II INTERNATIONAL CONFERENCE
KRASNOYARSK, RUSSIA
25-27 September 2020

APITECH

Прикладная физика, информационные технологии и инжиниринг

APITECH

Applied Physics, Information Technologies and Engineering

Science & Technology City Hall

Krasnoyarsk

«Conference on Applied Physics, Information Technologies and Engineering» APITECH-2020

«Research of diagnostic of combine harvesters at levels of hierarchical structure of systems and units of hydraulic system»

Authors:

I L Rogovskii, B S Liubarets, S A Voinash, V A Sokolova, A A Luchinovich and M N Kalimullin

Problem statement

- Combine harvester – the most complex mobile machine used in agricultural production. The operation of the combine is provided by the combine-operator, who usually has only superficial knowledge about the structure and technological process of the machine and even more limited knowledge and skills in managing the technical condition (as known, the lack and low level of qualification of personnel is one of the most acute problems of agricultural production). This leads to the fact that most often the operator is not able to not only carry out maintenance and repairs in a quality and timely, but even correctly describe the external manifestations of the failure and inform their diagnostician that they are correctly entered into the IT system.

Solution methods

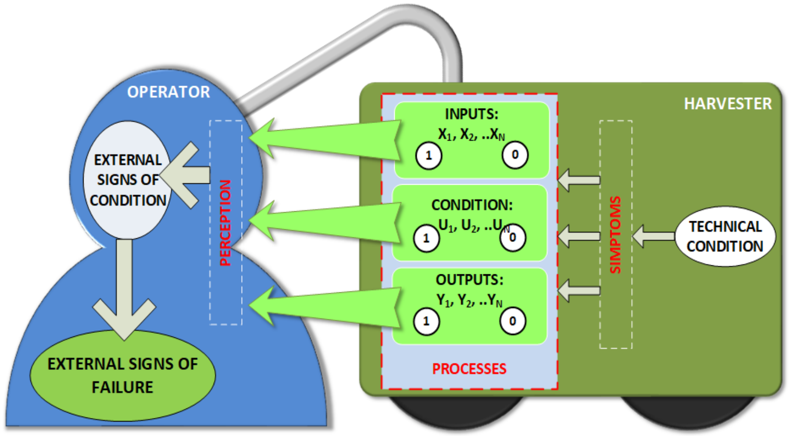

Figure 1. External signs of the states of the object of diagnosis (zero level).

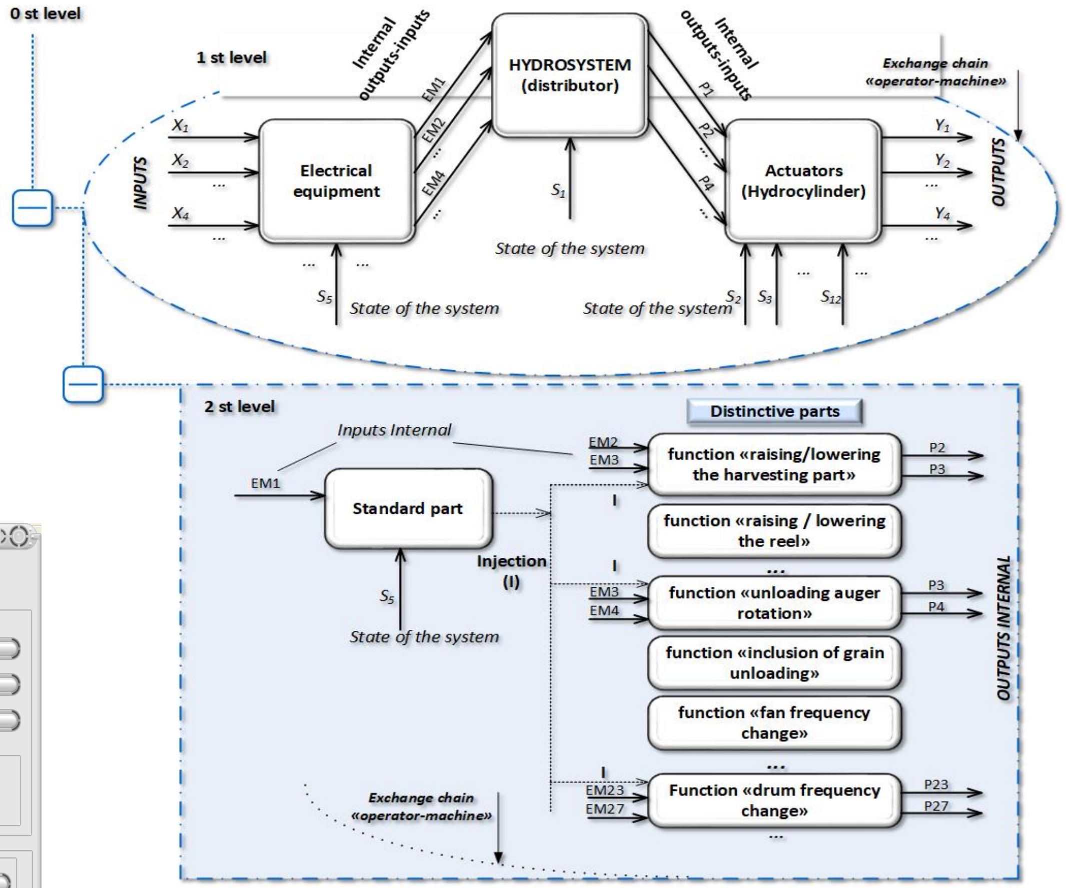

Figure 2. Levels of hierarchical structure of systems and assemblies hydraulic Slavutich KZC-9F

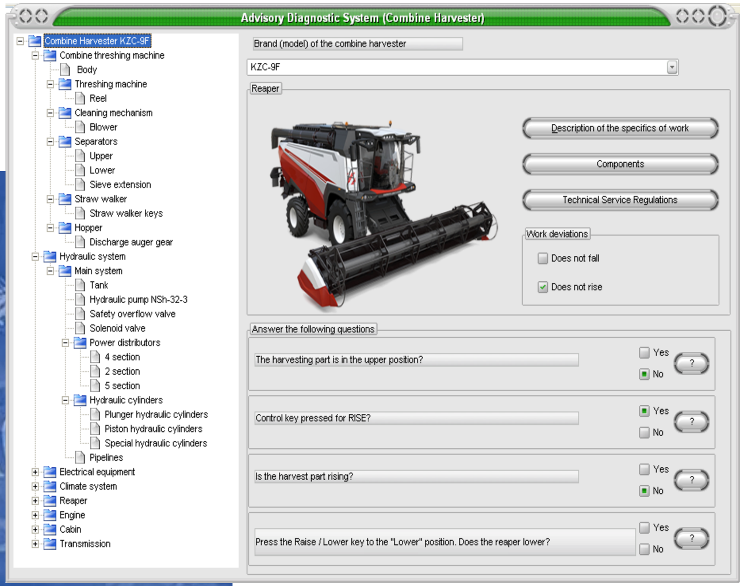

Figure 3. General view of window at diagnostic system

Conclusions

Results, implementation

- The materials presented in the article are part of the knowledge base of IT system, which contains information about the failures of combine harvesters according to external signs, the causes of the problems and recommendations for their elimination, became the basis of IT diagnostic system.
- Using the developed intelligent deliberative system will allow you to control the technical condition of the machine and eliminate the need for heuristic processing of large amounts of information and analysis of complex interrelated processes. This reduces the requirements for the qualification of the operator, in terms of the use of technical means of diagnosis.

Contacts

Authors name Sergey Voinash

- Federal State Budgetary Educational Institution of Higher Education "Novosibirsk State Agrarian University", 160 Dobrolyubova str., Novosibirsk, 630039, Russian Federation

E-mail: sergey_voi@mail.ru