Gorbachenya, K.N. Eye-safe 1.55 μm passively Q-switched Er,Yb:$GdAl_3(BO_3)_4$ diode-pumped laser / K.N. Gorbachenya [et al.] // Opt. Lett. – 2016 . – Vol. 41. – P. 918– 921.
Qin, H.B. Diode-pumped passively Q-switched Nd:YVO_4 laser with a carbon nanotube saturable absorber / H.B. Qin [et al.] // Laser Physics. – 2011 . – Vol. 21. – P. 1562– 1565.
Mond, M. Diode pumped 1.5 μm Er, Yb:glass laser / M.Mond [et al.] // OSA TOPS on Adv. Solid State Lasers. – 2000. – Vol. 34. – P. 212.

УДК 811.111:355.01:004.896

T. Taraila, O. Piskun

Military transportation robots

Belarusian National Technical University
Minsk, Belarus

Logistics have always been an important part of successful warfare. Military transportation robots can increase the efficiency of logistics as well as aid soldiers in movement. There are a lot of things to move both on the battlefield as well as in its vicinity. Indeed, weapons, ammunition and different supplies have to be moved to the point of action. At the end - causalities also have to be picked up from the battlefield. By putting humans to this work they are often exposed to a risk that could be avoided. We are not talking only about people that carry things around in a backpack - more about the drivers that have to drive into dangerous areas. Sure, that is what they do for living. Still, these hazards could be avoided and the transportation jobs made more effective. This is where military transportation robots come into the story. You can imagine how the robots could ease causality extraction from the battlefield. Also, different transportation jobs could be made

more effective. At the end, soldiers could travel longer distances if they could take more supplies with them.

Autonomous Platform Demonstrator

The Autonomous Platform Demonstrator or APD is a military transportation robot developed by the U.S. Army Tank Automotive Research, Development and Engineering center - TARDEC. It's a 9.6-ton heavy and 15-foot long UGV designed to demonstrate latest technological achievements in this field. It has a hybrid-electric drive train with six in-hub electric motors powered by li-ion batteries charged using an on-board diesel generator. The APD is a skid steer vehicle that can pivot-turn in place. Other technologies include a lightweight hull, an advanced suspension system, and others. From control point of view it can be controlled in real-time by a soldier or it can operate autonomously. Autonomously it can operate at speeds up to 50 mph. It can travel along a GPS way point route and avoid obstacles in its way. The robotic vehicle can overcome 1-meter high obstacles and navigate 60 degree steep slopes. The culmination of this program is Soldier Operation Experiments in 2010. Eventually it will become the main test platform for the RVCA (Robot Vehicle Control Architecture) Army Technology Objective.

R-gator

People who like coffee and milk mix them together because one good thing can't spoil another good thing. The same happens when two companies that are great professionals in their corresponding fields work together to create something new. This has happened in case of r-gator, one of military transportation robots. John Deere has great experience in making all-terrain vehicles and iRobot has great experience in making robotic solutions. So, they take a battle proven vehicle - the m-gator, equip it with iRobot's devices and voila - we have an unmanned ground vehicle. So, it can be remote controlled using an xbox 360 controller. It can move autonomously along a preprogrammed route using GPS. And it can still be driven by a driver. The switching between these modes can be done as easily as turning off a switch. As you can understand, it can be used for numerous purposes. It can be used to remotely inspect areas of interest. It can autonomously patrol and send a video stream back to the command center. It can be used to ensure safe extraction of causalities and to transport cargo. This is not limited of course. It comes with an Operator control unit. That is basically a computer and an xbox controller. Optionally, a wearable operator control unit is also available. The bottom line is - if you can play xbox you can operate this military transportation robot.

Armored Combat Engineer Robot

ACER stands for Armored Combat Engineer Robot. It is made by Mesa robotics. This is a real heavy-weight robot - it weighs about 2 tons and can carry a payload of about 1 ton. On top of that, its arm can lift more than 400 kilograms. It is not limited to logistics of course. Although, it can be counted as one of military transportation robots, it can do other tasks as well - such as landmine disposal, route clearance and others. One of its main advantages is the ease of maintenance. Maintenance can be done using standard tools.

In conclusion, it should be noted that the above mentioned military transportation robots are being used by many countries at the moment. I hope new robotic devices will be fully developed and given to the military to improve the chances of a soldier to survive on the battlefield.