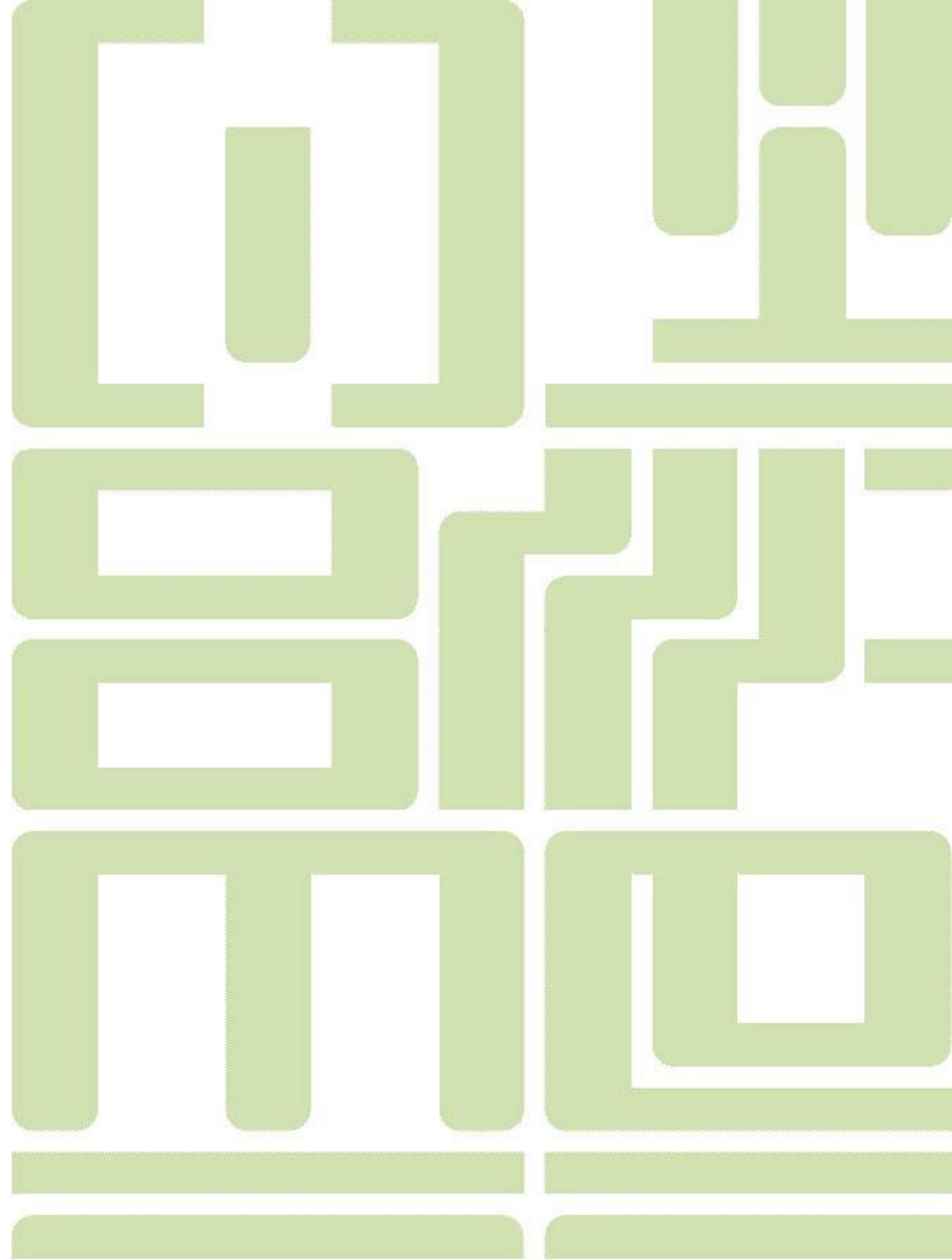




future's
in the making

GAOS MS series:

Gas analysis systems for ferrous metallurgy



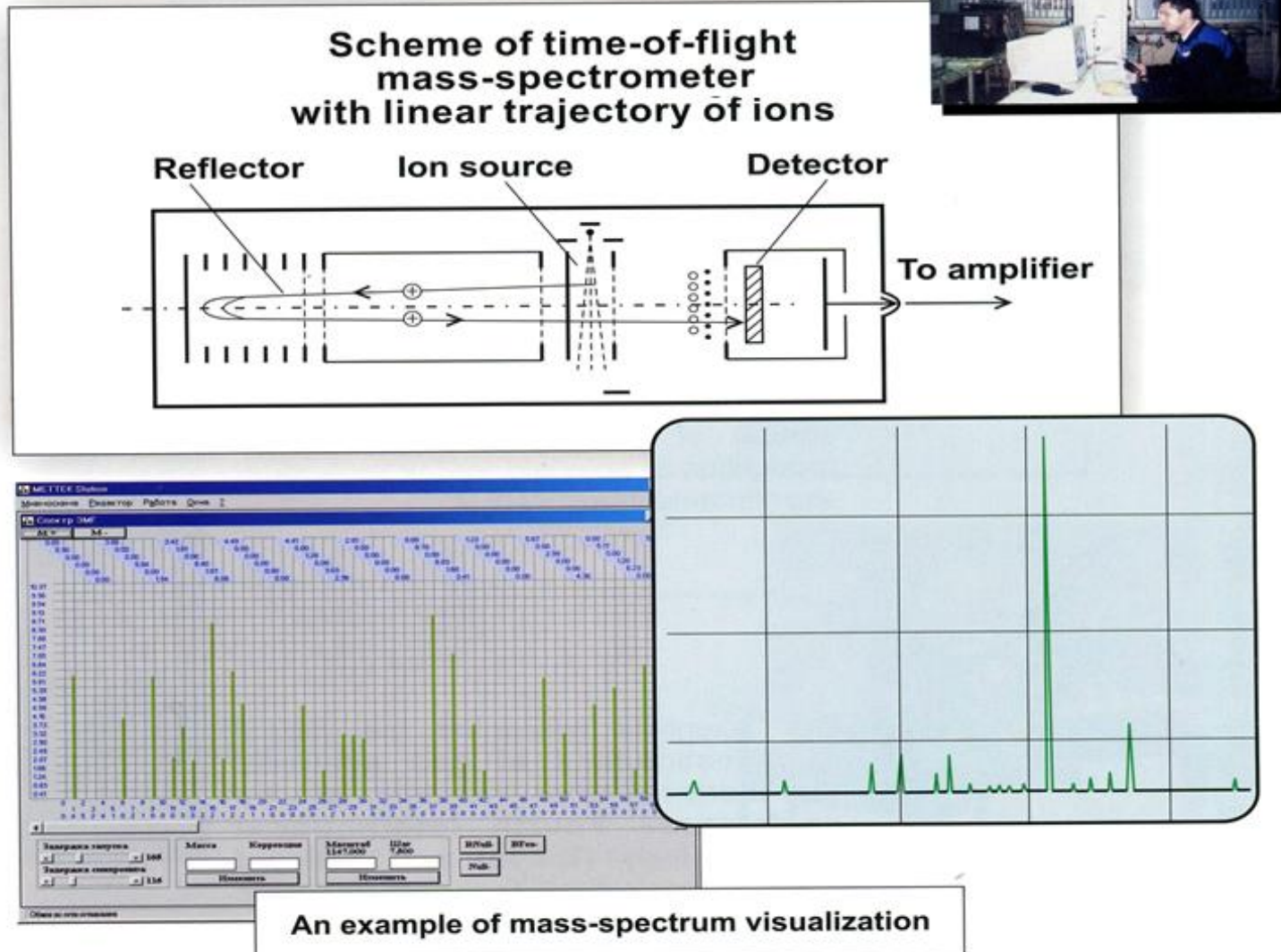
Historical background



Historical background



TOF mass spectrometer

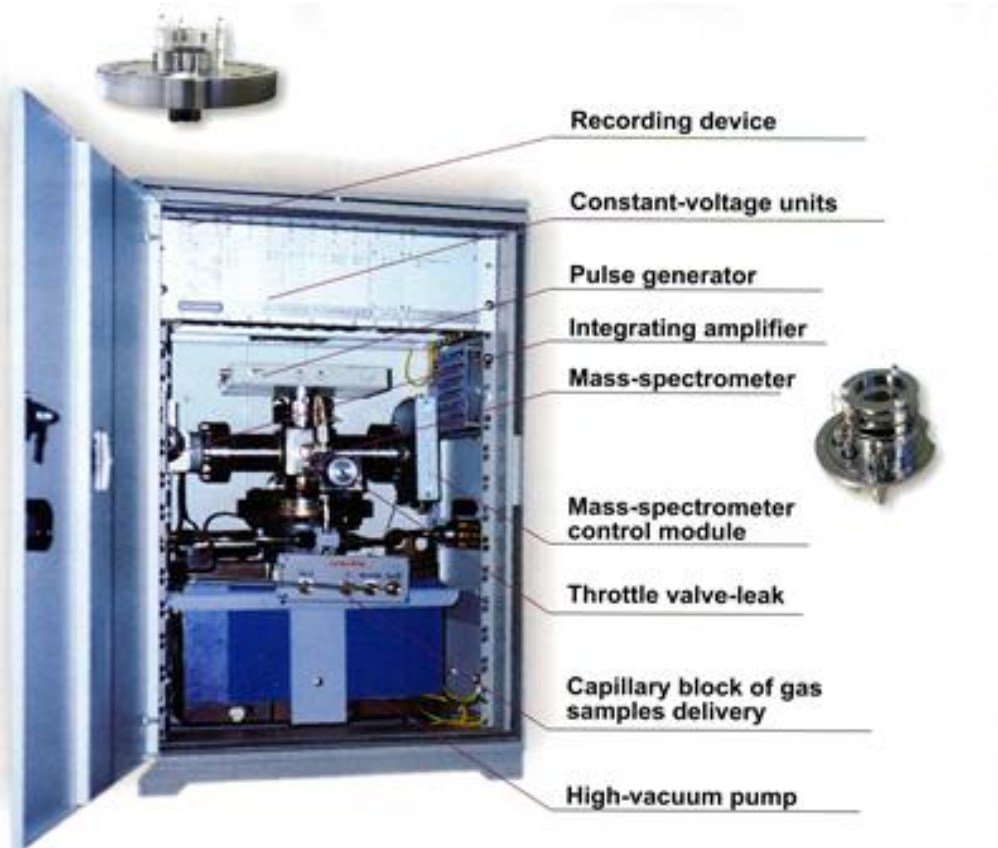


TOF mass spectrometer

GAOS MS gas analyzers are installed in an IP55 rack, so they can work in any climatic regions and / or in conditions of excessive humidity and dust.

GAOS MS multi-component gas analyzers identify any gas components in the mass range from 1 to 800 amu.

The high speed of the gas analyzer allows you to display data on 200 masses for 0.1 s.



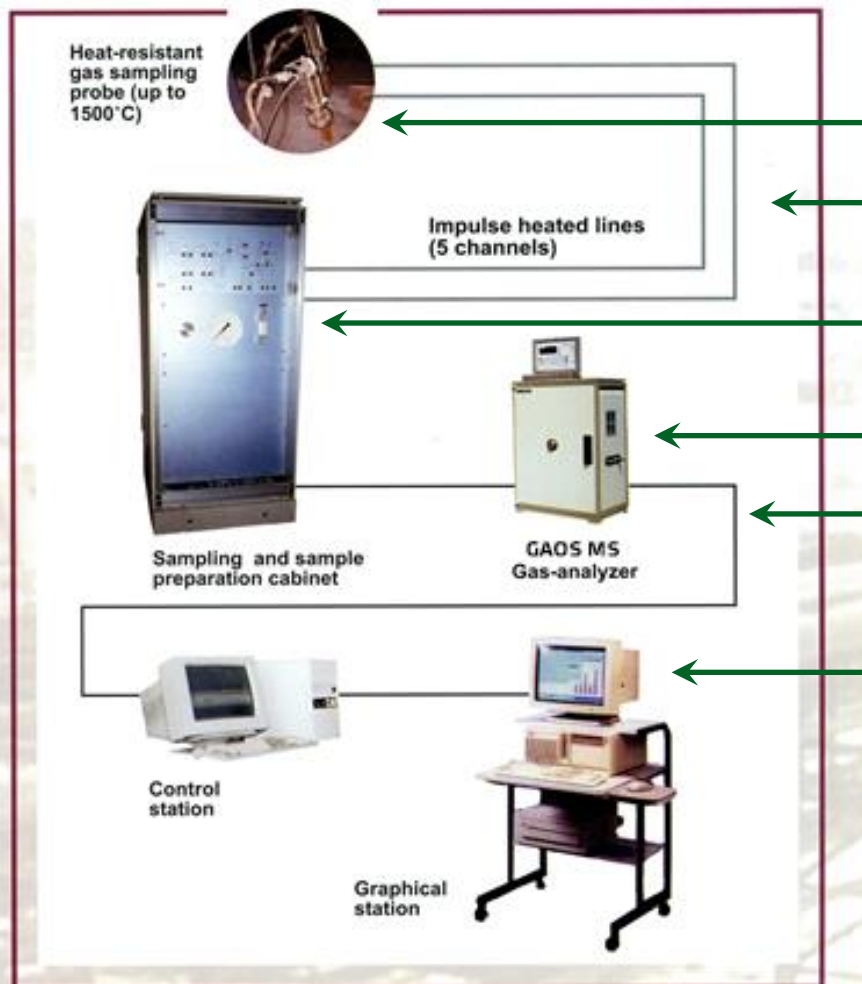
Measured components:

*H₂, N₂, O₂, O, NO₂, S₂, SO₂...
CO, CO₂, CH₄, C₂H₆, C₃H₈...
C₂H₂,...C₆H₆...
D₂, T₂, He, Ne, Ar, Kr, Xe...*

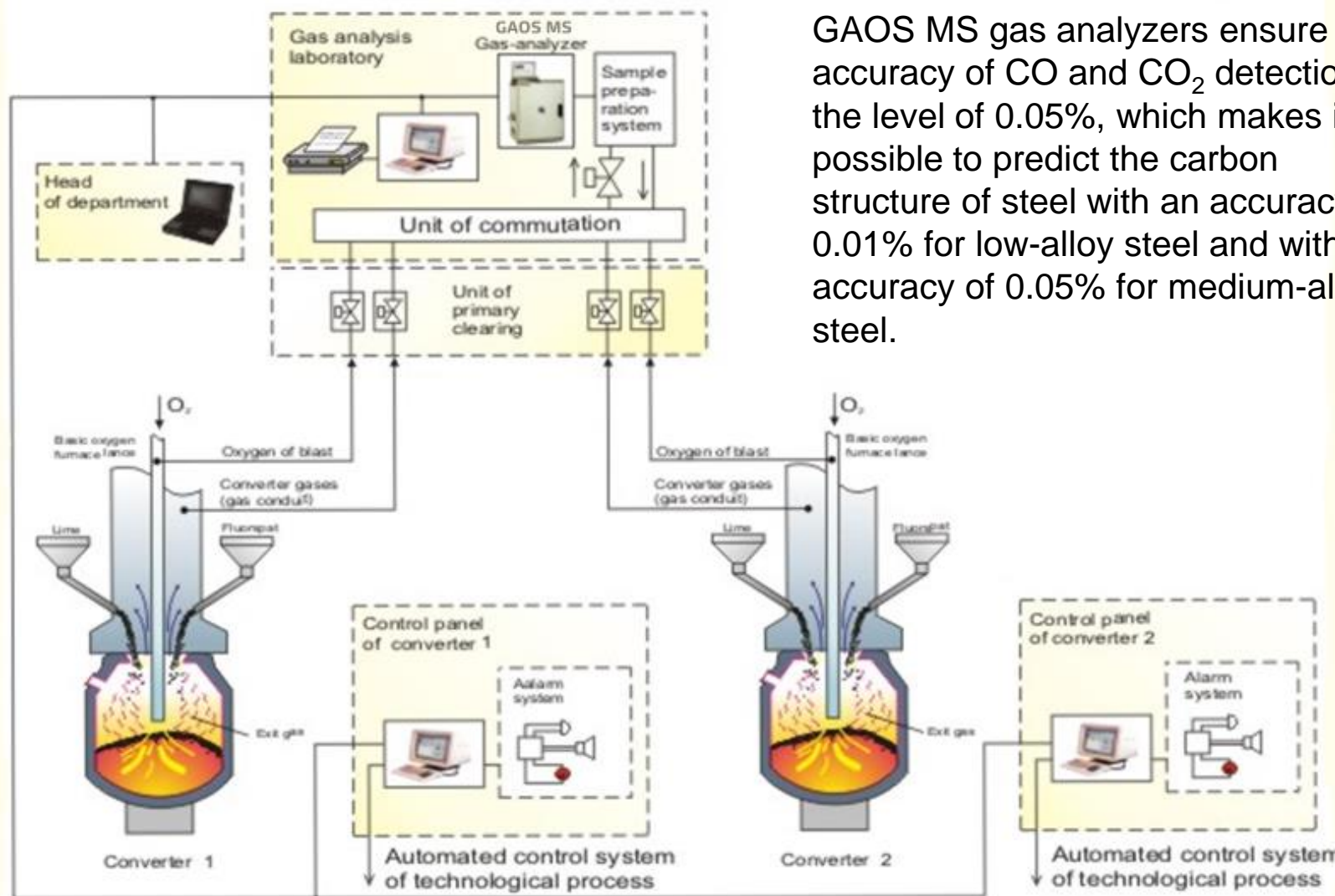
GAOS MS gas analysis system

Modern gas analytical systems consist of:

- heat resistant sampling probes;
- pulse heated lines;
- gas treatment systems;
- mass spectrometer;
- information lines;
- managing and graphic stations.



Gas analysis in converter steel production

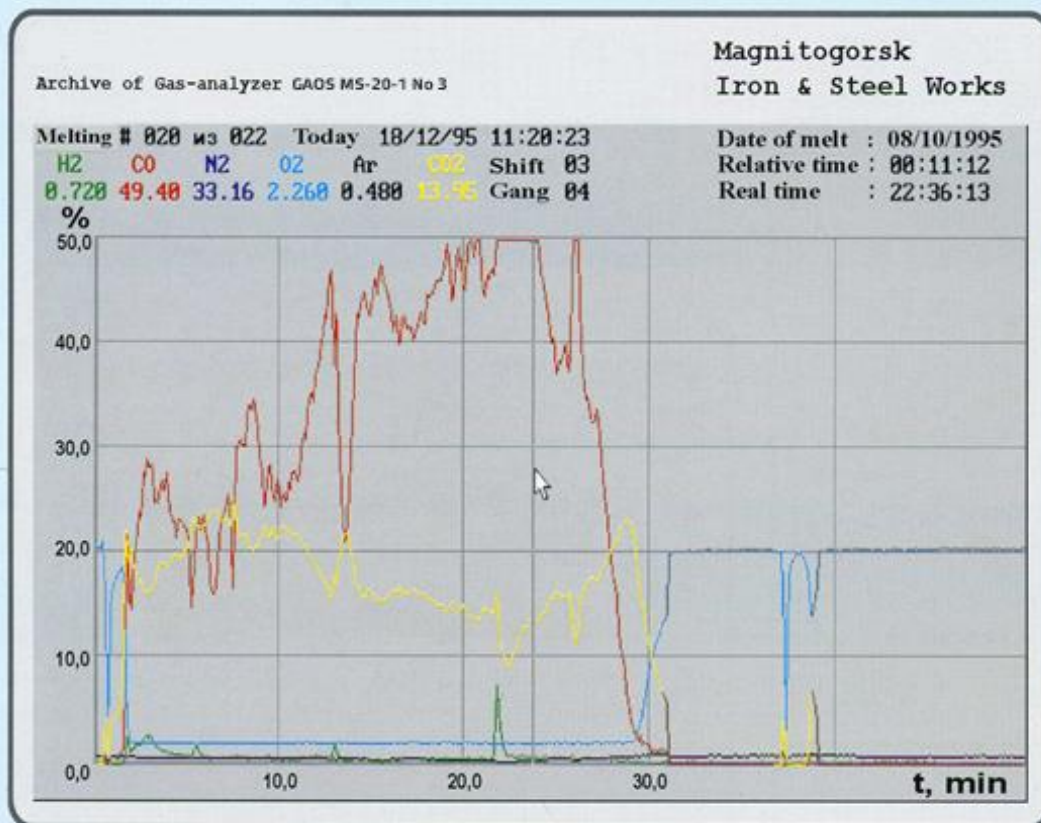


GAOS MS gas analyzers ensure the accuracy of CO and CO₂ detection at the level of 0.05%, which makes it possible to predict the carbon structure of steel with an accuracy of 0.01% for low-alloy steel and with an accuracy of 0.05% for medium-alloy steel.

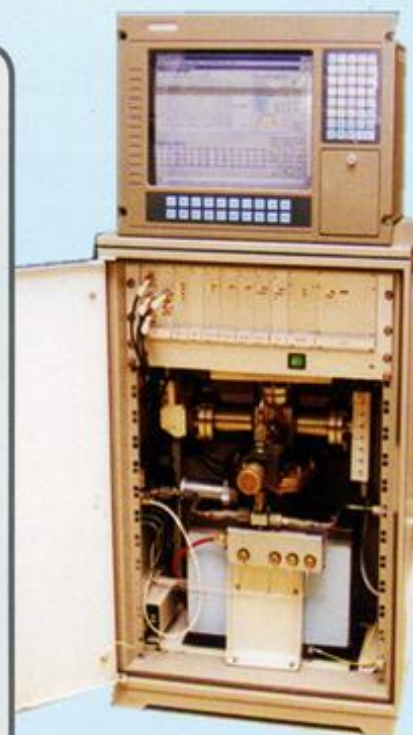
The structure of the gas analyzer system converter



Examples of melting process diagrams



EXAMPLE OF THE SCHEDULE CONVERTER SWIMMING TRUNKS FROM ARCHIVE OF MASS-SPECTROMETER GAOS MS



Analysis results can be shown on monitor screen as tables or graphs in real time of technological process.

Diagram of quick ignition fusion

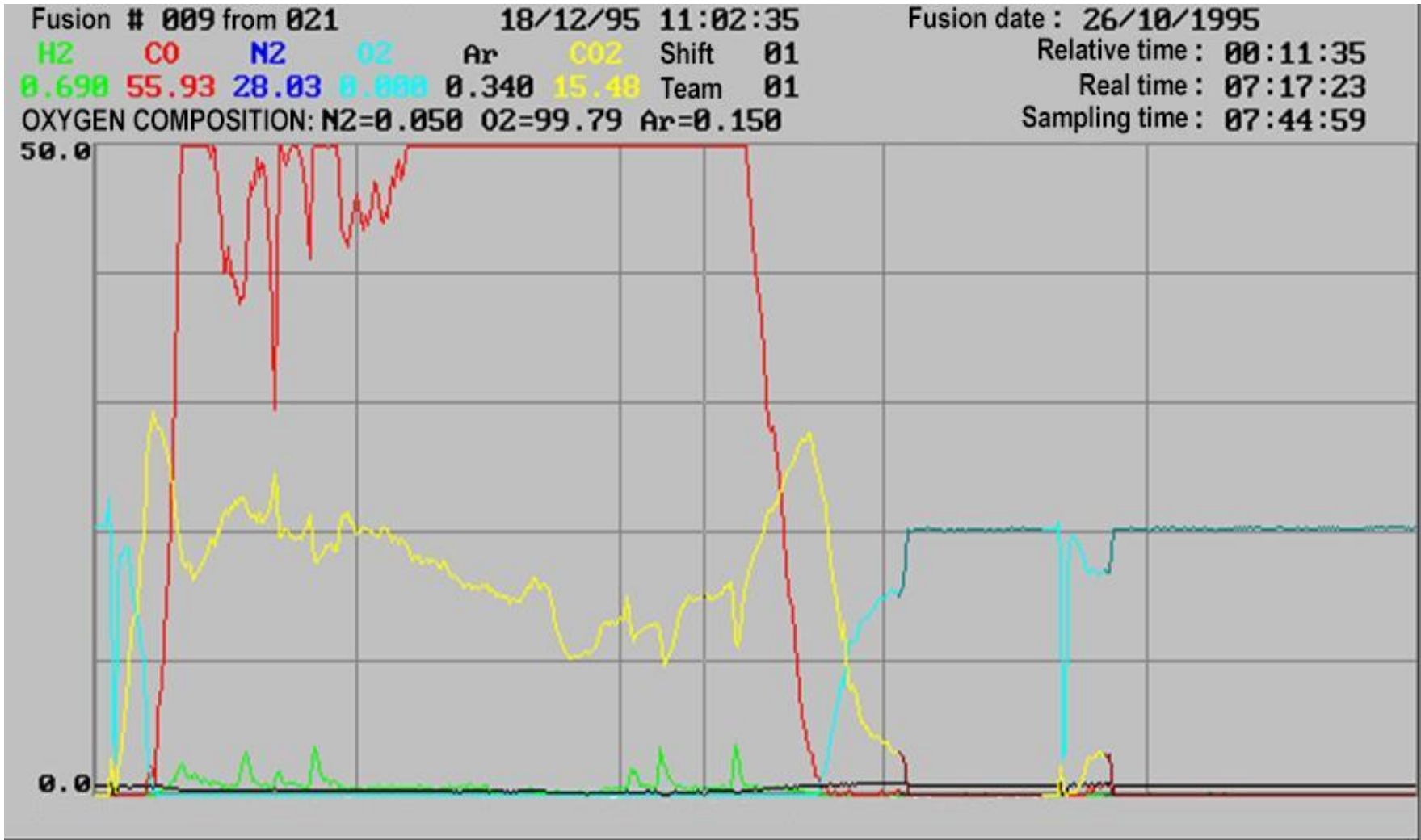
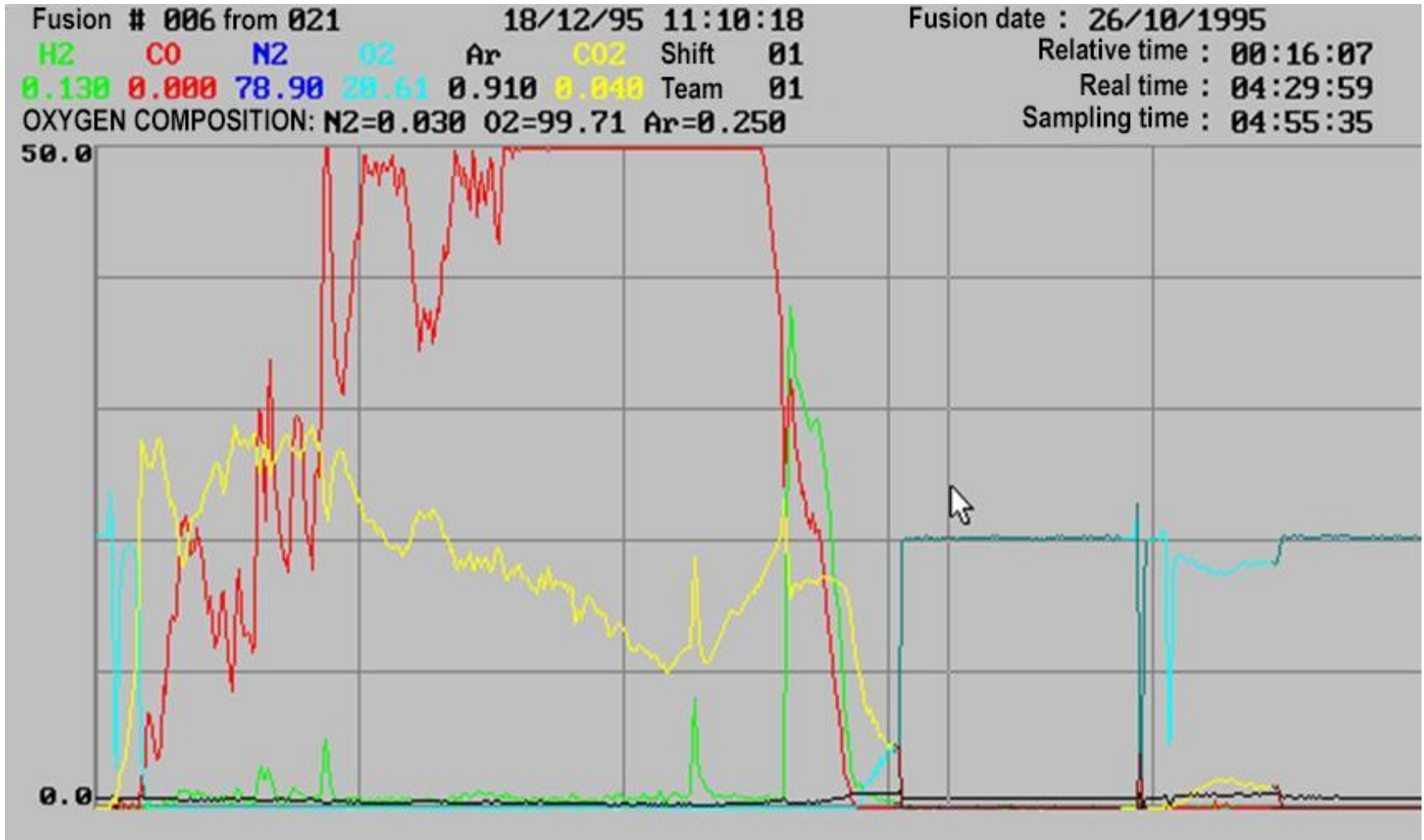


Diagram of tuyere burnout melting stop

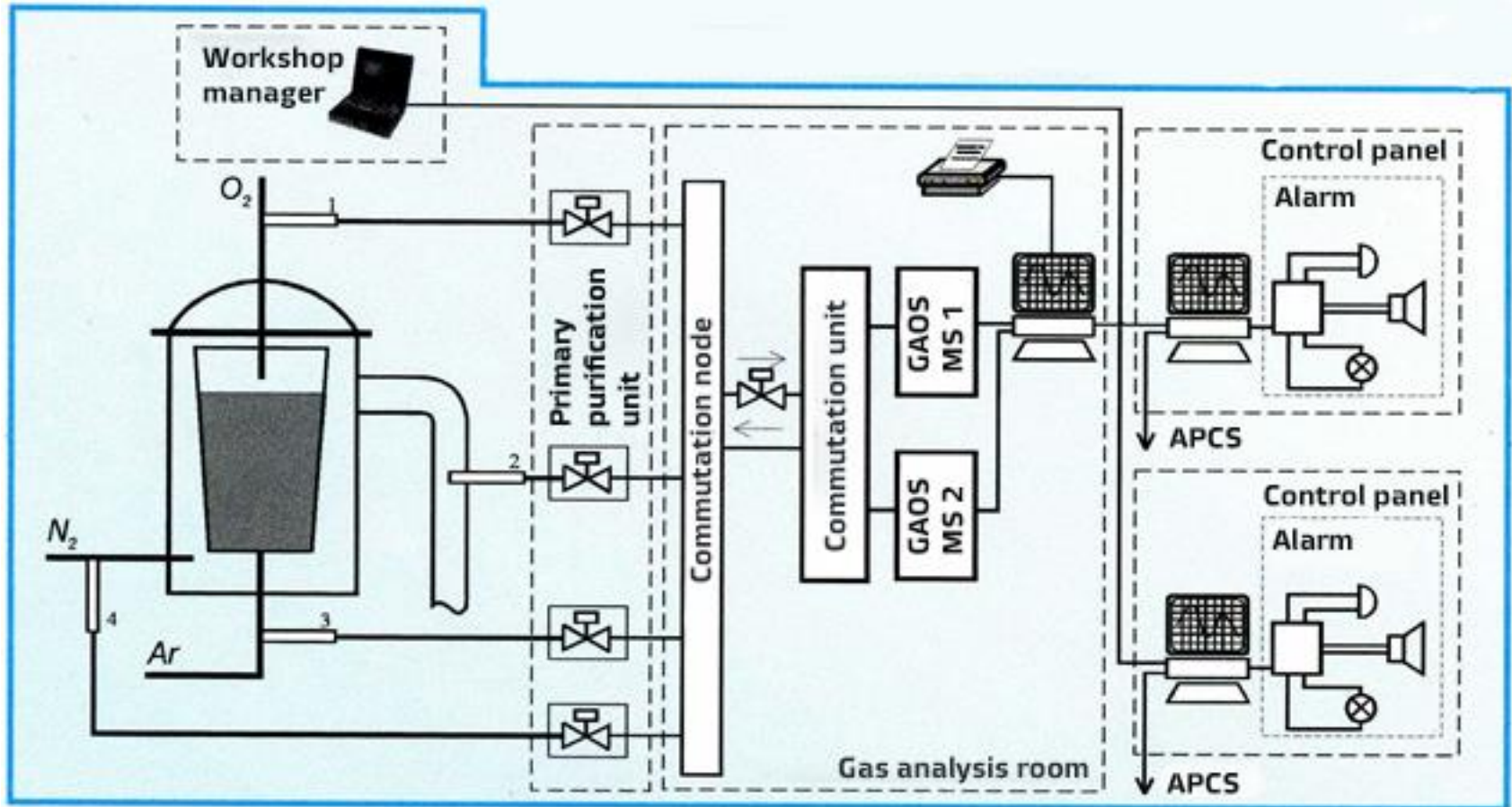


Gas analysis system advantages

Application in converter production of gas analytical systems based on time-of-flight mass spectrometer have significant advantages over conventional systems working on sensors:

- The ability of the operator to control the converter
- Linearity of measurements from 0 to 100%
- Reducing the time of melting process
- Saving resources by reducing the time of melting process
- There is no need to turn down a converter to take metal for analysis
- Impossibility of the explosion of the converter exhaust duct during tuyere burnout and uncontrolled release of hydrogen
- Continuity of work throughout the year
- Simple and inexpensive maintenance

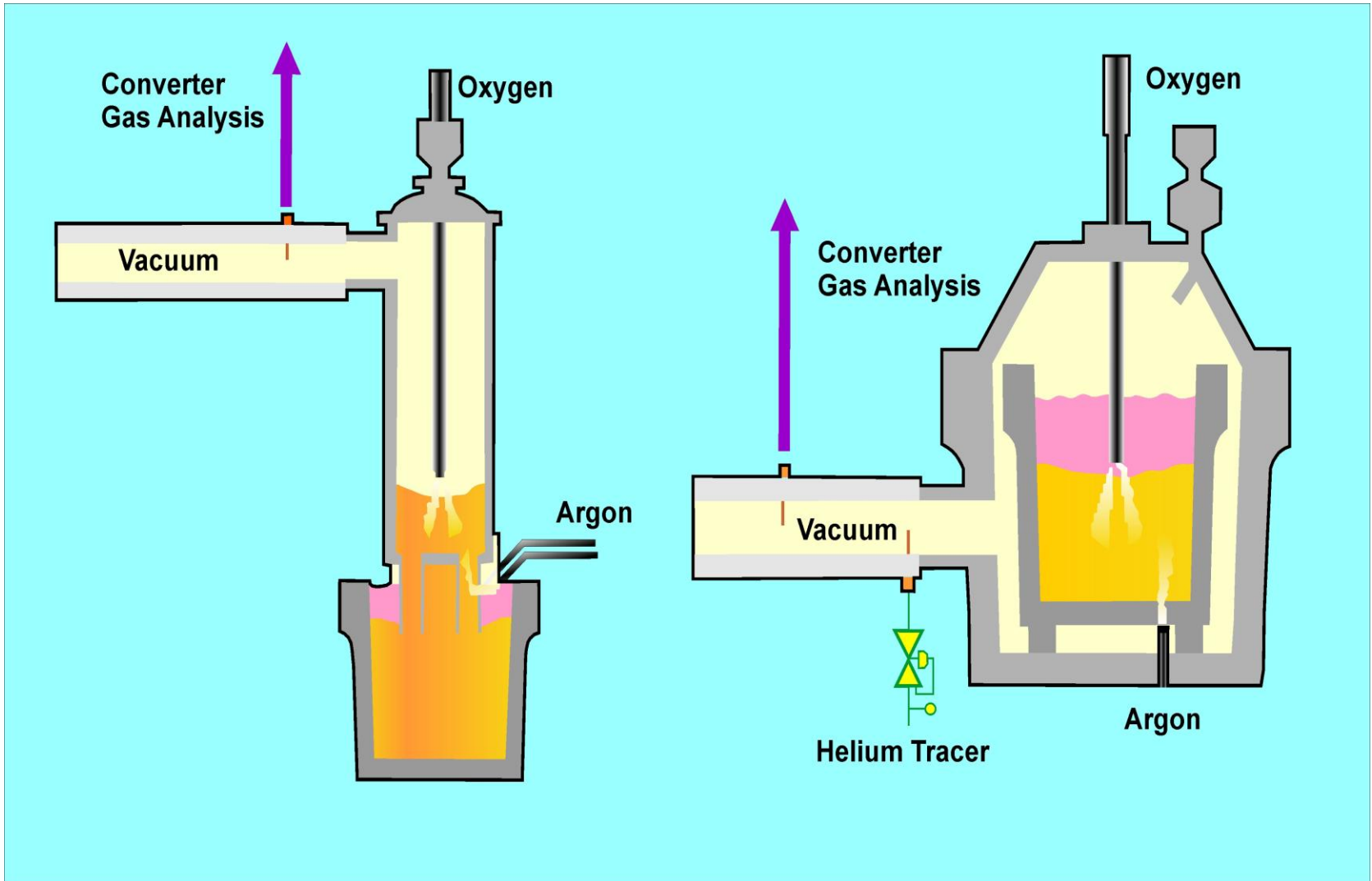
Steel degassing



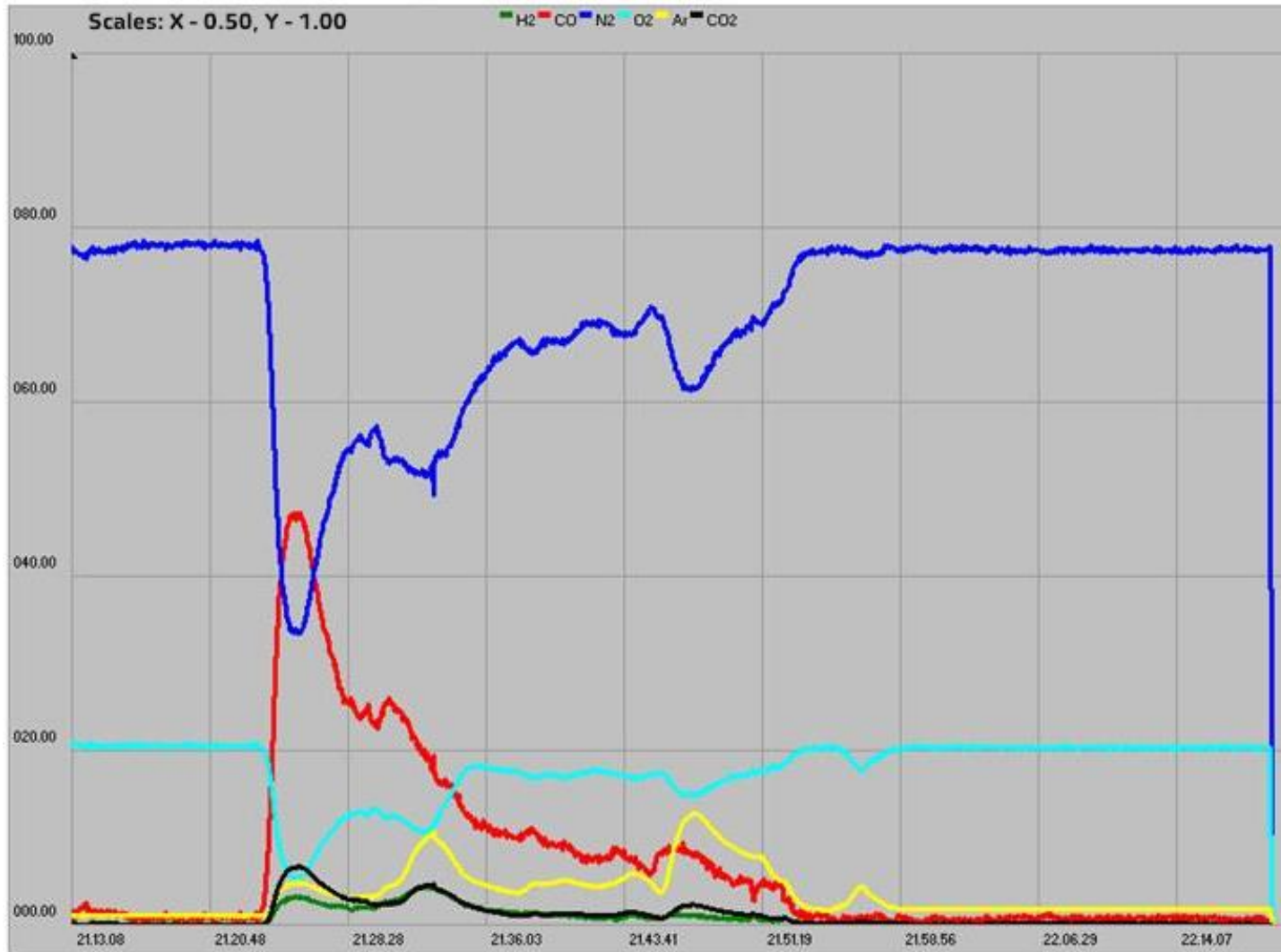
Gas analysis complex analyzes the following gases:

- exhaust gases of the vacuum unit
- impurities oxygen blast during vacuum-oxygen decarburization of metal

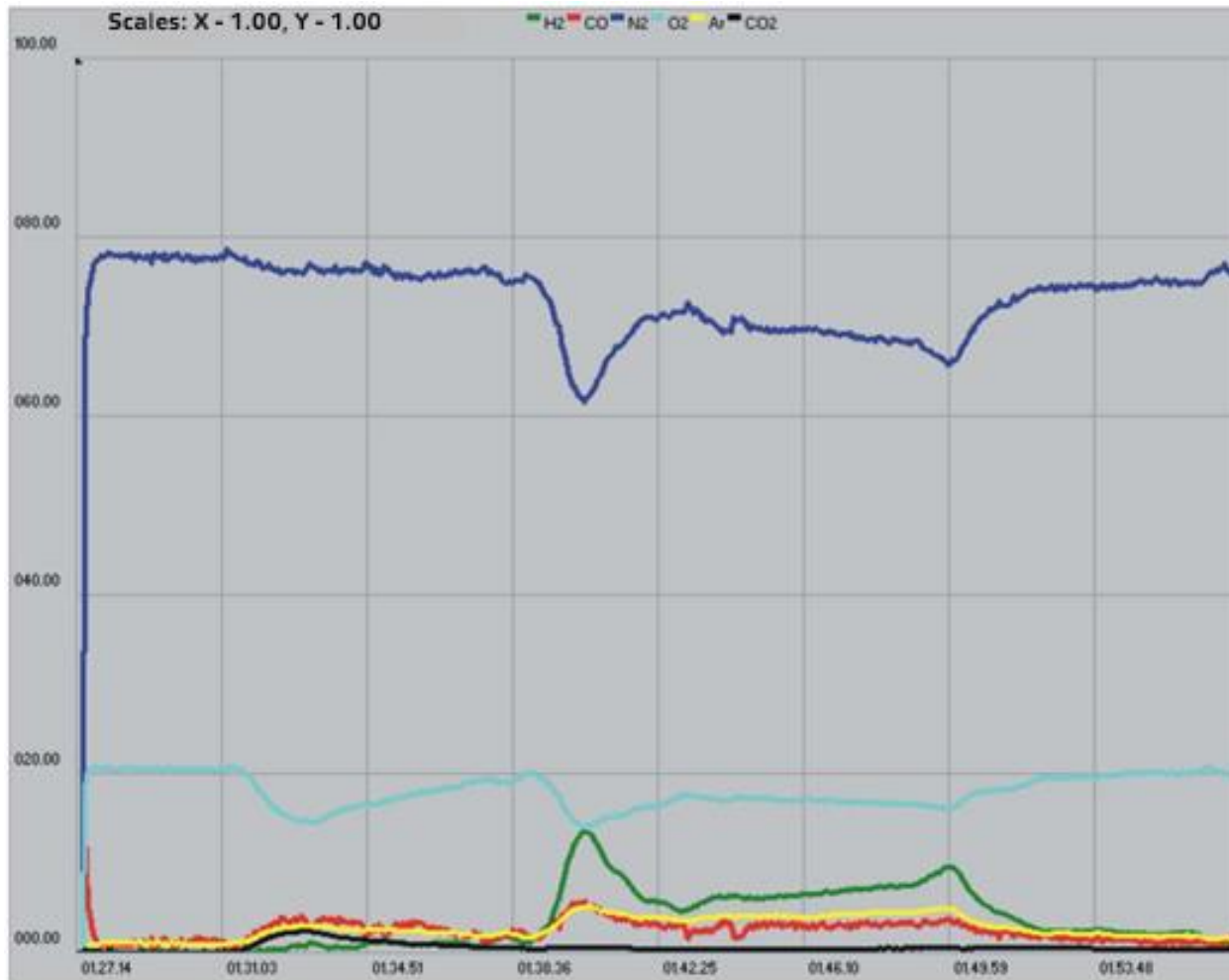
Steel degassing



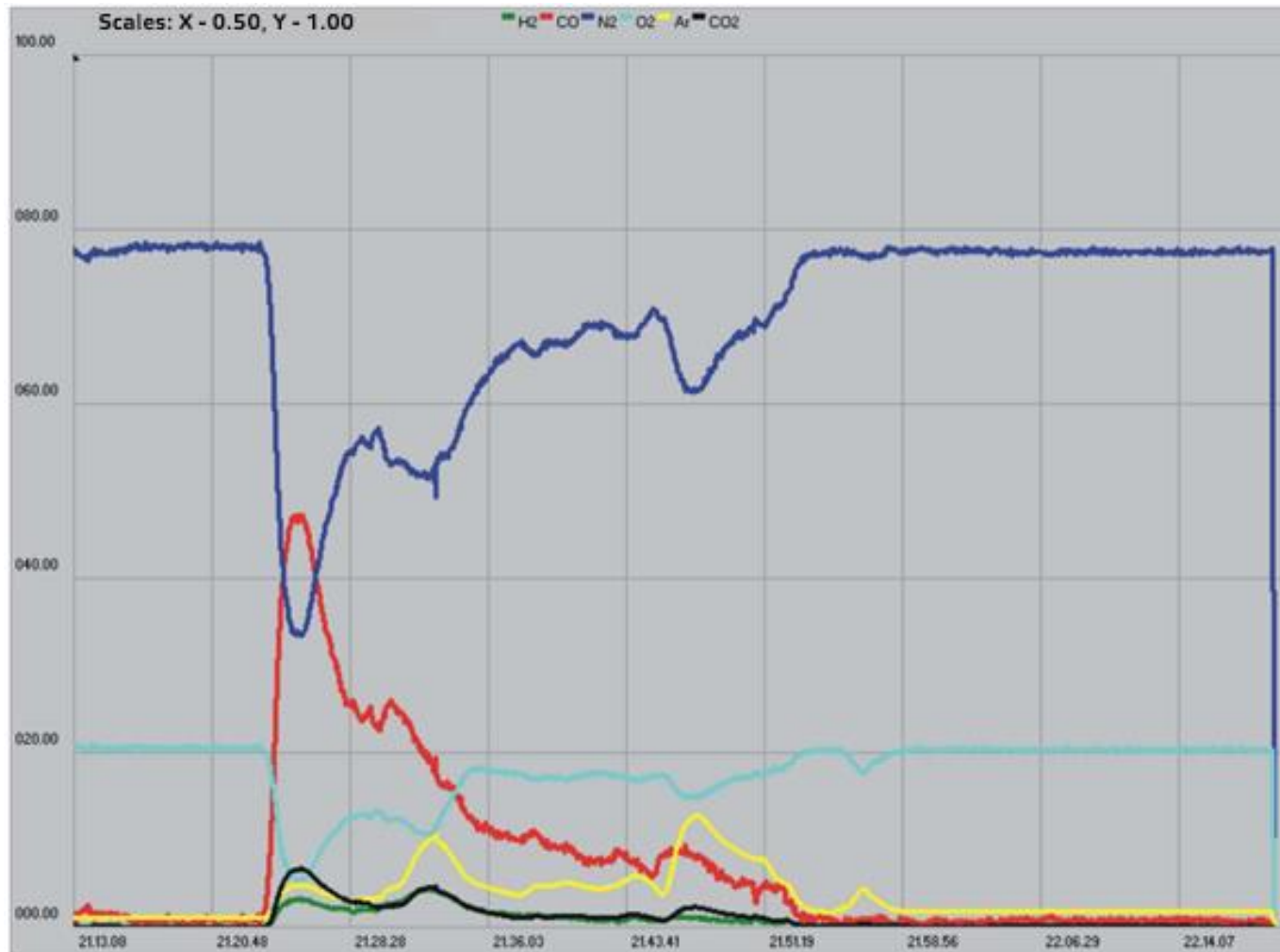
Melting process diagram in an degassing unit



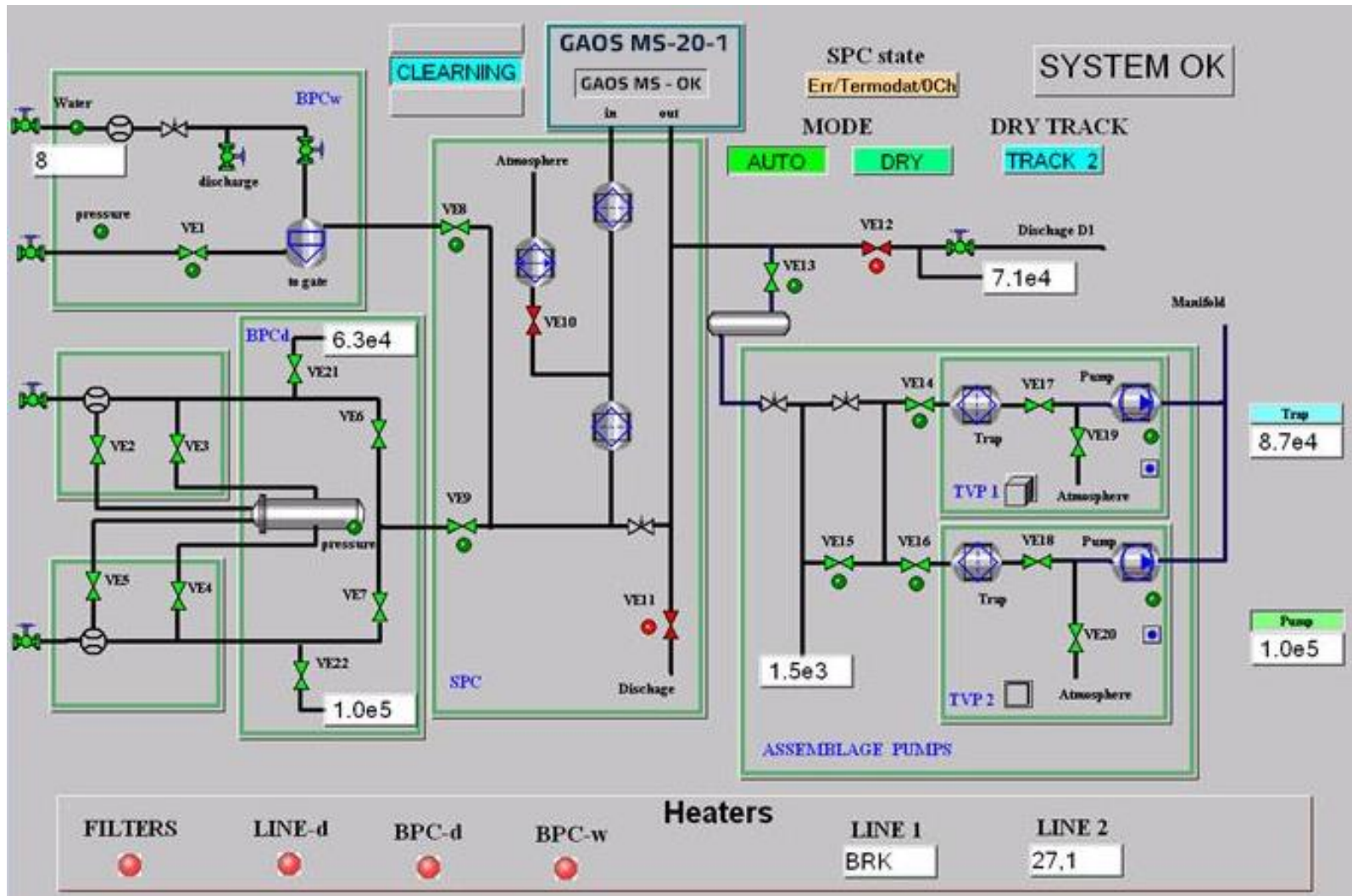
Gas phase composition diagram in the processing of steel using degassing steel unit



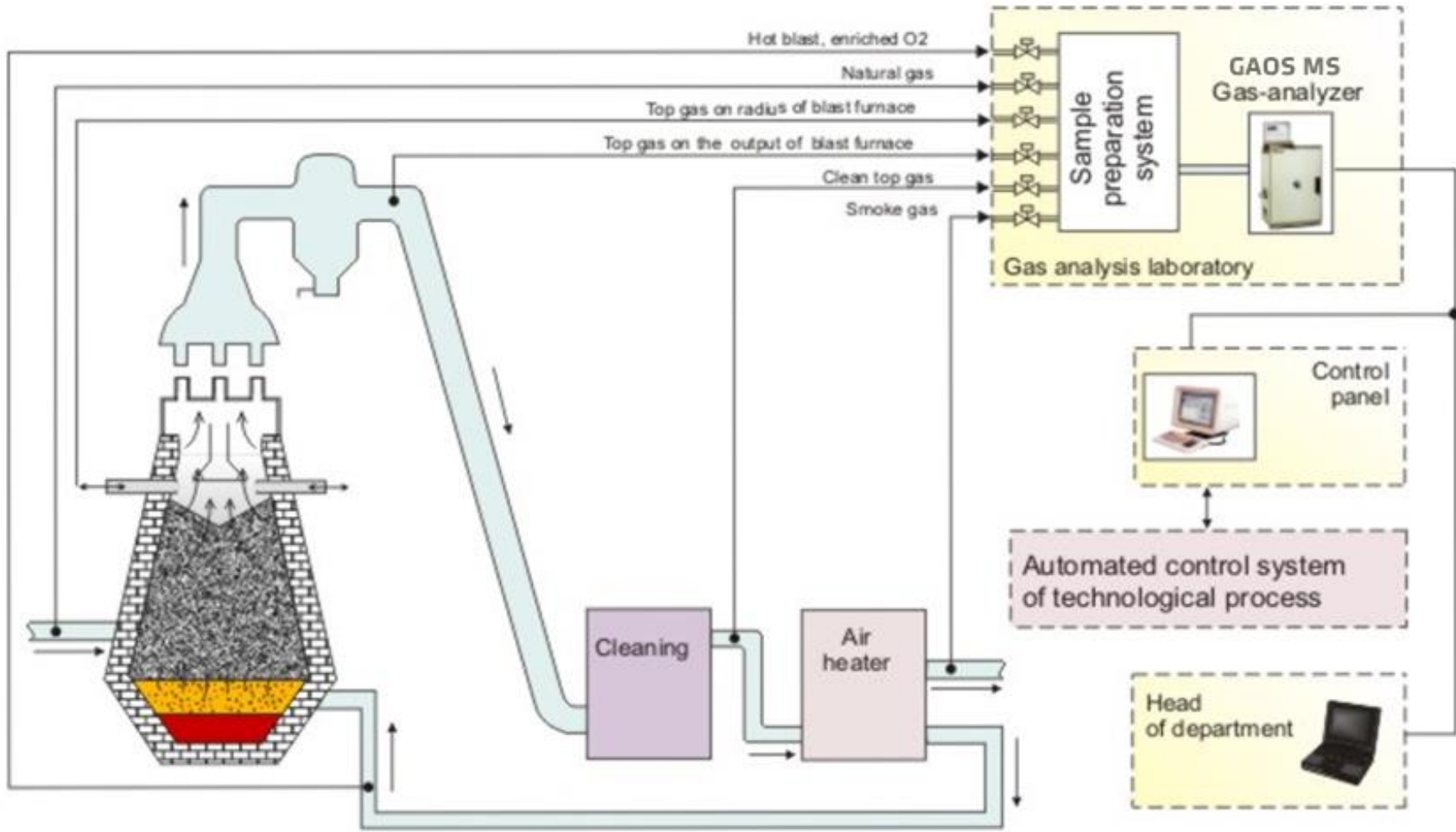
Decarbonisation diagram in the processing of steel using degassing steel unit



Pneumatic scheme of degassing system



Blast-furnace process



Other applications

Gas analyzing systems based on TOF mass spectrometers can be successfully used for:

- coke production;
- oxygen plants;
- continuous hot dip galvanizing units;
- protective gas stations.



future's
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