



**Acceleration of Grain Logistics of Sea Ports
and Grain Quality Control thanks to
INNOVINNPROM Automation Solutions**

**Ukraine
2024**

Logistics Production Solutions of INNOVINNPROM

Maximize efficiency with a comprehensive suite of automation solutions designed specifically for grain logistics processes at seaports

Logistic Software



Weight Systems



Railway Grain Sampling Complexes



Maintenance and Repair



Flow Samplers



Hopper Dedusting Systems



Track Sampling Systems



Warranty Services



Implementation experience in three seaports

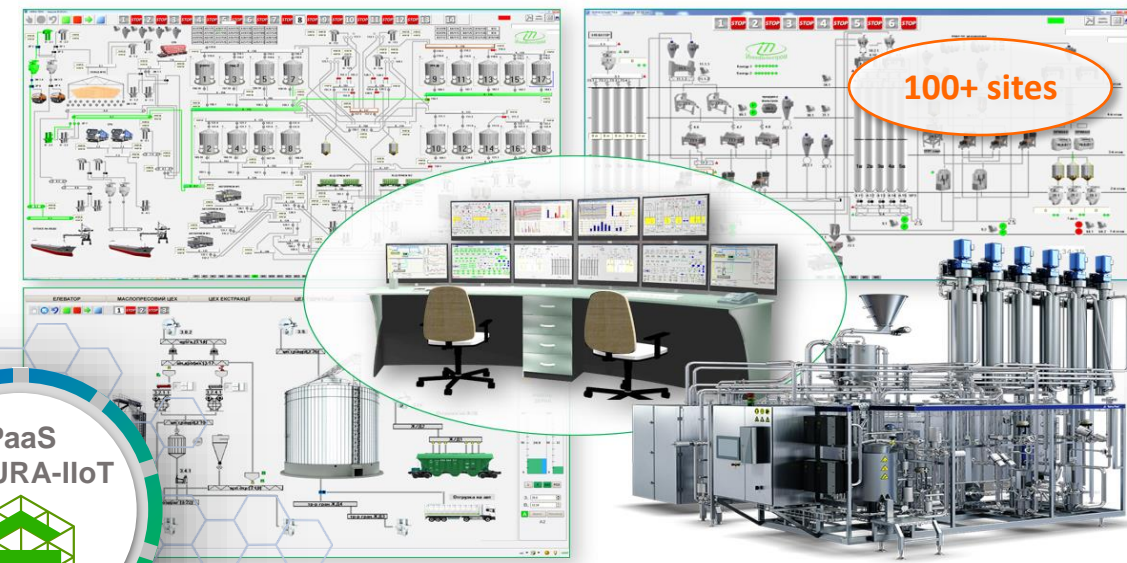
INDUSTRY 4.0

INNOVINNPROM: Products & Solutions

APM/MES/ERP/PLM



Automated Design System "Route" / SCADA



Crystal Growing Systems



Car Sampling Systems



Hopper Railway Car Robotic Sampling Systems



Monitoring Systems

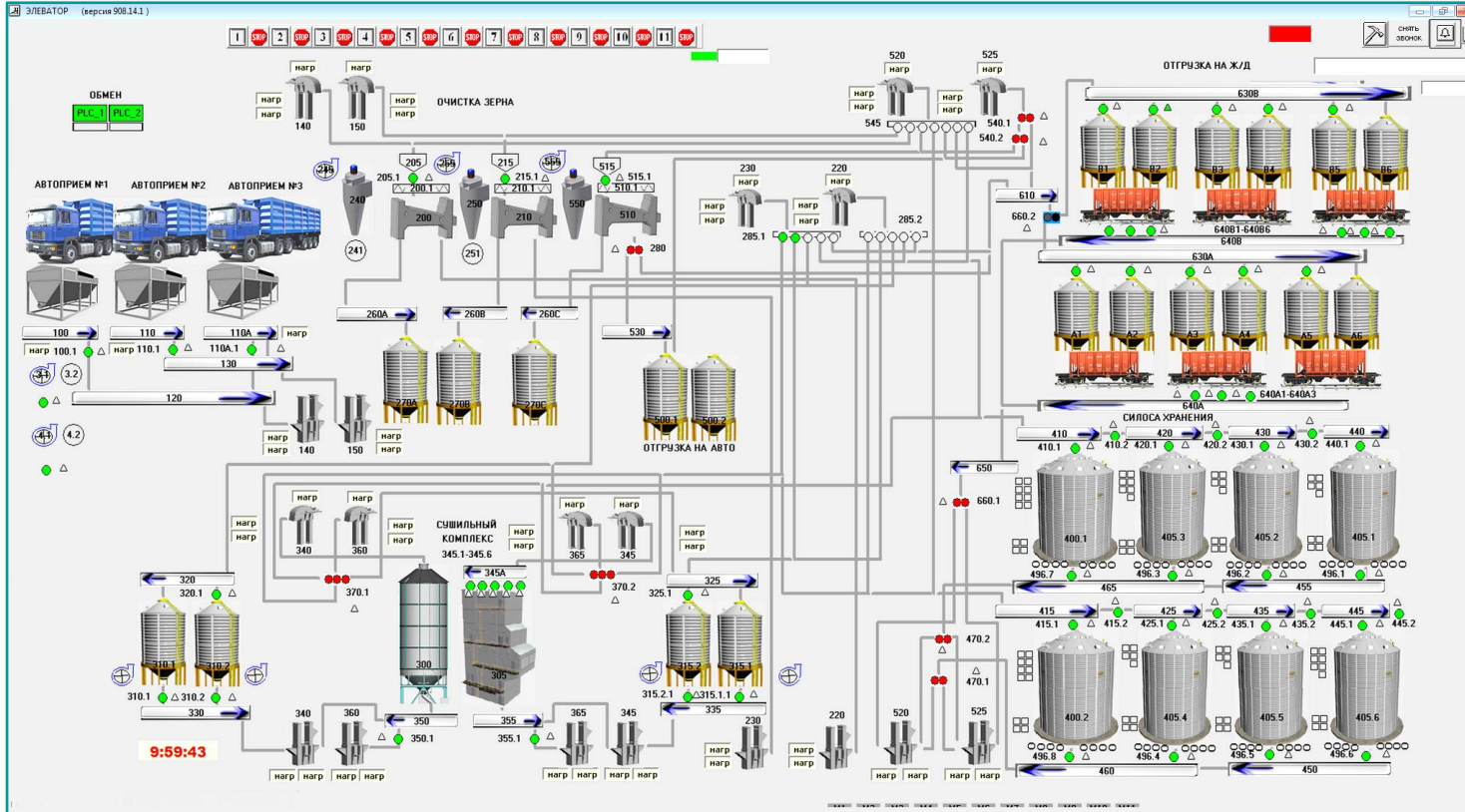


Grain Logistic Solutions of INNOVINNPROM

Map of implemented projects for the automation of grain elevators and port terminals, mills, sugar factories, feed mills, technological lines for the processing of agricultural raw materials and products



Automation of Grain Elevators and Port Grain Terminals



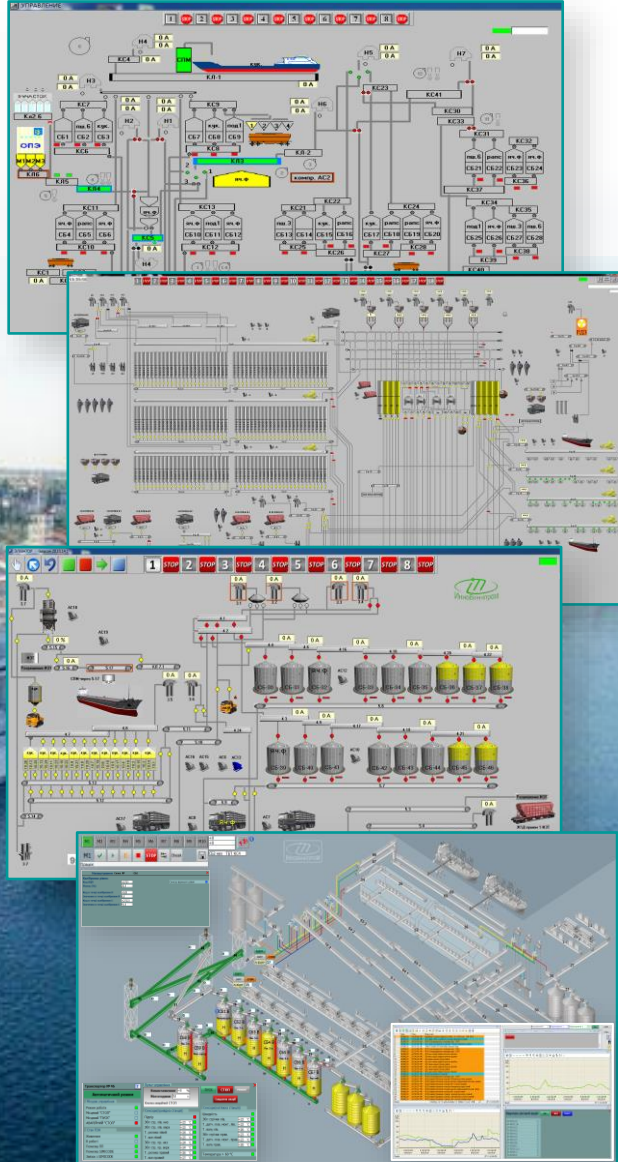
- ✓ Full range of services from design to commissioning "Turnkey elevator"
- ✓ Our own CAD automated design system "ROUTE" for the construction of automated technological process control systems (SCADA)

- ✓ Management of all processes
- ✓ Quality control of grain products
- ✓ Operational response
- ✓ Visualization of processes
- ✓ Keeping statistics
- ✓ Minimization of the influence of the human factor

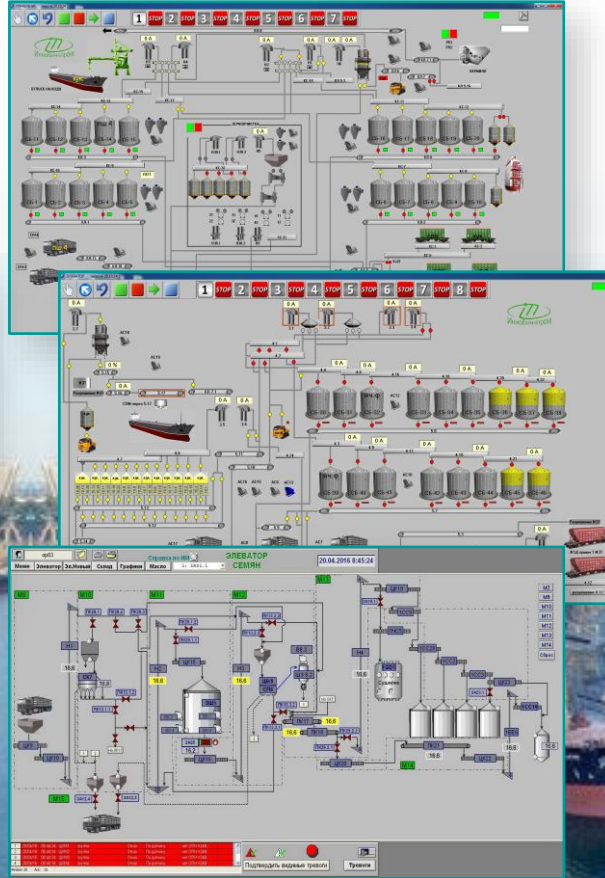


Implemented Grain Port Terminal Engineering Projects

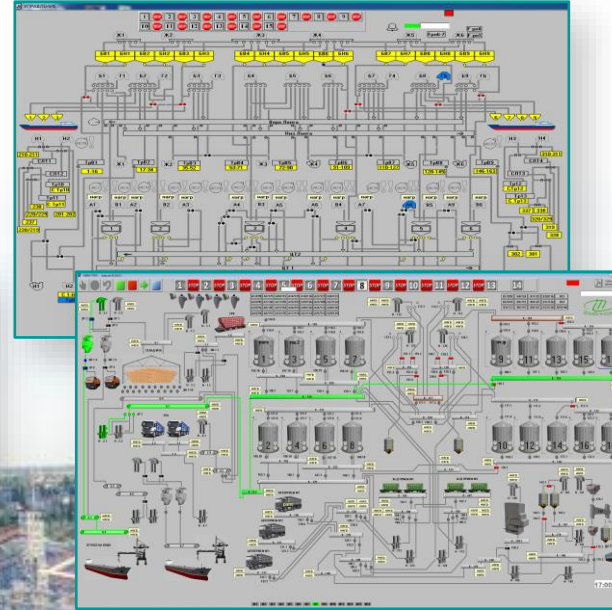
Odesa Seaport



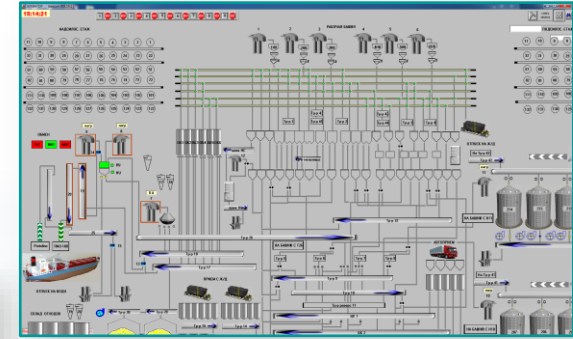
Chornomorsk Seaport



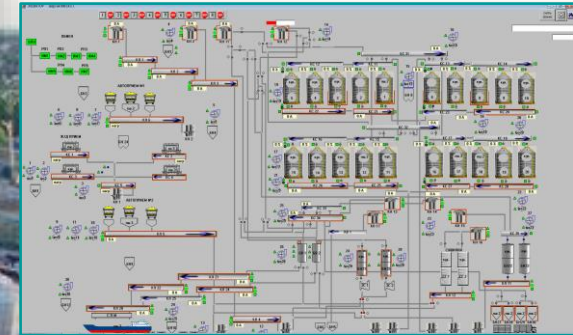
Mykolaiv Seaport



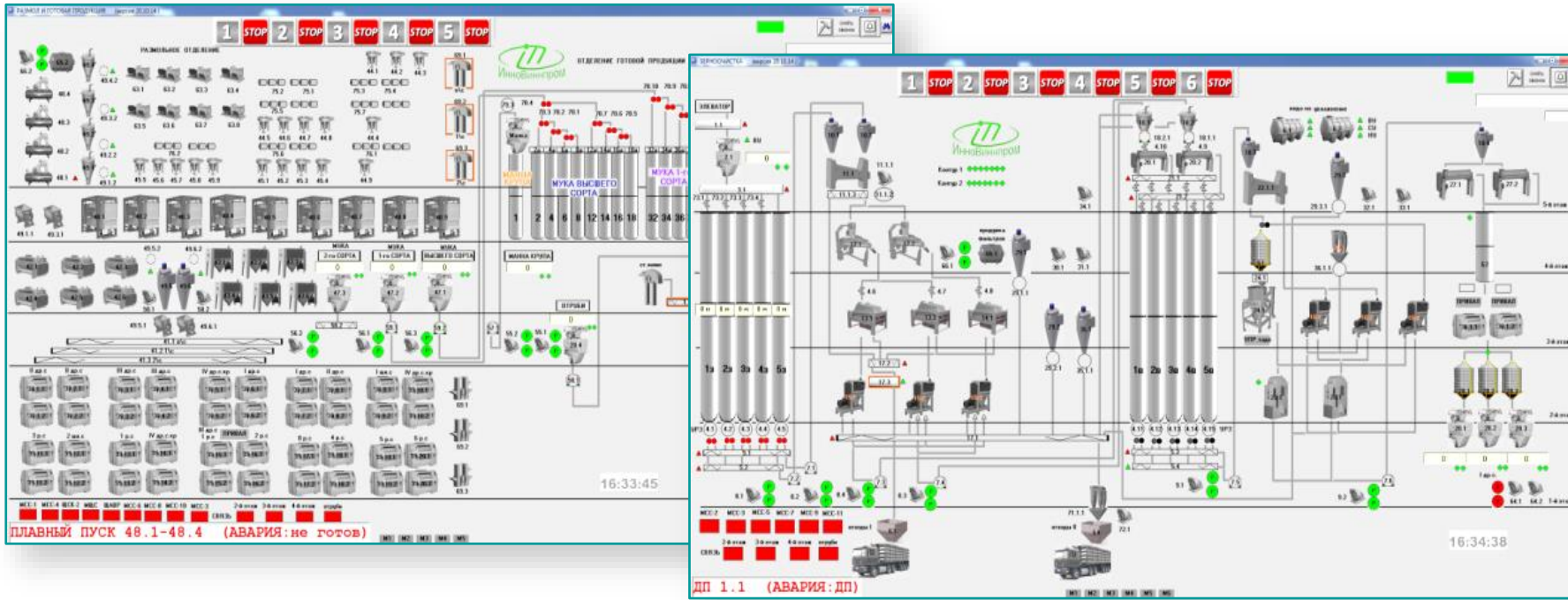
Kherson Seaport



Seaport "Southern"

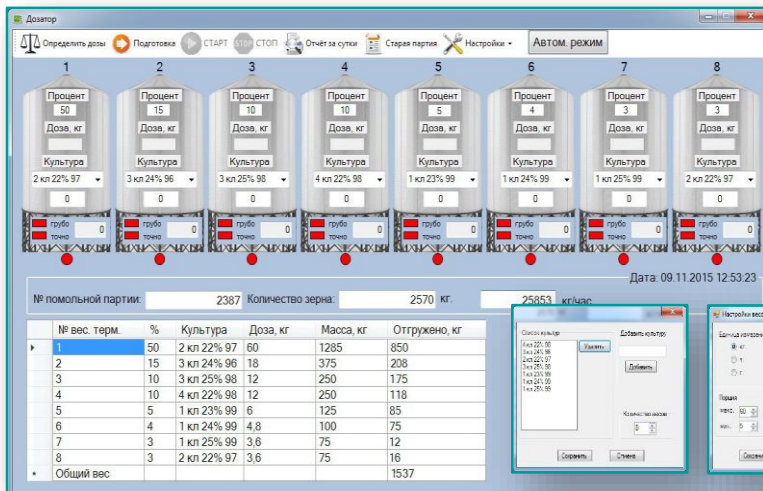


Automation of Mills

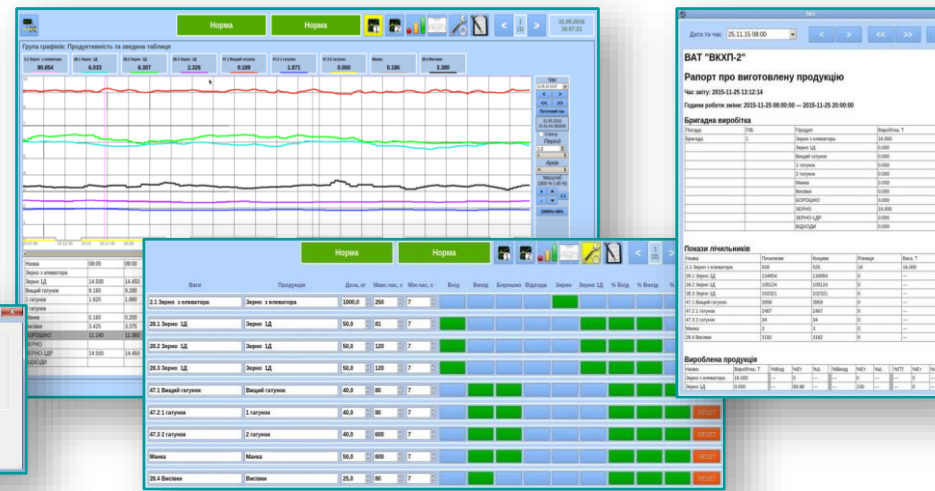


- ✓ Management of all production and technological processes
- ✓ Control of the quantity and quality of products
- ✓ Operational response
- ✓ Visualization of processes
- ✓ Keeping statistics
- ✓ Minimizing the influence of the human factor

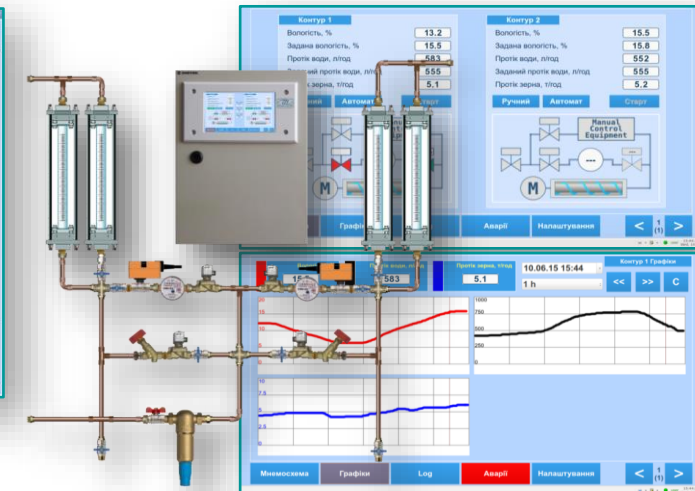
Systems of formation of grinding batches



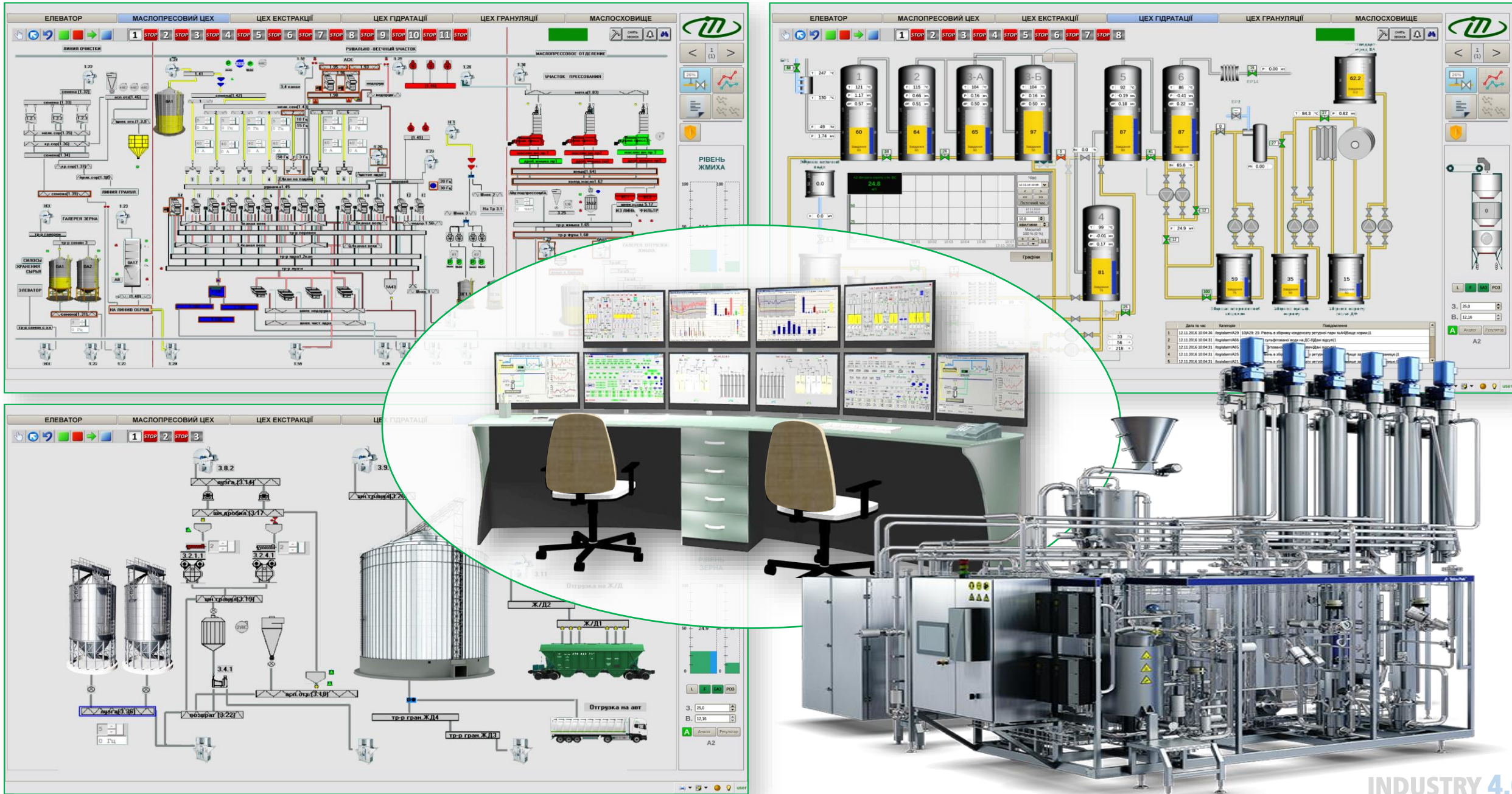
Mill productivity analysis systems



Grain moistening systems

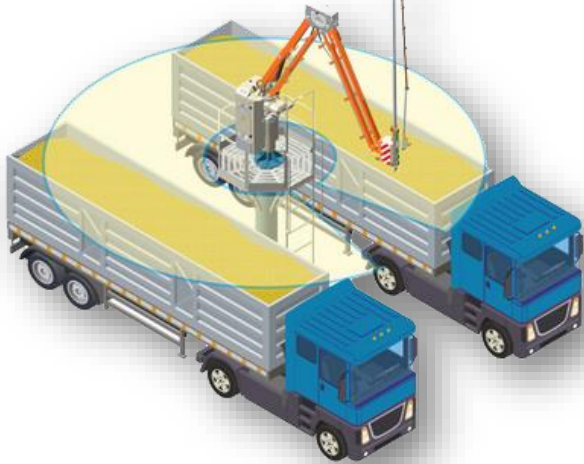


Automation of Oil Press, Feed, and Sugar Factories

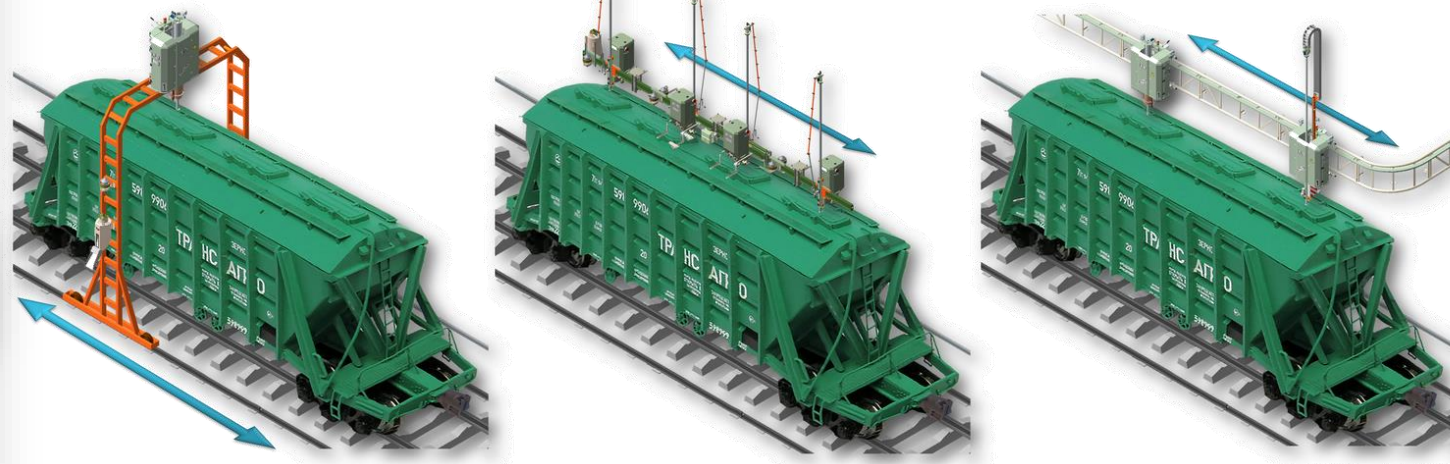


Grain Sampling Systems

Car Systems



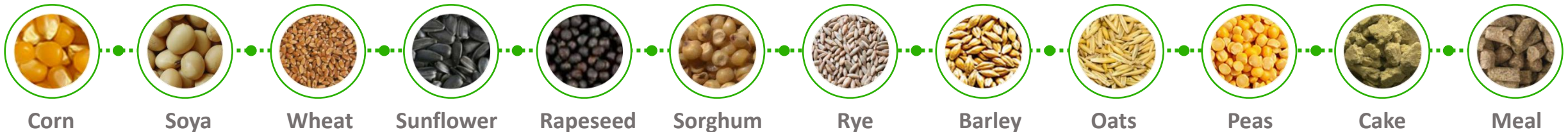
Railway Systems



Flow Systems



Cereal Crops with which the Samplers Work:



- ✓ Sampling in accordance with industry standards
- ✓ Compliance of the quality of the sample with regulatory requirements
- ✓ Own patented technologies

 **Made Samplers:**

Car Systems – **33**
Railway Systems – **4**
Flow Systems – **14**

High-speed Railway Sampling System



- ✓ All sampling processes are automated
- ✓ Automatic sending of a grain sample to the laboratory for quality analysis without human intervention
- ✓ A significant reduction in the cost of the train's stay in the seaport - the train is there in half the time



Chornomorsk Seaport

Solution features:

- ✓ one railway train;
- ✓ four selection modules on one moving frame;
- ✓ manual control mode

Sampling time from one hopper is **1 minute**.

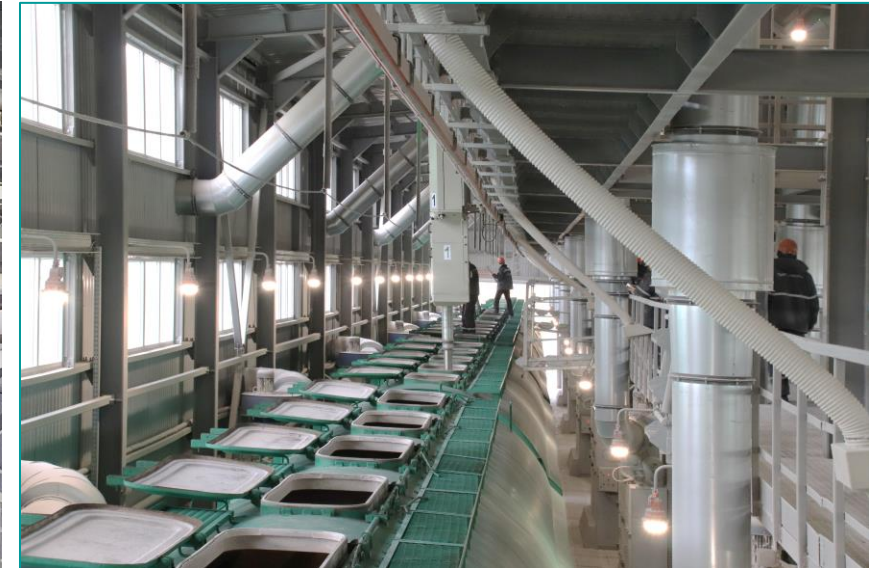


Odesa Seaport

Solution features:

- ✓ two railway trains with one car each;
- ✓ two moving sampling modules;
- ✓ coaxial probes;
- ✓ automatic mode of operation:
 - automatic hatch search;
 - automatic sampling;
 - automatic sample transportation to the laboratory.

Sampling time from one hopper is **3 minutes**.



Mykolaiv Seaport

Solution features:

- ✓ two railway trains with 7 cars each;
- ✓ two moving sampling modules;
- ✓ telescopic probes;
- ✓ automatic mode of operation:
 - automatic hatch search;
 - automatic sampling;
 - automatic sample transportation to the lab.

Sampling time from one hopper is **3 minutes**.

Thermometry Systems

- ✓ Multi-channel multi-zone temperature control
- ✓ Notification of temperature deviation from the norm
- ✓ Control of the temperature and humidity of the outside air
- ✓ Multi-level indication
- ✓ Controllers and hardware gateways of our own development



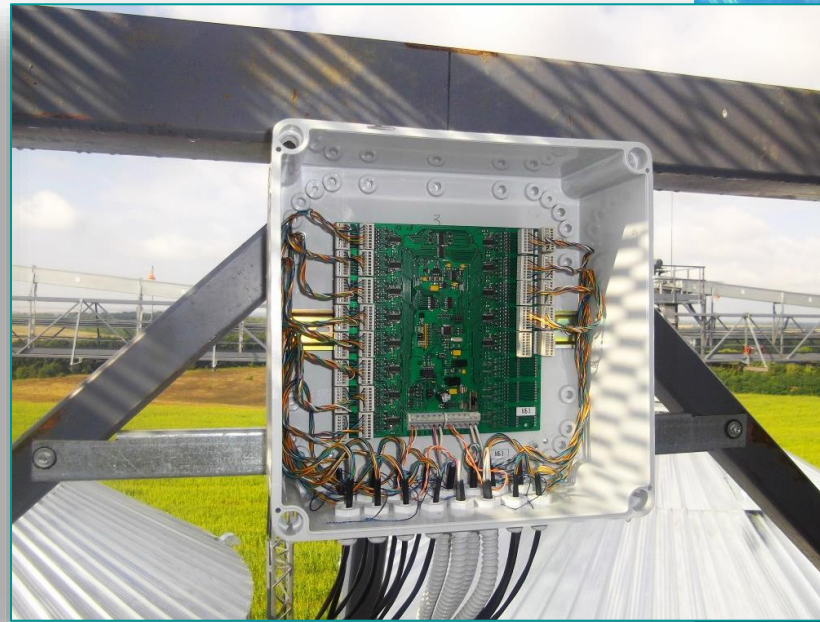
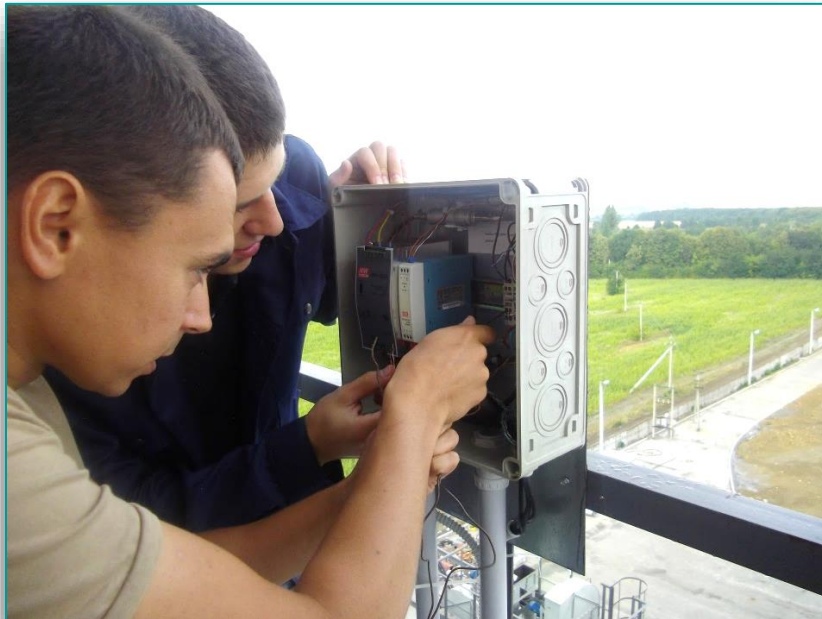
Big Data
Великі дані



Long Distances
Великі відстані



Radio Data
Радіо дані



Bunker Scales

- ✓ Commercial weighing accuracy - 0.1%
- ✓ Estimated productivity from 50 to 2000 tons/hour
- ✓ Pneumatic, hydraulic or electric valve drive
- ✓ Automatic calibration system with built-in calibration loads



**Unique
Own Solutions**



Functionality



**High
Accuracy**



**Certified
Products**



Dosing systems

- ✓ Commercial weighing accuracy - 0.1%
- ✓ High dosing rate



Unique
Own Solutions



Functionality



High
Accuracy



Certified
Products



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Industry 4.0

