

HVAC Management for Nuclear Power Plants

Heating, Ventilation, Air Conditioning

Framatome’s integrated HVAC solutions enable you to comply with worldwide safety and qualification requirements and provide you with all benefits of a single supplier with overall competence and long-term experience including concept, basic and detail design for HVAC systems, layout and component engineering

Challenge

Plant operators are often confronted with the complexity of qualification processes, high regulatory and safety requirements across different standards and the subsequent implementation of complex components.

Maintaining a stable temperature and appropriate humidity levels, HVAC plays an important role in ensuring the safe and smooth operation of nuclear plants.

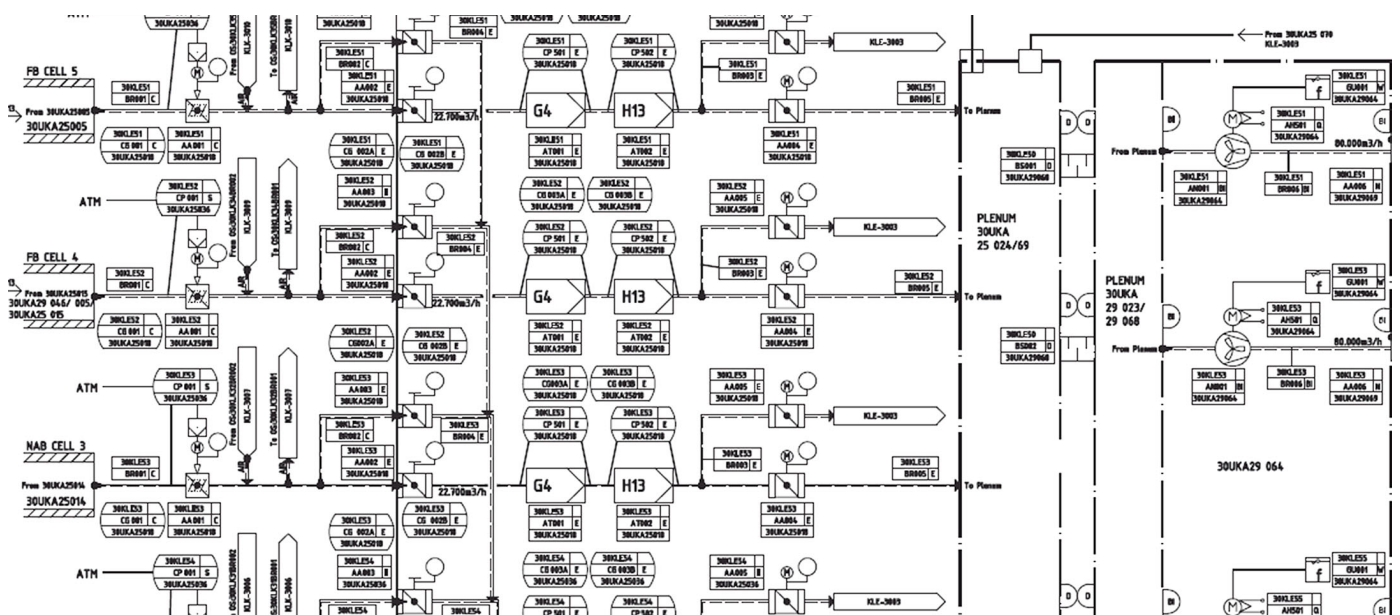
Solution

Framatome provides plant operators with the entire field of HVAC, ranging from system and layout engineering to HVAC component delivery (state-of-the-art design or special qualified).

Relying on more than 40 years of experience we offer of both, complete HVAC concepts as well as single component deliveries matching the individual operational or nuclear requirements of NPPs.

Customer benefits

- Overall competence in all HVAC and chilled water system engineering design steps, 2D/3D layout planning and HVAC component design including specifications for HVAC products and refrigerating machines
- One single supplier ensuring an integrated concept
- Comprehensive, long-term worldwide experience with various codes / standards
- Numerous references from the integration in already existing plants



System design, example for flow diagram of a complex HVAC system

Three Pillars of HVAC Engineering

HVAC System Engineering

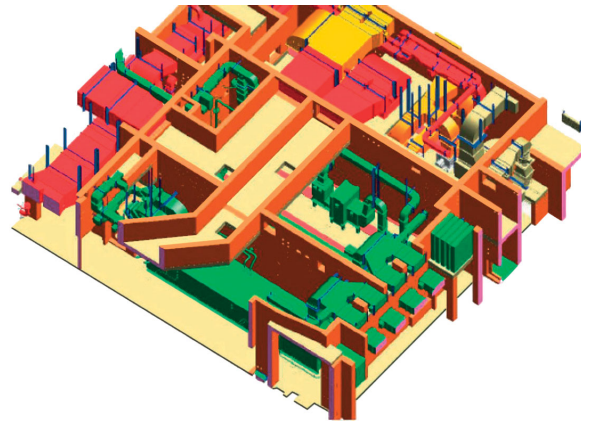
- System studies and design of all kind of HVAC systems
- Chilled water/ventilation – air conditioning / heating systems
- All design steps from conceptual design to basic design to detail design
- Elaboration of licensing documents
- Issuing of P&IDs, system description, manuals, and the commissioning, maintenance and operational manual
- Issuing of component data sheets
- Creating various reports, e.g. room condition report
- I&C and electrical engineering
- Component selection
- As-built documentation in existing NPP
- Development of tools for HVAC design (thermal dynamic calculation)
- Assistance in erection and commissioning activities as required

HVAC Layout Engineering, 3D / 2D Design

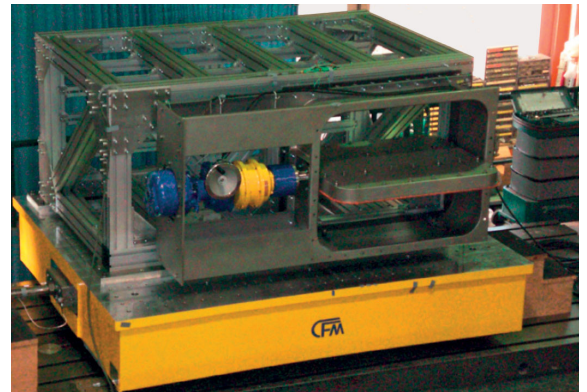
- Building integrator of a complete HVAC configuration
- Duct routing concepts with 2D tools, layout studies
- HVAC Layout design in the PDMS model including anchorage and support design
- Issuing of 2D duct arrangement drawings for the detail designer and / or fabrication
- Issuing of installation drawings if required
- Development of the PDMS HVAC tool with catalogue

HVAC Component Engineering

- Elaboration of HVAC project specifications
- Elaboration of requisition files
- Qualification of component suppliers / manufacturers
- Technical support for sub-suppliers during elaboration of standard / customized construction plans
- Clarification of interfaces (e.g. system / layout engineering, I&C and electrical topics, ...)
- Checking / issuing of construction plans
- Technical clarification, discussion with customer and authority
- Functional tests at the workshop
- Component qualification with manufacturers
- Development and functional tests: temperature, pressure, radiation, aging, switching cycle
- Assistance in erection and commissioning



3D-Layout engineering for HVAC ducts & components



Seismic qualification test

HVAC Purposes

- Maintain ambient conditions within acceptable limits (temperature, humidity, contamination)
- Protect the staff and equipment against specific risks from inside the buildings (anoxia, explosion, fire) and outside
- Monitor the release of air from the controlled areas in normal operation
- Contain the radioactivity released during a DBC or DEC event

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