

PIPING SYSTEM DESIGN

Versatile piping system engineering

Our piping system design and engineering service is part of our overall service chain which enables us to provide for oil & gas, building services, and industrial clients with versatile and modern engineering services. We carry out piping design for conventional power plants, boiler plants, HVAC, oil & gas, process and allied industry, etc.

Our designers and engineers are well acquainted with the requirements of procurement, construction, installation and prefabrication, and we can utilize the special capabilities of our workshops.

3D systems we use in our design work

- PDMS
- Cadmatic
- Vertex Plant Design
- SolidWorks

Our piping system design services

- plant layout design using 3D and 2D systems
- detailed design of piping systems (isometric drawings, hangers, mouldings, non-standard special parts)
- stress calculations and flexibility analyses for piping sections

Process Piping

Our knowledge of industry processes and strong technological competence as well as our ability to manage projects of different sizes in various circumstances make the realisation of demanding projects in a reliable, safe and economical way possible.

Glowsworth Engineering delivers process piping **from designing to prefabricated pipe elements** that are produced in our own workshop. Thanks to our own design competence, Glowsworth Engineering can carry out deliveries flexibly and cost-efficiently.

We provide piping for all industries:

- Oil & gas industry
- Food industry

- Energy industry
- Building & Infrastructural Industry
- Mining industry
- Chemical and petrochemical industry
- Metal and steel industry
- Marine industry
- Forest industry

Our piping deliveries can be carried out as comprehensive deliveries or, if the customer so wishes, we can concentrate on a smaller entity.

Whether the required entity is big or small, our experts will help you achieve the desired outcome.

Our offering:

- Pre-designing and consultation
- Designing
- Material acquisition
- Prefabrication
- Construction
- Installation
- Documentation

Installation and prefabrication, and we can utilize the special capabilities of our workshops.

Heating & Sanitation

Glowsworth Engineering offers HVAC, wastewater/sewage treatment plant, and water treatment solutions for buildings and industries, projects, and services.

Our offering

Our offer covers **heating solutions**, including combustion plants, boilers, and more advanced renewable energy based heating solutions, e.g. heating pumps.

Water supply and sanitation systems

We offer sanitation and water supply systems both for new buildings and renovation projects. We help you improve your energy-efficiency by selecting the right eco-friendly water fixtures and plumbing materials for your building.

Optimisation and right fixtures help you conserve water

Using water-conserving solutions brings you environmental and financial advantages. We are able to provide you with water-conserving fixtures. We can also carry out calculations to optimise water pressure levels, for example. Additional energy savings can be achieved through optimal water pipe insulation.

Simulation software helps to make good decisions

With our dynamic simulation software, we are able to simulate the energy balance of the entire building. The program shows how energy use is distributed and how much energy is wasted in the

building. This information enables us to compare different solutions as early as in the development phase, such as when choosing pipe material.

Ventilation & Air Conditioning

Our ventilation and air conditioning offer includes traditional **HVAC** solutions and industry specific advanced solutions. Ventilation is used for the exchange of air to the outside as well as the circulation of air within the building. An array of technology varies **from ventilation ducts and air handling units (AHUs) to high-end clean room solutions and industrial air handling**. Air conditioning typically means solutions for the altering of air humidity and temperature to create more comfortable indoor conditions. The technology includes, for example, air conditioners, heat pumps heat exchangers, and heat recovery systems. Efficient ventilation technology and a comfortable indoor climate are, together with heating and sanitation technology, the yardsticks of modern building services. Our range of expertise and references in this area is, therefore, extensive.

We have installed ventilation and air-conditioning systems in all building types

- office buildings
- hotels
- shopping centres
- airports
- event and trade fair halls
- sports venues
- hospitals
- laboratory
- clean room projects
- Industrial settings and production plants.

In addition, we deliver and install heat recovery systems, including chemical air-cleaning systems.

Authorities have defined certain criteria for these works to make sure that the quality of the work is at a professional level. Our employees have required certification and qualifications to fulfil these demands.

Control room and Call Centre works in close cooperation

24/7 service is available for this discipline, by monitoring and operating remotely from Glowsworth Engineering 's control room we provide supervision and responses to building system processes in a more energy efficient way. The control room is run by highly skilled engineers who can either monitor the functions of the building systems or remotely test and adjust the processes in malfunction situations.

The control room works in close cooperation with the Call Centre personnel who register the

service requests from the customers. Together, these activities form Glowsworth Engineering 's customer service centre which is available for contract customers on any day and at any time.

Proven pipe know-how

We are one of the leading industrial piping suppliers in Nigeria. Our service chain covers everything related to piping projects. Thanks to our strong and experienced project management competence, we are able to handle all stages of a project.

Our piping deliveries:

- Project Execution: piping design, materials procurement, prefabrication and installation

Efficiency through engineering know-how

Our engineers are top professionals who are familiar with the working methods and equipment used in workshops, and are often working on-site in our projects. The fact that the design and engineering is in our own hands means added flexibility and cost-efficiency for the whole project.

Prefabrication at our workshop reduces the time required for the installation work on-site. In addition, the quality is better because the working conditions at the workshop are optimal.

Best possible installation competence

Our highly skilled installation crews are quick to respond and have the right kind of attitude in a tight spot. One accident is one too many for us, and safe operating methods are an integral part of our skill set. An experienced and professional project team guarantees that projects are carried out according to clients' requirements, safely and always on schedule.

Security and Safety

Proactive safety work is pronounced in real estate and industry safety management. The better the risks are identified, the better they can be prepared for. We offer **safety management expert services**, in which with them good overall safety management can be ensured.

We design, install, and maintain technical security solutions regardless of the brand to buildings and industry. There are available specific solutions, but also **cost-effective** integrated total solutions on a turnkey basis.

Security and safety solutions include multiple types of personal security systems and fire safety systems. Technologies are covering for example following systems and solutions.

- Access control systems
- Intruder alarm systems
- Video surveillance (CCTV)
- Locking systems

- Gate systems
- Working time monitoring systems
- Fire detection systems (e.g. fire alarms, smoke detectors)
- Fire protection systems (e.g. sprinklers, gas extinguishing)
- Escape lighting.

By the help of an automation system, we or our clients can manage and integrate on the upper system level the security and safety systems, such as access control and fire alarm systems, via a single integrated interface. We utilize open solutions, which allow system independence and, therefore, support common communication interfaces such as KNX, LON, MODBUS, M-Bus, DALI, and BACnet.

Automation

Automation technologies and solutions are developing rapidly and with these new solutions buildings and industries can be affected significantly.

Energy efficiency and cost savings by automation

Automation has great importance for energy efficiency, since it makes it possible to control the property and the conditions prevailing in industrial plants. Automation is the brain that controls and regulates all the circumstances.

The most critical automation decisions are made at the design phase, including in there modernization and repair phase, in which automation should be focused on as it has great importance for energy efficiency, cost savings and firewall & data safety solutions.

By the help of an automation system, we or our clients can manage, for example, HVAC, instrumentation & control systems, energy consumption control, access control and fire alarm systems via a single integrated interface. We utilize open solutions which allow for system independence and, therefore, support common communication interfaces such as KNX, LON, MODBUS, M-Bus, DALI, and BACnet. Our service concept also covers services related to electrical & industrial automation to process and energy industries starting from design, equipment supply, and installation to the deployment.

The automation system is in use in many towns and cities, which have integrated to the system number of real estate and water supply facilities. Small individual facilities as well as large buildings and industrial plants can be monitored by the system.

Our clients are able to **manage and control the property**. For our contract clients, the most modern control room and energy management services are also available. The up-to-date information collected from the property and data stored in the history of the property can be used to analyse and predict the performance of maintenance.

Control room and Call Centre works in close cooperation

24/7 service is available for this discipline. Monitored and operated remotely by Glowsworth Engineering 's control room, we provide supervision and responses to building system processes in a more energy efficient way. The control room is run by highly skilled engineers who can either monitor the functions of the building systems or remotely test and adjust the processes in malfunction situations.

The control room works in close cooperation with Call Centre personnel who register the service requests from the customers. Together, these activities form Glowsworth Engineering 's customer service centre which is available for contract customers on any day and at any time.

Industrial Installations

Glowsworth Engineering supplies and install **gasometers LPG, CNG and LNG tanks** as customized project deliveries to customers. Our special expertise also covers large storage tanks for oil & gas constructed on-site.

We supply tanks as turnkey deliveries, with our services covering design, materials purchase, fabrication, installation, insulation and surface finishes. Our designers are familiar with the implementation process, and we have top expertise in fabrication.

Our services:

- Gasometers
- LNG tanks
- Heat accumulators
- Basins and silos
- Storage Tank for oil & gas
- pipe work and equipment