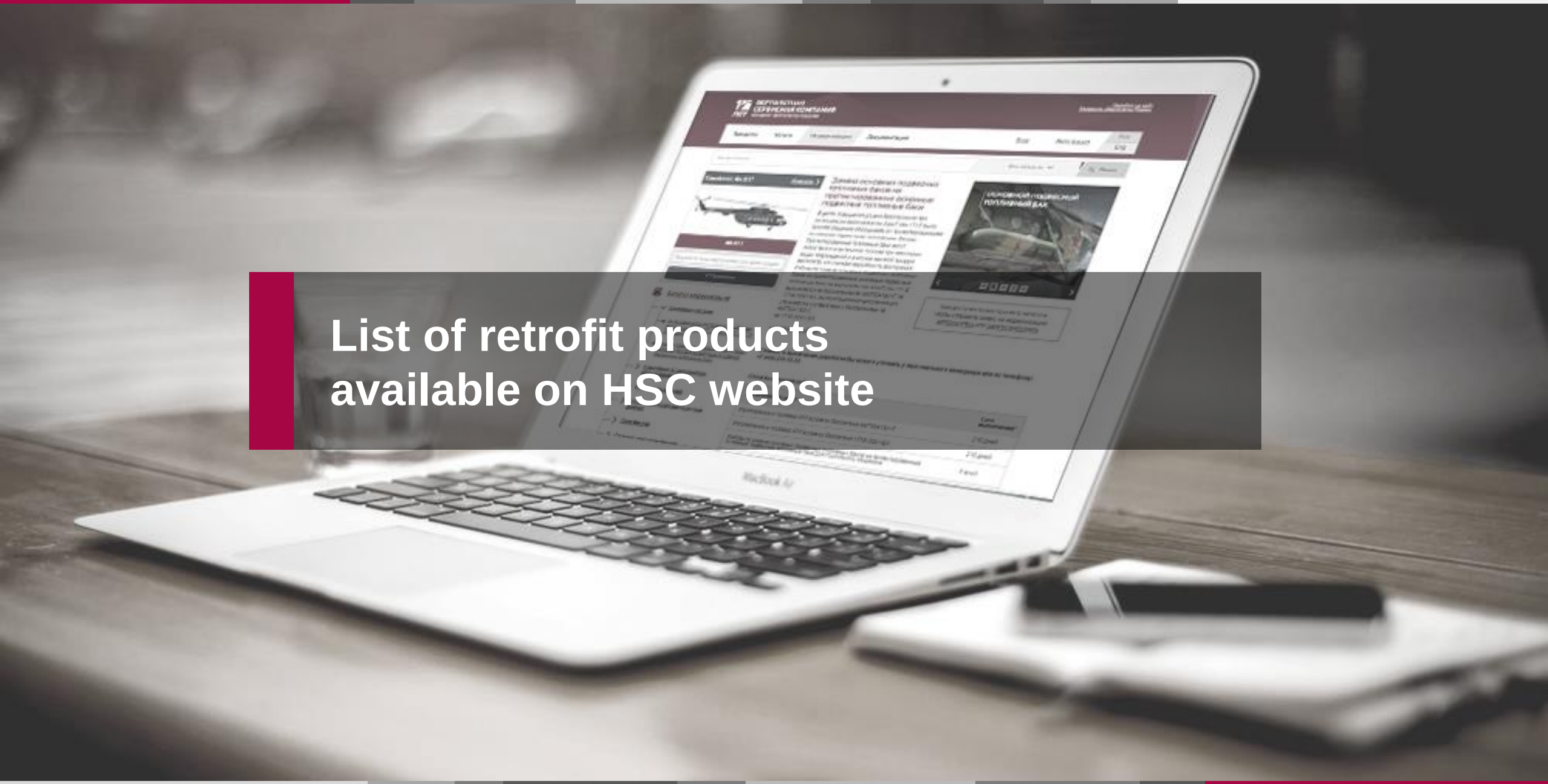
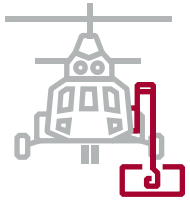
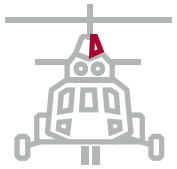
HELICOPTER
SERVICE COMPANY
RUSSIAN HELICOPTERS JSC



List of retrofit products available on HSC website

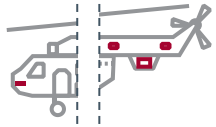
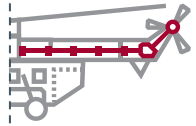
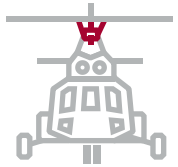
List of retrofit products covered by service bulletins

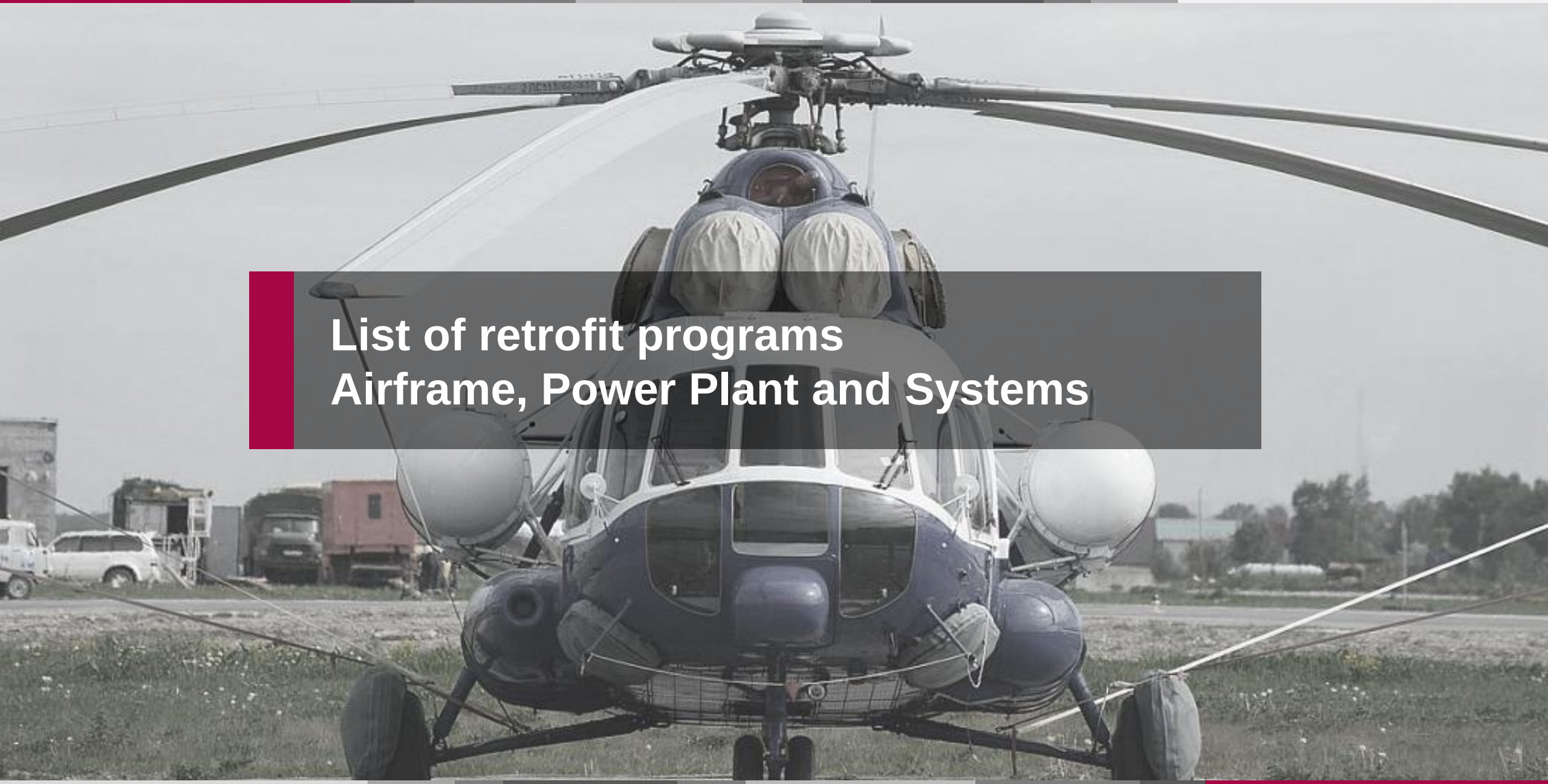
Available on HSC website

№		Retrofit product	SB reference	Application	Brief technical description of retrofit
1		Installation of auxiliary external fuel tanks No. 171-6150-00-01 and No. 171-6150-00-02	AMT3097BU-G	Mi-8AMT	Advantages of this installation are extended flight range and duration, possible efficient use of the whole helicopter cargo cabin area to transport passengers, cargoes or to install internal auxiliary fuel tanks.
2		Replacement of main external fuel tanks with self-sealing main external fuel tanks	AMT5041BU-G, 171Ye-5041-BU	Mi-8AMT, Mi-171E	In order to increase the safety level, Mi-8AMT and Mi-171E helicopters are equipped with self-sealing main external fuel tanks. The self-sealing fuel tanks prevent fuel leakage during some types of damage and during a hard landing of the helicopter, thus reducing the probability of inflammation.
3		Installation of on-board cargo jib with SLG-300 hoist system on Mi-8AMT helicopter	AMT2886BU-G, AMT2888-BU-G	Mi-8AMT	The cargo hoist system (SLG-300) is intended for loading and unloading cargo weighing up to 300 kg, lifting and lowering people (no more than two people) if landing is impossible, in hovering mode at a height up to 50 m. The SLG-300 system improves helicopter operating efficiency during search-and-rescue missions and simplifies handling operations. There are two options for installing the cargo hoist jib with SLG-300: on the left or right side of the helicopter.
4		Replacement of MGBC bracket No. 8AT-5104-305 with bracket No. 8AT-5104-405.	AMT3582-BU-BE-G, AMT3582-BU-BE-AB, 171-3582-BU, 171A1-3597	Mi-8AMT, Mi-171, Mi-171E, Mi-171A1	Modern series-manufactured helicopters are equipped with aluminium alloy bracket No. 8AT-5104-405. This aluminum bracket No. 8AT-5104-405 as compared with magnesium bracket No. 8AT-5104-305 has increased operating and service life , as well as increased service life of the boosted control part (BCP) components.

List of upgrade products covered by service bulletins

Available on HSC website

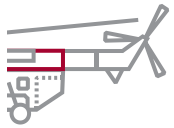
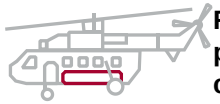
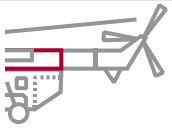
№	Retrofit product	SB reference	Application	Brief technical description of retrofit
5	 Replacement of BUR-1-2 system with BUR-1-2 series 2	AMT3088BU-G, AMT3088-BU-AB	Mi-8AMT, Mi-171	Replacing the flight data recorder based on analog data media with a data recorder based on solid-state drive.
6	 Replacement of the transmission gears on helicopters of Mi-8MTV/Mi-8AMT type and their modifications	AMT3096-BU-G, AMT3096-BU-AB; AMT3096-BU-G, AMT3096-BU-AB; T3033-BU-G, T3528-BU-AB, T3529-BE-AB.	Mi-8AMT, Mi-171, Mi-171E, Mi-8MTV-1, Mi-17-1V, Mi-17V-5	Increase the transmission capacity up to 1050 hp (instead of 900 hp for the transmission No.8A-1500-000
7	 Introduction of a backup supply line for electricity receivers on Mi-8MTV-1 helicopters	T3241BU-G, T3423-BU-G	Mi-8MTV-1	Because of an increase in power supply failures of electric energy receivers connected to battery with supply bus via cutout IP-50 on Mi-8MTV-1 helicopters, backup supply line for electric energy receivers is introduced and its electric diagram is modified.
8	 Replacement of swash plate (SP) No. 8-1950-000 with No. 8-1960-000	M3472-BE, M3472-BE-G, T/AMT 3339-BE-G, T/AMT 3339-BE	Mi-8T, Mi-8MTV-1, Mi-17, Mi-17-1V, Mi-171, Mi-171E, Mi-8AMT, Mi-172	The new-generation swashplate SP, No. 8-1960-000, does not have the deficiencies of previous swashplate No. 8-1950-000 (short time between overhauls and service life limits, labor-consuming maintenance during operation, etc.).
9	 Replacement of stabilizer No. 8AT-3100-00-03/04 with stabilizer No. 8AT-3100-00-05/06	AMT3798-BU-G, AMT3493-BE-G	Mi-8AMT, Mi-171	To improve flight safety and to enhance characteristics of pitch stability and controllability of Mi-8AMT and Mi-171 helicopters, the stabilizer with fabric covering (8AT-3100-00-03/04) is replaced with stabilizer with metal covering (8AT-3100-00-05/06) with improved performance characteristics.



List of retrofit programs
Airframe, Power Plant and Systems

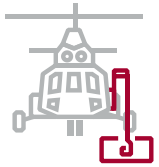
List of retrofit products covered by service bulletins

Airframe, Power Plant and Systems

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
1	 **Replacement of Ai-9V auxiliary power unit (APU) with Safir 5K/G-MI**	T2859-BU-G(AB), AMT3999-BU-G	Mi-8MTV-1, Mi-17, Mi-17-1V, Mi-8AMT	Replacing standard Ai-9V APU with Safir 5K/G-MI APU with improved specifications and service life.
2	 **Replacement of external fuel tanks (EFT) with self-sealing external fuel tanks equipped with foam polyurethane (FP).**	AMT3189-BU/BE-AB	Mi-8AMT, Mi-171	In order to increase the safety level during operation of Mi-171 helicopters, they are equipped with self-sealing main external fuel tanks. Self-sealing fuel tanks prevent fuel leakage during some types of damage and during hard landing of the helicopter, thus reducing the probability of inflammation.
3	 **Replacement of 633630 fire protection shut-off valves in cross-feed pipelines with 768600MA valves**	AMT3581-BU-G(AB)	Mi-8AMT Mi-171E	To improve reliability and consumer performance of Mi-8AMT (Mi-171) helicopters, two manual fuel-feed valves No. 633630 (one left valve in the forward pipeline and one valve in the tail pipeline) in cross-feed pipelines of external fuel tanks are replaced with two remote-controlled fuel-feed valves No. 768600MA.
4	 **Replacement of hoses in main and backup hydraulic systems**	M1803-BU-G	Mi-8T	To improve operational reliability of Mi-8 helicopters, cotton-braided hoses in the hydraulic control systems are replaced with metal-braided hoses.

List of upgrade products covered by service bulletins

Airframe, Power Plant and Systems

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
5	 **Equipment of helicopters with an emergency ditching system**	TM2700-BU-G	Mi-8T, Mi-8MTV-1	To ensure safe emergency landing during flights over water, the helicopter is equipped with an emergency ditching system.
6	 **Equipment of helicopter with SLG-300 cargo hoist system**	T3243-BU-G	Mi-8MTV-1	Cargo hoist system (SLG-300) is intended for loading and unloading cargo weighing up to 300 kg, lifting and lowering people (no more than two people) if landing is impossible, in hovering mode at a height up to 50 m. The SLG-300 system allows improvement in helicopter operating efficiency during search-and-rescue missions and simplifies handling operations.
7	 **Installation of ARM-406P emergency radio beacon**	TM2779-BU/BE-G, AMT2779-BU-G	Mi-8T, Mi-8MTV-1, Mi-8AMT	Equipping the helicopter with the COSPAS-SARSAT rescue system to ensure locating a crash-landed helicopter and rescue the crew and passengers.
8	 **External slinging load device – installation of remote control for load drop.**	M1865-BU-G	Mi-8T	Remote control panel is installed to provide remote control for load drop.

List of upgrade products covered by service bulletins

Airframe, Power Plant and Systems

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
9	**Modification of the hydraulic system electrical circuit design responsible for switching between the main and backup systems when signals are coming from two sensors (MST-35A and MST-25A).**	AMT2594-BU-G	Mi-8AMT	To improve the level of flight safety, a circuit is implemented to switch between the main and backup hydraulic systems in case of main system failure.
10	**Replacement of RN-120U voltage regulator with RN-120U-2s electronic voltage regulator**	AMT5014-BU-G	Mi-8AMT	Replacing electrical-mechanical voltage regulator of RN-120U type with RN-120U series 2 electronic regulator of new generation with improved specifications.
11	**Input of “BATT ON” panel signal**	T3176-BU-G(AB)	Mi-8MTV-1, Mi-17	To ensure the crew’s timely detection of a voltage drop in the battery supply bus of the helicopter’s electrical network and to prevent failures of the receivers powered from the battery bus, it is recommended that a “BATT ON” panel be installed.
12	**Rerouting of the electrical wiring harness of the APU fuel valve**	T2901-BU-G (AB)	Mi-8MTV-1, Mi-17, Mi-172	To exclude possibile damage to L6B electric wiring harness of the auxiliary power unit (APU) fuel valve during helicopter maintenance, it is recommended that L6 electric wiring harness be rerouted.
13	**Replacement of batteries**	TM3041-BU-G(AB)	Mi-8T, Mi-8MTV-1, Mi-17	To improve performance of helicopters, 12-SAM-28 batteries are replaced with 20NKBN-28 batteries. Aircraft alkaline battery of 20NKBN-28 type is interchangeable with acid battery 12SAM-28 but is superior in performance.

List of retrofit products
On-board equipment

List of upgrade products covered by service bulletins

On-board equipment

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
1	 **Installation on-board equipment (glass cockpit)**	M3073-BU-G, AMT3079-BU-G, TM3077-BU-G	Mi-8T, Mi-8MTV-1, Mi-8AMT	To improve helicopter flight safety, a new-generation on-board equipment set by TRANZAS CJSC is installed.
2	 **Replacement of SARPP-12D1M (SARPP-12D) recorder with SDK-8 recorder**	T2822-BD-G, M2822-BD-G, TM3445-BE-G	Mi-8T, Mi-8MTV-1	Equipping helicopters with on-board automatic solid-state digital flight recorder of SDK-8 type integrated with computer-based system of flight data recording and objective assessment with storage of 13 analog parameters and 12 discrete commands in electronic-digital form, as a replacement of SARPP-12D-1M (SARPP-12D) recorder. Flight parameters are processed and the SDK-8 system is maintained using IBM PC/AT or a compatible computer.
3	 **Replacement of SARPP-12D(1M) recorder with BUR-1-2 system**	T2835-BU-G	Mi-8MTV-1	Equipping helicopters with on-board automatic solid-state digital flight recorder.
4	 **Replacement of SARPP-12D(1M) recorder with BUR-1-2Zh system**	M2242-BU-G	Mi-8T	Equipping of helicopters with on-board automatic flight data recorder.
5	 **Installation of ZBN-1-2 series 3**	БУР-1-1-BU/BE	Mi-8T, Mi-8MTV, Mi-8AMT	Replacing protected flight recorder ZBN-1-1 with on-board solid-state protected flight recorder of ZBN-1-3 series 3 in BUR-1-2Zh and BUR-1-2 systems.

List of upgrade products covered by service bulletins

On-board equipment

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
6	**Replacement of RI-65 voice annunciator with Almaz-UPM**	T3035-BU-G	Mi-8MTV-1	To improve hardware reliability, service life, lifetime and to enhance functionalities of the voice annunciator, the discontinued RI-65 is replaced with Almaz-UPM, a new-generation on-board voice annunciator.
7	**Replacement of P-507-3BS tape voice recorder, P-503B wire voice recorder, MS-61 voice recorder with P-507M voice recorder**	T3535-BU, T3534-BU-G	Mi-8MTV-1, Mi-172	According to ICAO requirements described in clause 4.3.2.2 , Part III, Appendix 6 to the Convention on International Civil Aviation, P-507-3BS tape voice recorder, P-503B wire voice recorder and MS-61 voice recorder must be replaced by P-507M digital voice recorder.
8	**Installation of IV-500A equipment**	M2547-BU-G, M2487-BU-G	Mi-8T, Mi-8MTV-1	Monitoring of power plant vibration level.
9	**Replacement of B5A-Yar1 unit in Yadro-1G1 radiostation with B5M-Yar1 unit**	AMT3188-BU-G(AB)	Mi-8AMT, Mi-171(E)	Replacement of B5A-Yar1 unit in Yadro-1G1 radiostation with B5M-Yar1, a new-generation unit with improved specifications.
10	**Replacement of Orlan-85ST radiostation with Prima-MV and Prima-DMV-1 radiostations**	AMT3992-BU-G/AMT3992-BU, AMT5015-BU-G	Mi-8AMT, Mi-171E	To improve performance of Mi-8AMT helicopters, standard Orlan-85ST VHF-band radiostations are replaced by Prima-MV new-generation VHF-band radiostations.

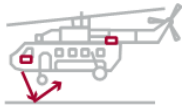
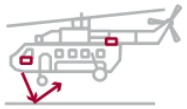
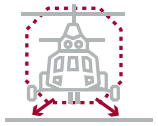
List of upgrade products covered by service bulletins

On-board equipment

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
11	**Replacement of Orlan-85ST radiostation with Prima-MV and Prima-DMV-1 radiostations**	AMT3992-BU-G/AMT3992-BU, AMT5015-BU-G	Mi-8AMT, Mi-171E	To improve performance of Mi-8AMT helicopters, standard Orlan-85ST VHF-band radiostations are replaced by Prima-MV new-generation VHF-band radiostations.
12	**Replacement of Baklan-20 radiostation with Orlan-85ST radiostation**	AMT3883-BY/BE	Mi-171E	Due to discontinuance of Baklan-20 VHF-band radiostation, it is recommended that this station be replaced with Orlan-85ST, a new-generation VHF-band radiostation.
13	**Replacement of Baklan-20 radiostations with Prima-DMV-1 and Prima-MV radiostations on operating Mi-8AMT helicopters.**	AMT5011-BU-G	Mi-8AMT, Mi-171E	Due to discontinuance of Baklan-20 VHF-band radiostation it is recommended that this station be replaced with Prima-DNV-1 (main) and Prima-MV (standby) new-generation VHF-band radiostations.
14	**Installation of ARK-UD**	AMT3696-BU-G(BU), T3377-BU-G	Mi-8T, Mi-8AMT, Mi-171E	Equipping the helicopter with searching ARK-UD automatic radio compass for search-and-rescue operations.
15	**Replacement of ARK-15M with ARK - 35-1**	AMT-3789-BU-G(BU)	Mi-8AMT, Mi-171E	Equipping helicopters with ARK-35-1 new-generation radioaltimetr.
16	**Replacement of RIO-3 with SO-121**	M2586-BU-G, TM2635-BU-G(AB), AMT2585-BU-G	Mi-8T, Mi-8MT, Mi-8AMT, Mi-17, Mi-172	Equipping the helicopter with SO-21, a new-generation icing indicator to replace the discontinued radioisotope RIO-3 icing indicator.

List of upgrade products covered by service bulletins

On-board equipment

№	Retrofit product	SB reference	Application	Brief technical description of retrofit
17	 **Installation ofTTA-12H TAWS (by TRANSAS)**	M3393-BU-G(AB), M3221-BU-G	Mi-8T	Equipping helicopters with TTA-12 EGPWS (TAWS) system
18	 **Installation of Enhanced Ground Proximity Warning System (EGPWS) (by VNIIRA-Navigator)**	171-5018-BU	Mi-171	Equipping helicopters with an Enhanced Ground Proximity Warning System (EGPWS).
19	 **Automatic flight control equipment - AP-34B autopilot. Expansion of adjustment range for roll and pitch gear ratio of AP-34B autopilot.**	AMT2697-BU-G(AB)	Mi-8AMT	Expansding the adjustment range for roll and pitch gear ratio of AP-34B autopilot.
20	 **Installation of KN53 short-range radio navigation and landing system with KN-63 radar range finder**	AMT3684-BU-G	Mi-8AMT	To improve the level of flight safety, the helicopter is equipped with KN53 short- range radio navigation and landing system.
21	 **Installation of satellite-position tracking system**	T3426-BU-G	Mi-8MTV-1	The helicopter is equipped with an satellite-position tracking system to monitor its position.
22	 **Installation of SX-16 (IR) Nightsun searchlight system**	AMT2892-BU-G/ AMT2892-BU	Mi-8AMT, Mi-171E	To enhance the ability of the helicopter to perform S&R missions, the helicopters are equipped with an SX-16 (SX-16I.R) searchlight system.

List of prospective retrofit products
Not covered by SB

List of upcoming upgrade products

Bulletin has not been issued

№		Retrofit product	Brief technical description of retrofit
1		**Replacement of Ai-9V Auxiliary Power Unit (APU) with a modification of Safir 5K/G-MIS**	Replacing standard Ai-9V APU with Safir 5K/G-MI APU with improved specifications and service life, with DC generator.
2		**Equipment helicopter with VSU-5 helibucket**	It is planned to equip the helicopter with a VSU-5 helibucket with capacity of 5 cub. m for fire-fighting missions.
3		**Installation of a third auxiliary fuel tank**	In order to increase flight range and duration.
4		**Replacement of KO-50 kerosene heater with ECS-M1V air-conditioning and heating system**	Replacing KO-50 kerosene heater with a new-generation air-conditioning and heating system with improved specifications (such as ECS-M1V).
5		**Replacement of standard pilot safety harnesses with inertial mechanism based safety harnesses**	To improve ergonomics of pilot seats, it is suggested that the standard pilot safety harness be replaced with an harness with inertial mechanism.
6		**Installation of improved thermal-noise-vibration insulation**	To improve comfort, it is suggested that improved thermal-noise-vibration insulation be installed.
7		**Replacement of standard pilot seats with 230/260 H110 Fischer energy-absorbing seats (or equivalent).**	In order to reduce impact loads on pilots during an emergency hard landing, it is suggested that the standard pilot seats be replaced with 230/260 H110 Fischer energy-absorbing pilot seats (or equivalent).

List of upcoming upgrade products

Bulletin has not been issued

№	Retrofit product	Brief technical description of retrofit
8	**Installation of a mirror with enhanced visual field to observe the underslung load**	To ensure visual observation of the underslung load, the helicopters are equipped with additional external rearview mirrors with enhanced visual field.
9	**Installation of a data download point for the flight recorder in the cargo cabin**	In order to provide rapid flight data download, the helicopters are equipped with a data download point for the flight recorder in the cargo cabin.
10	**Replacement of SARPP-12D(1M) recorder with BUR-SL series 7(9) system**	Equipping helicopters with a flight recorder based on solid-state data storage.
11	**Replacement of Almaz-UP48 voice annunciator with Almaz-UPM**	Replacing Almaz-UP48 voice annunciator with Almaz-UPM, a new-generation on-board voice annunciator.
12	**Installation of PKV-8 digital autopilot**	Equipping helicopters with new-generation digital autopilots.
13	**Installation of a standby horizon indicator**	To monitor normal operation of standard horizon indicators and to ensure piloting control in case of failure of the standard horizon indicator.
14	**Installation of a satellite-position tracking system (SSKM-R)**	Monitoring of the helicopter position using the new-generation SSKM-R system.
15	**Installation of Kontur-10Ts weather radar**	To improve flight safety in adverse weather conditions, the helicopters are equipped with Kontur-10Ts weather radars.

List of upcoming upgrade products

Bulletin has not been issued

№	Retrofit product	Brief technical description of retrofit
16	**Installation of RDR-2000 weather radar**	To improve flight safety in adverse weather conditions, the helicopters are equipped with RDR-2000 weather radars.
17	**Installation of KT-76S equipment**	Helicopters are equipped with air traffic control equipment - transponder
18	**Installation of VIM-95 equipment**	The VIM-95 landing equipment is designed for the short-range navigation system’s radio beacons (VOR) and radio beacons of the instrument landing systems (ILS, SP-50).
19	**Installation of SO-2010 airborne transponder**	This equipment provides standard (ELS) and enhanced (EHS) surveillance in S-mode in accordance with requirements of EUROCONTROL. SO-2010 is intended for installation on helicopters, small aircraft flying at altitudes up to 4,570 m.
20	**Installation of ADS-B system**	Automatic Dependent Surveillance - Broadcast (ADS-B) is a method of surveillance of aircraft where the aircraft automatically provides information via data communication line to a specific or any information user (ground-based or airborne) about its coordinates, movement parameters and immediate intents (the next destination point and specified altitude).
21	**Replacement of RIO-3 device with EW-164 icing warning device**	Replacement of the discontinued RIO-3 warning device with EW-164, a new-generation icing wrning device.
22	**Installing an on-board TV unit**	Visual remote monitoring of underslung load.

List of upcoming upgrade products

Bulletin has not been issued

№	Retrofit product	Brief technical description of retrofit
23	**Installation of LED aircraft lights and taillight**	Equipping the helicopter with LED aircraft lights of a new generation with improved reliability and low power consumption.
24	**Installation of LED flashing light of MSD-72-01 type**	Equipment of the helicopter with LED aircraft flashing lights of new generation having improved reliability and low power consumption.
25	**Installation of an emergency light**	Provision of an emergency light source for the crew in case of emergency.
26	**Installation of TSL-1600 searchlight**	Supporting search-and-rescue missions using a new-generation searchlight.
27	**Replacement of internal lighting equipment in the cockpit with LED lighting equipment**	Equipping the helicopter with internal new-generation LED lighting equipment with improved reliability and low power consumption.
28	**Installation of foreign-manufactured BIRD self-protection subsystem**	This self-protection subsystem protects the helicopter against ground-to-air and air-to-air missile attacks.
29	**Optimization of avionics**	Reduction in operationg costs for avionics maintenance and repair.

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Thank you for attention!