

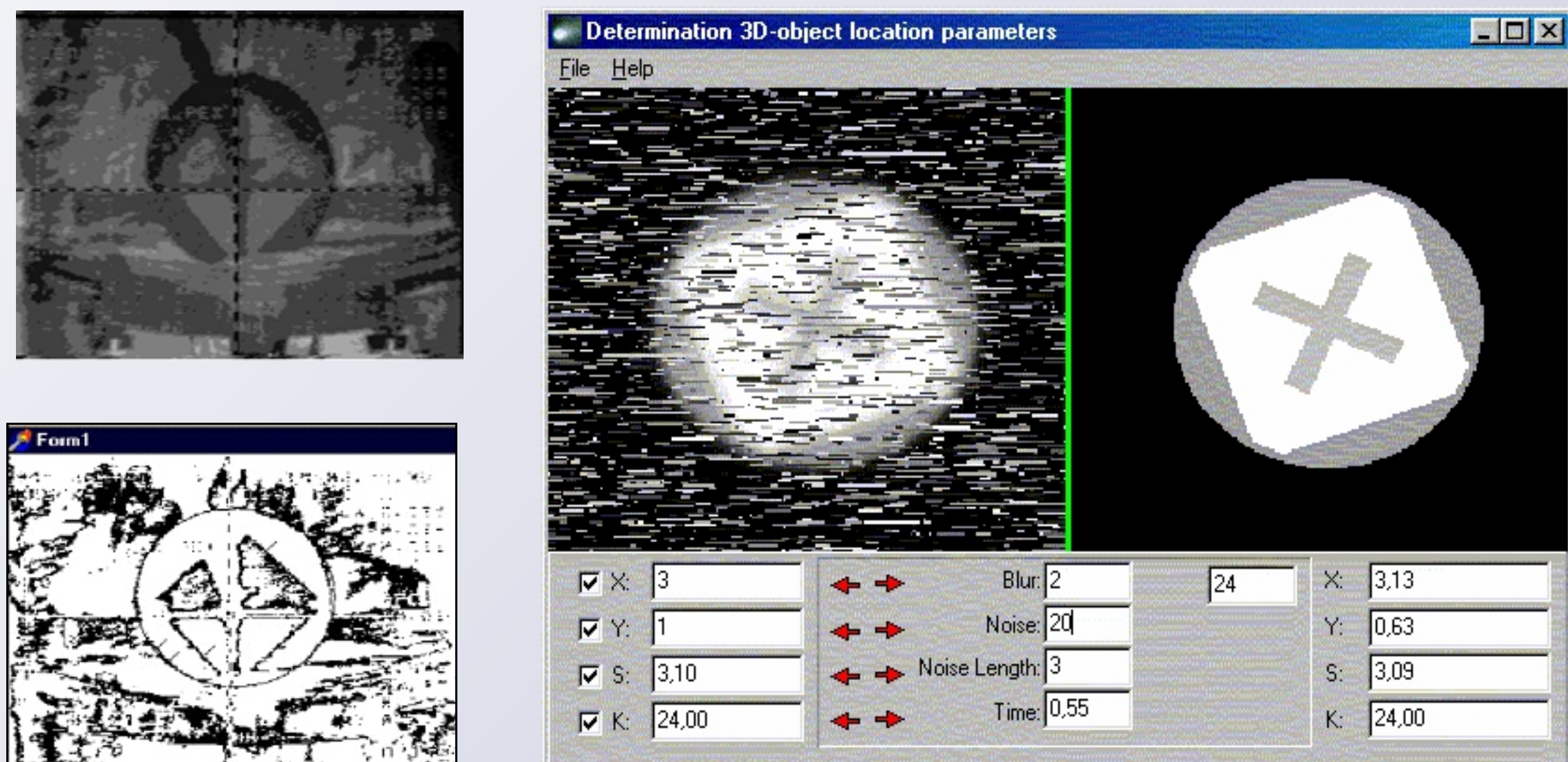


# Russian Academy of Sciences Program Systems Institute

## Artificial Intelligence Research Centre

### Software System for Docking Target Parameter Identification

Developed under the contract with the Russian Rocket and Space Corporation "Energia", this software system is meant to identify parameters of the target construction of docking unit directly from TV or video image.

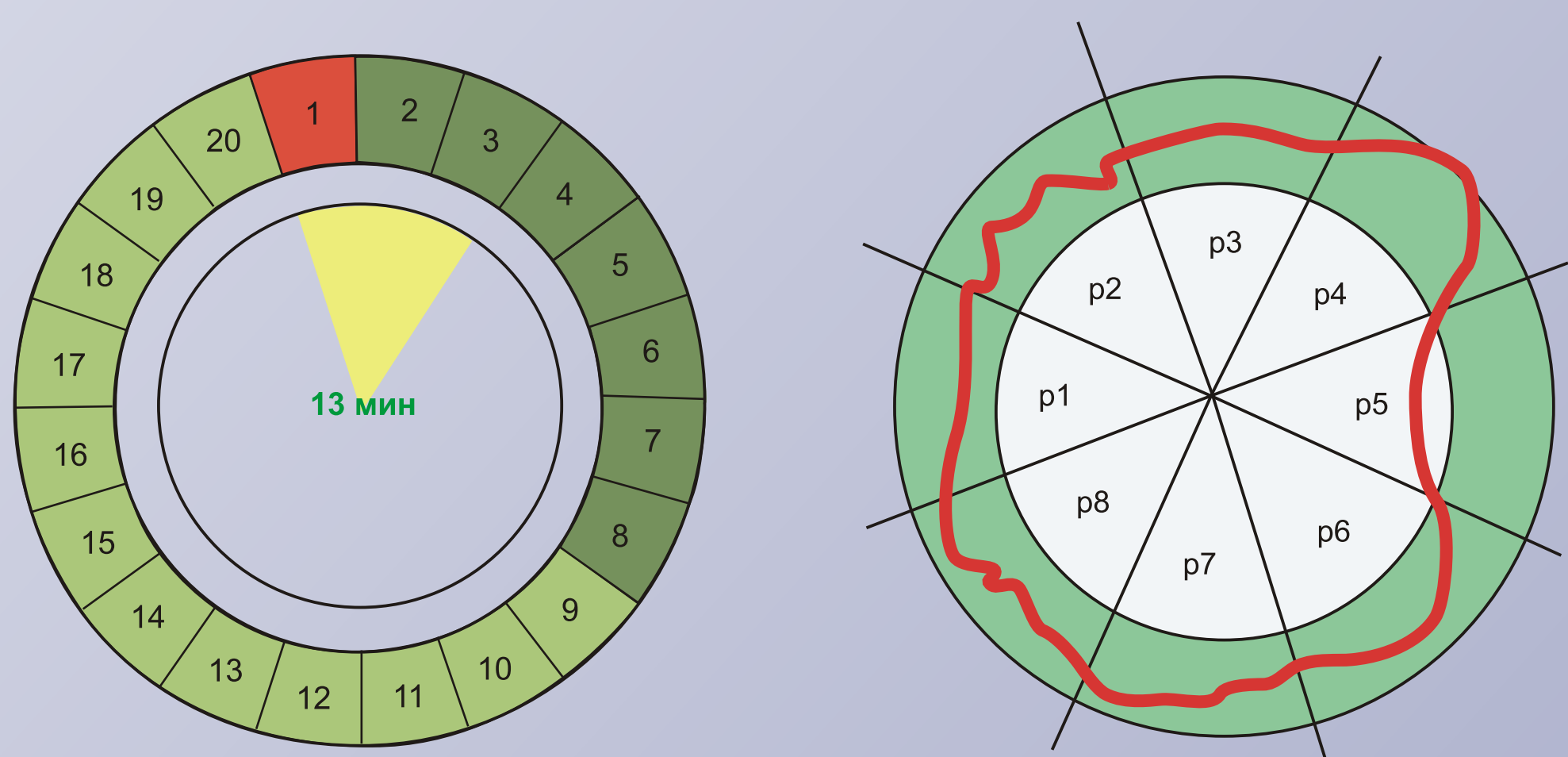


#### Major advantages of the system are:

- low sensitivity to image blur and noise
- the system is operational even if image is more than 50% truncated
- real-time operation

### System for Visualized Analysis and Control of the Launch Preparation Process

The software was developed under the contract with the Rocket and Space Corporation "Energia". The objective is to dynamically visualize processes involved in spacecraft launch preparation. An off-nominal process is marked in red and detailed by a red curve where it goes outside the bounding circles.

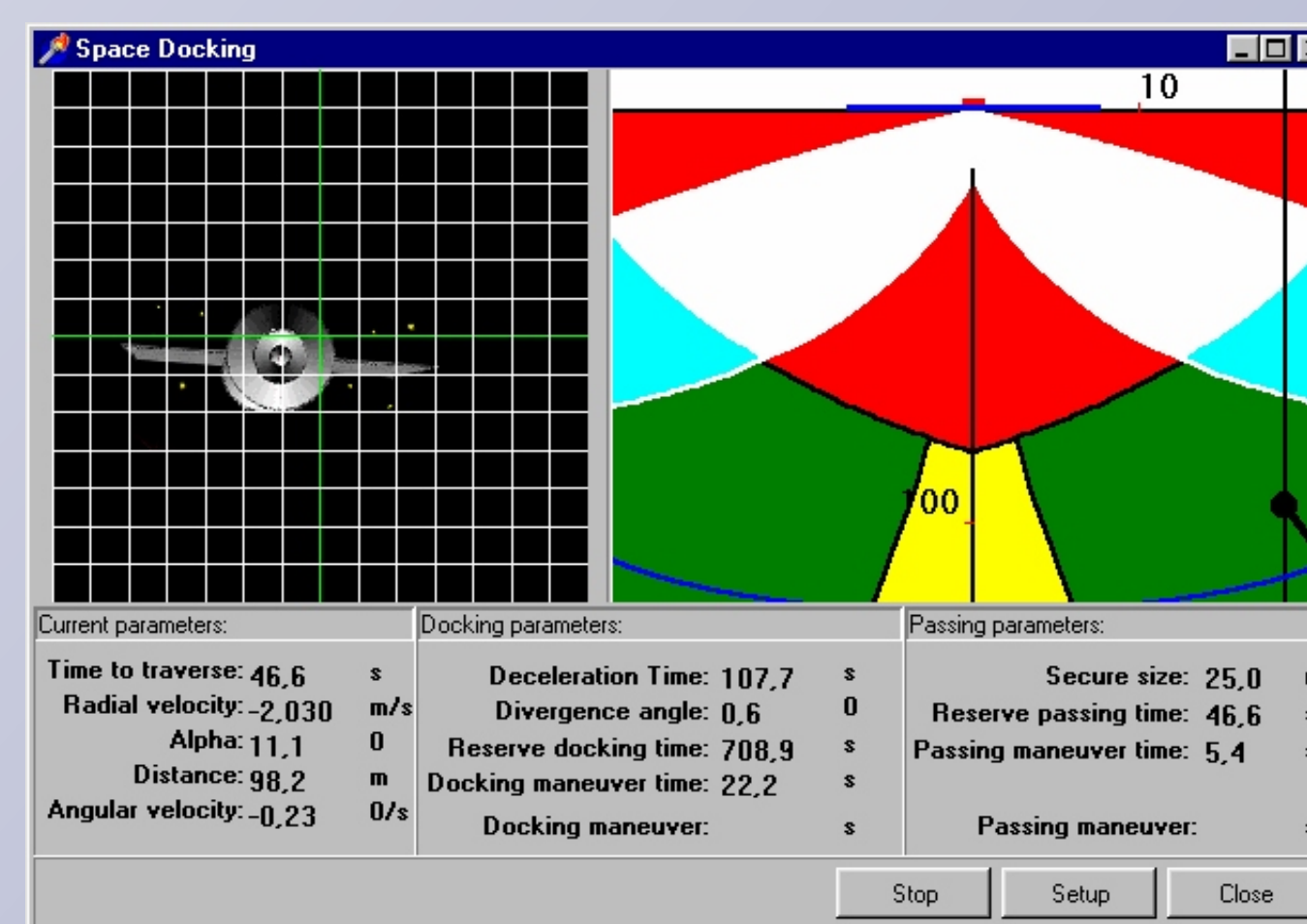


#### Advantages of the system include:

- efficient, in terms of perception time, visualization of information
- considerably decreasing psychological load on human operator
- ensuring highly informative visualization

### Intelligent Control System for Spacecraft Docking

The software system developed in cooperation with the Russia's Gagarin Cosmonaut Training Centre is meant to ensure safe spacecraft docking under manual piloting. The relative motion of spacecraft is represented by hodographs on an error plane.

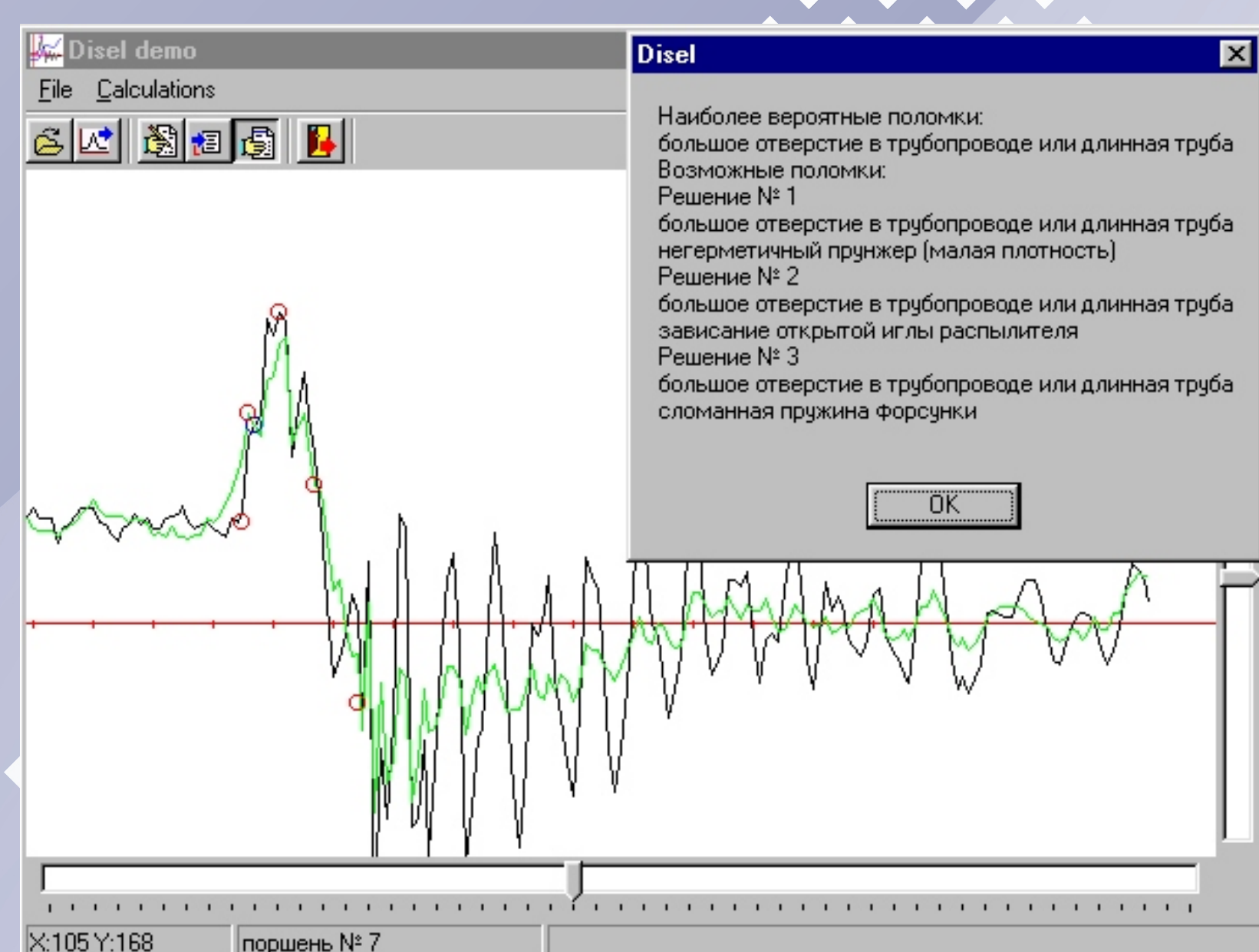


#### Key features of the control system are:

- informative and intuitive visualization based on hodographs
- real-time situation analysis and forecast
- possibility of using telemetry data to review and analyze real-life docking procedures

### Automated Diagnostics System for Diesel Engine Fuel Equipment

The software developed for "Lokomotiv" corporation uses SIMER+MIR expert system to perform fuel equipment diagnostics for diesel engines.



#### Major benefits:

- prompt failure diagnostics and localization
- significantly reducing equipment down-time

#### ADDRESS

Artificial Intelligence  
Research Center  
Program Systems Institute  
Russian Academy of Sciences

Pereslavl-Zalessky 152020 Russia  
Phone/fax: +7 (48535) 98065  
E-mail: [airec@botik.ru](mailto:airec@botik.ru)  
Web-site: <http://www.botik.ru/PSI/AiReC>

