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NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 20580.8-2021

**Budget estimation norm of nuclear power plant construction
project works - Part 8: Thermal equipment installation
engineering for conventional island**

核电厂建设工程概算定额 第8部分：常规岛热力设备安装工程

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Foreword

This document was issued on 7 January 2021 by the National Energy Administration of the PRC and takes effect on 1 July 2021.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 01.010.27, Chinese classification F02.

This document was drafted in accordance with the rules given in GB/T 1.1-2020, Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents.

This document is Part 8 of NB/T 20580, Budget estimation norm of nuclear power plant construction project works. The following parts of NB/T 20580 have already been issued.

Part 1: Nuclear island civil works.

Part 2: Nuclear island mechanical equipment installation engineering.

Part 3: Nuclear island piping installation engineering.

Part 4: Nuclear island ventilation and air conditioning installation engineering.

Part 5: Nuclear island electrical installation engineering.

Part 6: Nuclear island instrumentation and control, instruments and communication installation engineering.

Part 7: Conventional island building works.

Part 8: Thermal equipment installation engineering for the conventional island.

Part 9: Conventional island electrical equipment installation engineering.

This document was proposed by the Nuclear Power Standardization Technical Committee of the energy industry.

This document is under the jurisdiction of the Nuclear Industry Standardization Research Institute.

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1 Scope

NB/T 20580.8-2021 is the Chinese preliminary estimation norm for installing the thermal equipment of the conventional island of a nuclear power plant, the eighth part of the NB/T 20580 series. A preliminary estimation norm answers a different question from a budget norm, and the difference matters. At the feasibility and preliminary design stage the drawings do not yet exist in detail; what exists is a plant configuration and a rough equipment list, and the question is whether the project is affordable at all. The units of this norm are correspondingly coarse - a turbine of a given rating installed, a feedwater train, a condenser - where the detailed budget norm of NB/T 20358 works down to the individual weld and cable termination. Both are price books published by the state, but this one is the instrument for deciding whether to build, and the other for deciding what to pay. This volume covers the thermal side of the turbine hall: the steam turbine and its auxiliaries, the generator cooling and sealing systems, the condenser and vacuum plant, the feedwater heaters and deaerator, the pumps and the associated pipework, valves and heat exchangers, together with the insulation and painting that go with them. For a foreign supplier or analyst, these are the figures that sit behind a Chinese nuclear cost estimate at the stage where the investment decision is actually taken. It was issued on 7 January 2021 by the National Energy Administration and took effect on 1 July 2021.

For the conventional island scope, the Budget estimation norm of nuclear power plant construction project works is divided into three volumes.

Volume 7: Conventional island building works.

Volume 8: Thermal equipment installation engineering for the conventional island.

Volume 9: Conventional island electrical equipment installation engineering.

The present document is Volume 8, Thermal equipment installation engineering for the conventional island, referred to below as this norm.

The three volumes together cover the conventional island part of the estimation norm system for nuclear power plant construction works.

2 Field of application and use of the norm

This norm applies to the thermal equipment installation works of newly built and extended conventional islands, and of their associated BOP facilities, of second generation and improved second generation nuclear power units in the 600 MW to 1000 MW class.

The BOP sub-items to which this norm applies are listed in Annex 1, BOP sub-item list.

Other BOP sub-item works, not included in that list, may use this norm as a reference.

This norm is the basis for preparing the project budget estimate at the preliminary design stage.

It is a reference basis for preparing the tender base price and the bid price at the preliminary design stage.

At the construction drawing stage, where so agreed in the contract, it is the basis for project settlement and final accounts, the construction drawing quantities being measured according to the quantity measurement rules of the budget estimation norm.

3 Assumptions underlying the norm

This norm has been compiled taking into account the construction organization design that is reasonable at the present stage of nuclear power plant construction works, together with normal construction conditions.

The selection and matching of construction machinery has been fixed on a comprehensive basis, according to the different situations of the different sub-items.

Horizontal handling distances and installation heights have been taken as the average of the general situation of most projects.

Except where the norm expressly allows adjustment or conversion, the norm shall not be adjusted because the actual construction organization design, machinery arrangement or handling distance and height of a particular project differ from these assumptions.

4 Basis of compilation

The compilation basis and the main references of this norm are the following.

Guideline for the cost nature and project breakdown of nuclear power plant construction projects, NB/T 20023-2010.

Budget norm of nuclear power plant construction works - Thermal equipment installation engineering for the conventional island.

Construction drawing design documents of the conventional island and of the BOP works of nuclear power plants.

Construction schemes for the conventional island and its BOP works, including construction organization design, construction technical schemes and construction measures.

The scope and the content of the norm sub-items are set out in the explanatory notes of each chapter and section.

The scope and the content of the construction operations concerned are given in the relevant explanations of the Budget norm of nuclear power plant construction works - Thermal equipment installation engineering for the conventional island.

5 Consumption quantities of the norm

The consumption quantities of the norm were formed by calculating the construction drawing budget quantities of representative projects of different types in the various regions and, on the basis of a comprehensive analysis of the quantities of the estimation norm sub-items, by applying the labour and material analysis procedure of the budget norm.

Labour consumption is expressed in labour days.

It comprises basic labour, labour for extra handling distance, auxiliary labour and the construction amplitude allowance.

The material quantities of the norm already include the losses arising from handling within the site, from stacking on the construction site and from construction operations.

Scaffolding, sleepers, formwork, alignment and assembly platforms, assembly supports, stiffening members and special tools used for handling, assembly and installation are entered as turnover materials on an amortized basis.

The same treatment applies to the temporary pipes, pipe fittings, valves, gauges, boxes and tanks used for hydraulic testing, pickling and pipe flushing, and to the conductors used for heat treatment.

Sundry materials of small quantity and low cost are combined into a single item, other material cost, expressed in yuan.

The machine shift consumption of construction machinery is the quantity of construction machinery required to complete the work content of the norm under normal construction conditions and with reasonable construction methods.