

**USER'S MANUAL**  
**UNDER REVISED BUILDING CODES AND REGULATIONS**

**CN KR 41 - 03:2022 "Boiler plants"**

SN KR 41 - 03:2022 comes into force on January 20, 2023

SN KR 41 - 03:2022 apply to the design of boiler systems and autonomous boiler plants operating on any type of fuel with steam, hot water and steam boilers with steam pressure up to 3.9 MPa inclusive and with a water temperature not exceeding 200 ° C, including installations for combined generation of electricity during their design, construction, reconstruction, overhaul, expansion and technical re-equipment.

SN KR 41 - 03:2022 establishes the requirements for boiler rooms, as well as for related design processes (including surveys), construction, installation, commissioning, operation and disposal (demolition) established by these building codes.

SN KR 41 - 03:2022 consist of the following sections:

1 area of use

2 Normative references

3 Terms and definitions

4 General provisions

The section contains requirements for equipment and materials used in the design of boiler houses, types of fuel and its classification, requirements for the location of boiler houses, the choice of design heat output, and equipment redundancy. Information is provided on reliability, types of boiler houses, the need to install additional power equipment.

5. Scheme of the planning organization of the land plot

The section provides requirements for the placement of boiler houses in the residential area of settlements, the composition of boiler houses, the selection and allocation of a land plot for the construction of a boiler house, taking into account the standard distances between buildings and the arrangement of passages between them.

6 Space-planning and design solutions

The section contains requirements for the architectural and compositional solutions of all buildings and structures, enclosing and structural materials, geometric parameters of buildings and structures, span sizes, column pitches and floor heights, requirements for the installation site of boilers and other equipment, provision of horizontal passages and places for maintenance and repair of equipment, requirements for platforms and stairs for maintenance, inspection, repair of equipment, requirements for amenity and service premises, requirements for the arrangement of evacuation entrances and exits.

7 Fire safety

The section provides requirements for the installation of the category of premises in boiler houses for explosion and fire hazard, as well as the required fire resistance of buildings, premises and structures of boiler houses, requirements for the arrangement and determination of the estimated area of easily dropped structures in the enclosing structures of boiler houses, requirements for equipping boiler rooms with primary means fire extinguishing means of automatic fire alarm (APS) and automatic fire extinguishing (APT).

8 Boiler plants

The section contains requirements for the choice of the design of boilers and boiler auxiliary equipment.

The section contains subsections with relevant requirements:

- General requirements;
- boilers and burners.

## 9 Gas-air path. Smoke pipes. Flue gas cleaning

The section contains requirements for the design of the gas-air path of boiler units and for draft units.

The section contains subsections with relevant requirements:

- General requirements;
- gas-air path;
- chimneys;
- flue gas cleaning.

## 10 Fittings, instruments and safety devices

The section contains requirements for equipping boilers with devices that protect against pressure increase (safety devices), water level indicators; pressure gauges, devices for measuring the temperature of the environment; shut-off and control valves; safety and alarm devices to ensure the control of the operation of boilers and ensure safe operation modes.

The section contains subsections with relevant requirements:

- General requirements;
- pipelines;
- safety devices;
- manometers;
- instruments for measuring temperature;
- fittings of the boiler and its pipelines.

## 11 Accessories

The section provides requirements for devices for removing gases, gases dissolved in additional chemically treated water and in all condensate flows entering the boiler room - degassing by thermal or chemical means, requirements for the condensate collection and return system, requirements for deaeration of steam boiler feed water, requirements for with sodium- cationizing water softening plants, the possibility of thermal or chemical deaeration ( sulfation ) of water, requirements for feed and make-up water deaerators, requirements for redundancy of pumps for feeding boilers, circulation and recirculation pumps, requirements for selection by capacity and types of heat exchange equipment, requirements to storage tanks and their piping, requirements for the need for installation Necessity to use pressure reducing cooling units (RDU), reduction units (RU) and cooling units (OC) and their redundancy and other measures.

## 12 Water treatment and water chemistry

The section provides requirements for water treatment for feeding steam and hot water boilers, heating and hot water supply systems, as well as for monitoring the quality of water and steam.

The section contains subsections with relevant requirements:

- General requirements;
- purge of boilers;
- equipment and facilities for water treatment plants;
- condensate treatment.

## 13 Fuel economy

The section contains requirements for various types of fuel on which the boiler house should operate, as well as the need to use an emergency type of fuel, requirements for determining the estimated fuel consumption.

The section contains subsections with relevant requirements:

- General requirements;
- solid fuel;
- liquid fuel;
- gaseous fuel;

- liquefied natural gas (LNG) and propane -butane mixture (LPG).

#### 14 Ash and slag removal

The section contains requirements for ensuring reliable and uninterrupted removal of ash and slag, safety of maintenance personnel, and protection of the environment from pollution.

The section contains subsections with relevant requirements:

- General requirements;
- mechanical transport systems;
- hydraulic systems of transport.

#### 15 Automation

The section contains requirements for the automation of boiler houses, adopted during their new construction, reconstruction or technical re-equipment, should ensure their safe and energy-efficient operation in various modes.

The section contains subsections with relevant requirements:

- General requirements;
- equipment protection;
- control and signaling;
- automatic regulation.

#### 16 Power supply

The section provides the requirements for the power supply of boiler houses, depending on the category of the boiler house in terms of the reliability of the supply of thermal energy to the consumer, the requirements for the design of the electrical part of installations that generate electrical energy for their own needs, and (or) transmission to the network, the requirements for emergency and working electric lighting and natural lighting, requirements for the requirements for the requirements for the power supply of systems for monitoring the gas content of boiler rooms, fire and security alarm systems, the selection of electrical equipment and its grounding, the requirements for switchgears with a voltage of 0.4, 6 and 10 kV automatic transfer of the reserve (ATS) of feed, network, make-up pumps, hot water supply, liquid fuel supply, requirements for choosing the degree of protection of the shell of electric motors, blocking electric motors of smoke exhausters, draft fans and mechanisms for supplying fuel to the boiler, requirements for starting equipment, control devices, lamps, electrical wiring, requirements for laying supply and distribution networks.

#### 17 Communication and signaling

The section contains requirements for the automation of boiler houses, adopted during their new construction, reconstruction or technical re-equipment, should ensure their safe and energy-efficient operation in various modes.

The section contains subsections with relevant requirements:

- General requirements;
- equipment protection;
- control and signaling;
- automatic regulation.

#### 18 Heating and ventilation

The section contains requirements for equipping buildings and boiler rooms with natural and mechanical ventilation, as well as heating, requirements for determining air flow rates for ventilation and requirements for the internal microclimate.

#### 19 Water supply and sewerage

The section provides requirements for equipping buildings and premises of boiler rooms with water supply systems for supplying water for domestic, industrial and fire-fighting needs, the number of water inlets, water quality requirements for make-up, requirements for water fire extinguishing

systems, requirements for the removal of sewage from domestic and industrial (conditionally clean) sewers and the need for their cleaning.

20 Additional requirements for the design of boiler houses in special natural and climatic conditions of construction

The section provides requirements for the design of boiler houses in areas with type II subsidence soils, saline, swelling and permafrost soils.

The section contains subsections with relevant requirements:

- design of boiler houses in areas of permafrost;
- construction in areas with subsiding soils.

21 Environmental protection

Boiler houses and related slag and ash dumps and treatment facilities should be located on lands not suitable for agriculture in accordance with the Land Code of the Kyrgyz Republic.

The section contains requirements for environmental protection. When designing a water treatment system, ash and slag dumps and other structures, when calculating the dispersion of harmful substances in the atmosphere, when discharging wastewater into water bodies, when recultivating land allocated for temporary use and other requirements.

22 Energy efficiency

The section contains requirements that guarantee the economic feasibility and energy efficiency of thermal energy generation and its supply to consumers.

SN KR 41 - 03:2022 contains appendices explaining and facilitating the adoption of design decisions in accordance with the requirements established by SN KR:

Annex A List of professions of boiler house workers by category of work and the composition of special household premises and devices

Appendix B Category of premises and buildings (structures) in terms of explosion and fire hazard, degree of fire resistance of buildings (structures), characteristics of premises according to environmental conditions and classification of zones

Annex B Safety factor when choosing smoke exhausters and draft fans

Annex D Devices for draining water and removing air

Annex D Minimum clear distances between the surfaces of thermal insulation structures of adjacent pipelines and from the surface of thermal insulation of pipelines to the building structures of the building

Annex E Minimum wall thickness of pneumatic pipelines depending on the diameter

Annex G Air temperature in the working area of industrial premises, ventilation systems, methods of air supply and removal

Annex I Technical and economic indicators

Appendix K List of parameters recommended for control by the automation system