



20 Years Quality Management System “QM Heizwerke” in Austria

Photo: AEE INTEC

Christian Ramerstorfer, Sabrina Metz, Gottfried Lamers, Ingo Leusbrock

Quality as a Benchmark

When the Quality Management System *QM Heizwerke* was introduced in Austria in 2005, the initial situation was critical. A study conducted by the Austrian Energy Agency had revealed serious deficiencies in the planning and operation of biomass district heating plants. The need for action was evident. The Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) therefore commissioned a handbook, including practical recommendations, within a joint INTER-REG project with Germany and Switzerland. The resulting framework was embedded into the Austrian *klimaaktiv* programme under the title “QM Heizwerke” and integrated into the national funding scheme. This established a structured framework for quality assurance, funding effectiveness, and sustainability, which has since significantly shaped the development of district heating systems in Austria. Since 2015, AEE INTEC has been responsible for coordinating this well-known programme.

Based on the international quality management (QM) model, continuously further developed by the international Working Group QM for Biomass DH Plants¹, it became clear early on that quality requires both structure and binding commitment. A decisive step for successful implementation in Austria was linking the system to the federal environmental funding scheme as a formal funding criterion. Projects were no longer solely technically

supported but were also required to meet transparent quality standards. The system was complemented by a project database unique in Austria, enabling comprehensive documentation and jointly used by Kommunalkredit Public Consulting (federal funding authority KPC) and the regional funding authorities. Today, a pool of nearly 70 specially trained, independent quality managers ensures compliance with standards throughout all project phases – from preliminary feasibility studies and planning to implementation and operational optimisation.

A Model of Success

The achievements of the past two decades are remarkable. In Austria, the funding body Kommunalkredit Public Consulting administers an internationally unique QM Heizwerke database serving both funding administration and central documentation purposes. The database already contains more than 2,000 QM Heizwerke projects. These projects represent investments exceeding EUR 2.15 billion, supported by approximately EUR 300 million in public funding. Currently, more than 960 heating plants are actively supervised by QM Heizwerke.

However, QM Heizwerke is more than a collection of technical compliance criteria. Many of the introduced standards – such as systematic network loss analysis, mandatory operational data monitoring, and a strong emphasis on efficiency – have become established practice within the Austrian district

heating sector. An additional service offered to project stakeholders is the QM Heizwerke benchmarking system. Based on regular operational reports, key performance indicators are automatically processed and compared with target and reference values from other heating plants and district heating networks. The objective is to raise awareness of optimisation potential and initiate a continuous improvement process, thereby ensuring and enhancing long-term efficiency and economic performance. Overall, QM Heizwerke plays a decisive role in ensuring that every euro invested delivers measurable and sustainable impact.

A Role Model for Europe and Beyond

From the outset, the QM Holzheizwerke publication series has formed the foundation of the QM system in the D-A-CH region. Through continuous cooperation within the International Working Group QM for Biomass DH Plants, standards are regularly updated and key documents – such as the comprehensively revised QM Planning Handbook – are expanded and internationalised through new member regions (with Friuli Venezia Giulia joining in 2021) and translations into numerous languages.

The programme has also gained recognition at the European Union level. The European Court of Auditors highlighted QM Heizwerke in its special report on the promotion of renewable energy generation

through the Cohesion Fund as a model for quality assurance in the heat transition². This recognition as an EU best practice example, together with inquiries addressed to the Austrian Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK) from countries such as Norway and Canada, has further strengthened the internationalisation of the programme.

Innovation as a Driving Force

A central success factor lies in the continuous development of the QM Heizwerke quality management system. Initially focused on biomass heating plants, the system has evolved into a universal instrument for network-based heat supply. This evolution is reflected in the reorientation of the overarching management programme towards *klimaaktiv Heizwerke und Wärmenetze* (engl. *heating plants and district heating networks*), financed under the national environmental funding scheme by BMLUK and implemented in cooperation with new project partners – SIR (Salzburg Institute for Regional Planning and Housing) and the Graz Energy Agency. The objective is to further develop the system into a cross-sectoral leverage instrument for improving efficiency and reducing CO₂ emissions in the heat transition.



Excerpt from the scope of activities of *klimaaktiv Heizwerke und Wärmenetze*, ranging from spatial energy planning (district heating zoning) and the integration of renewable energy sources and waste heat to monitoring and operational optimisation of district heating networks within the framework of QM Heizwerke. Source: AEE INTEC

The fields of innovation are broad and diverse:

- Transfer of the methodology to low-temperature district heating,
- Expansion to urban district heating and cooling,
- Integration into municipal heat planning processes,
- Facilitation of dialogue between municipalities and district heating operators,
- Support for data preparation for GIS-based energy planning,
- Integration and hybridisation of biomass systems with available renewable technologies such as solar thermal energy, heat pumps, waste heat utilisation, and thermal storage solutions.

Quality as a Forward-Looking Strategy

The challenges of the coming years are considerable: ambitious climate targets, increasing cost pressure, and growing requirements for security of supply – particularly with regard to resilience and blackout preparedness. Greater CO₂ reductions must be achieved with fewer financial resources.

This requires a robust and adaptive quality management system – one capable of integrating technological, economic, and regulatory developments in a coherent and forward-looking manner.

Conclusion

Twenty years of QM Heizwerke represent an Austrian success story with European relevance. The programme has established standards that have become embedded in professional practice while safeguarding investments amounting to billions of euros. It has demonstrated that quality is not an end in itself, but rather the prerequisite for sound planning, high efficiency, economic viability, and environmental responsibility.

The outlook is both ambitious and necessary: QM Heizwerke will continue to evolve, integrate new technologies, and strengthen its role within municipal heat planning. In doing so, it will remain an indispensable instrument for advancing the heat transition – and a compelling example of how consistent quality assurance over two decades can generate lasting and sustainable impact.

¹ Working Group Quality Management for Biomass District Heating Plants (QM Holzheizwerke). Available at: <https://www.qmholzheizwerke.ch/qm-holzheizwerke/ueber-uns.html>

² European Court of Auditors (2014). *Have Cohesion Policy funds for renewable energy generation achieved good results?* Special Report No. 06, Publications Office of the European Union, Luxembourg. Accessed on 29 October 2025. Available at: https://www.eca.europa.eu/Lists/ECADocuments/SR14_06/SR14_06_DE.pdf

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Further information and links in the e-paper

https://www.aee-intec.at/zeitung/nachhaltige_technologien-4-2025/6/

Dipl.-Ing. Christian Ramerstorfer and **Mag.a Sabrina Metz** are members of the “Cities and Networks” department at AEE INTEC and are responsible for the klimaaktiv programme Heizwerke und Wärmenetze (heating plants and district heating networks). c.ramerstorfer@aee.at | s.metz@aee.at

Dipl.-Ing. Gottfried Lamers is a staff member of Division VI/7: National and European Climate and Environmental Funding at the Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK). gottfried.lamers@bmluk.gv.at

Dr. Ingo Leusbrock is Head of the “Cities and Networks” department at AEE INTEC. i.leusbrock@aee.at

Sources and further information

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The Transformation of District Heating Networks



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