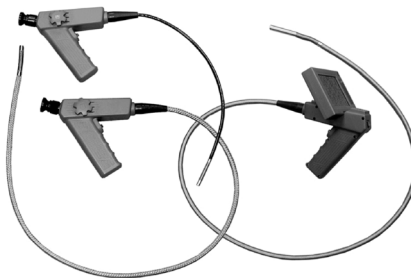


Fig. 2. Flexible endoscopes ETA and TV endoscope of ETV series

TV endoscopes of ETV series are of some interest as well. They are executed just like ETA series, i.e. in common enclosure with illumination system. In first instruments, miniature black-white video-camera was used, which is replaced currently by color one. Power is supplied from external mains or battery source.

Backlight module of mono-block fiber-optic endoscopes of ETA series is configured as a module on the basis of extra-bright LED and accumulator battery located di-

rectly in the endoscope enclosure. It ensures drastic reduction of the article overall dimensions and weight with simultaneous increasing of continuous operation time and improvement of ergonomic indices. Similar solution is used for creation of semi-rigid and portable mono-block TV endoscopes of ETV series equipped with LED of 3 W power.

Such technical solution made it possible to reduce drastically weight and overall dimensions of endoscopic systems, to decrease power consumption and to improve their technical and operational characteristics. At the same time, it resulted in increased interest of users and, firstly, customs service and frontier guards to this equipment. Fig. 3 shows the appearance of such endoscopes.



Fig. 3. Portable semi-rigid self-contained endoscopes

Table 1. Presents main characteristics of technical means supplied currently to Ukraine

	ETA series	ETVC series
Working part diameter	4 – 10 mm	6 – 12 mm
Working part length	0.5 – 2.0 (2.5) m	2 m
Turn angle of distal end	$\pm 180^\circ$	$\pm 120^\circ$
Field of vision	60°	$40 - 60^\circ$
Resolution	5 lines/degree	320×240 pixels
Power of backlight source	1 W	3 W
Power supply	$4 \times \text{AA}$	12 V
Power consumption	1.2 W	10 W
Weight	0.5 – 1 kg	1.2 kg + 2.7 kg (BOS-20)

Presently, options are considered in order to extend cooperation for the account of increasing of products range and volumes of technical means supplies to Ukraine, revealing of options of joint developments and use modern technologies available in Ukraine for production of individual parts and units and the complete set of some types of equipment (in perspective) at the territory of Ukraine.