

## GENERAL DIRECTIONS OF COMBINE HARVESTER'S FIRE SAFETY IMPROVING

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Qualitative and fast harvesting company is one of the most important tasks of the country's economy. Its implementation depends on the readiness of the machines and its sustained operation. Combine harvesters' fires cause significant damage to farms with the loss of expensive equipment, burning grain arrays, the growth of crop losses due to extension of the terms of harvesting.

Currently used tools can't provide the required level of harvesters' fire safety corresponding to the modern and future stages of development of harvesting equipment. So it's necessary to find a fundamentally different solution of the problem of improving harvesters' fire safety.



1 – cutter and sloping camera, 2 – reel, 3 – engine compartment, 4 – grinding space and belt drive, 5 – hydraulic system

**Fig.1 – The main fire hazardous units of combine harvester**

On the base of the fire safety system's components' analysis and the math model of the grinding space's fire development thermodynamics in combine harvester we can propose the following measures to improve harvester's fire protection:

- to equip the engine compartment and the grinding space of the harvester with automatic aerosol fire extinguishing installation, which will extinguish fire at the early stage of development;
- to install control panel with light and sound alarm in the cab for state control, verification and start of the automatic fire-extinguishing system;
- to ensure the control over the serviceability of the automatic fire extinguishing system by the central computer of a combine harvester, which will ban the work on combine harvesters with a defective fire-extinguishing system;
- to associate fire-extinguishing system with automatic locking system components. It stops the work in the case of the fire and limit the spread of combustion;
- to establish the control over the temperature of the bearings, to block the operation of all components and assemblies after exceeding the standard value of the temperature;
- to establish the control over the belt tension to prevent them from loosening and slippage, which can cause a temperature rise in the unit with a belt drive;
- to lay electric cables in metal sleeves to ensure their protection from mechanical damage and to limit the spread of combustion in the case of emergency;
- to equip combine harvesters with extinguishers OP-10 in an amount of not less than 2 pieces.