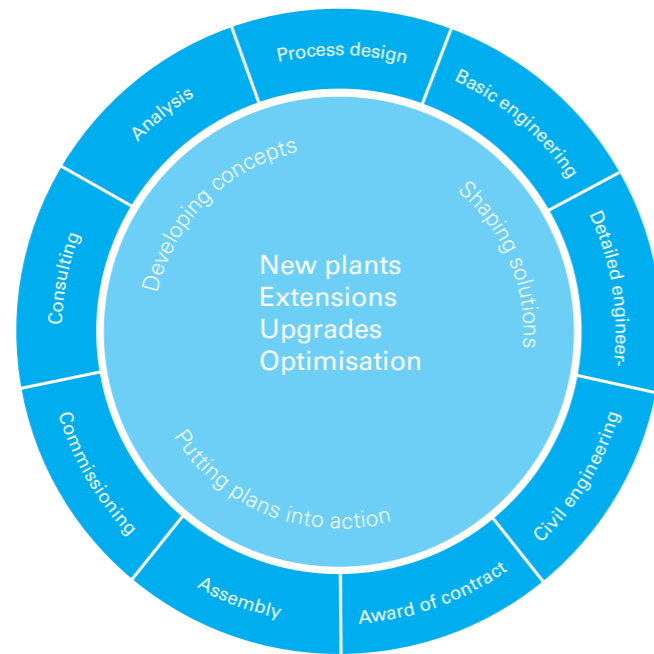


**Every question deserves an answer.
Every process, the right performance.**

BMA Engineering Network.



Engineering services. Throughout the life cycle of your plant.



Developing concepts

As part of its concept studies, BMA prepares mass and heat balances tailored to your factory design. With a supplementary economic feasibility analysis, we develop an overall concept that takes into account all key factors of a plant.

Shaping solutions

In basic engineering, we go one step further. We prepare process flow charts, equipment lists, machinery and plant specifications, a list of control circuits for C&I systems, and a rough layout plan for key equipment.

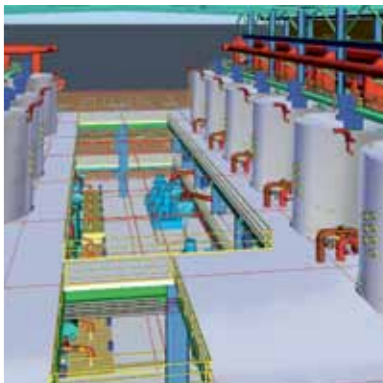
In detailed engineering, we fine-tune our basic engineering work to the smallest detail. We provide you with load plans for steel structures and concrete foundations, detailed layout plans, piping engineering including piping and instrumentation diagrams (PID), and much more.

During the civil engineering phase, we plan, design, engineer and dimension all the surrounding infrastructure and peripheral systems.

Putting plans into action

Hands-on commitment and expertise: those words perfectly describe the work of our BMA experts when they supervise assembly and commissioning at a construction site. Their experience gained in many successful projects around the globe coupled with excellent customer relations and engineering expertise are a guarantee for implementation success.

From the first consultation to the finishing touches. Our engineering solutions can take many different forms.



More than 100 strong, the BMA team of engineers is the largest engineering force in the world for sugar, sweeteners and their by-products.

Sugar is produced mainly from sugar cane and sugar beet. But whatever your raw material, we can provide a sound engineering basis for your new plant or upgrade project.

BMA bundles individual skills and expertise in an international engineering network. We can find the best solution for you – in terms of economic viability, plant efficiency and final product quality. Wherever you may be in the world, you have access to the specialist knowledge of our sugar technologists, process engineers and automation experts.

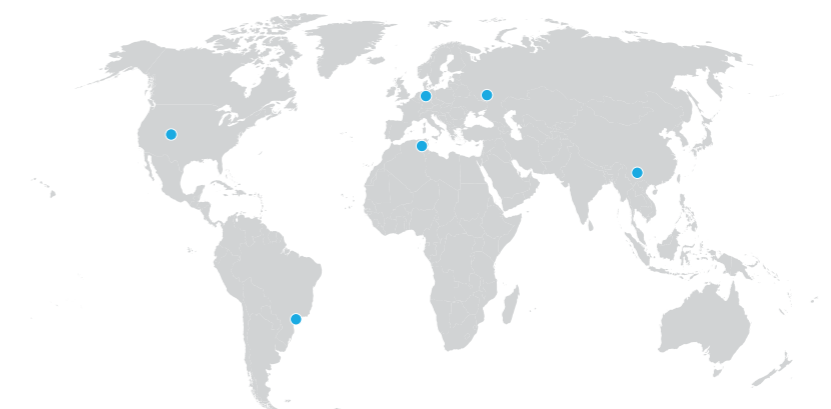
BMA is synonymous with integrated engineering. Which is why we use only the latest engineering and planning tools. Your projects are handled by local teams of engineers, our BMA Engineering Network.

In 1871, BMA supplied the equipment for the first sugar beet factory in California. Not long afterwards, we also moved into planning cane sugar factories and refineries. Based on a best practice approach, we transfer our experiences with one technology to other fields. This has proved to be quite a success, as in the case of proven energy-efficient solutions from the beet sugar sector, which we have successfully applied in cane sugar mills. One of the many benefits is the greater co-generation potential.

We take a holistic approach in everything we do. Together with our customers, we develop concepts whose benefits win them over from the start. On this basis, we propose planning solutions that you will certainly want to implement. If you are looking for help in putting your plans into action, look no further than BMA for commitment and passion!

Life cycle engineering – from single components or stations to complete factories.

BMA Engineering Network





The BMA Engineering Network is the favourite partner of plant operators and investors alike, in the planning of single plants, process stations or complete factories.

Advanced process expertise

BMA has proven expert knowledge of processes and methods, from raw materials to final products.

A broad range

From sugar to ethanol and to co-generation – we are familiar with the whole range.

The right performance

Solutions from BMA deliver the right performance, in terms of quality, energy efficiency and reliability.

Solutions with a local touch

BMA delivers advanced engineering solutions that take into account local circumstances and national technical regulations and standards. Plus, we speak your language!

All from a single source

BMA solutions combine engineering made in Germany, a global network of 100 process, electrical and civil engineers, and powerful state-of-the-art tools.

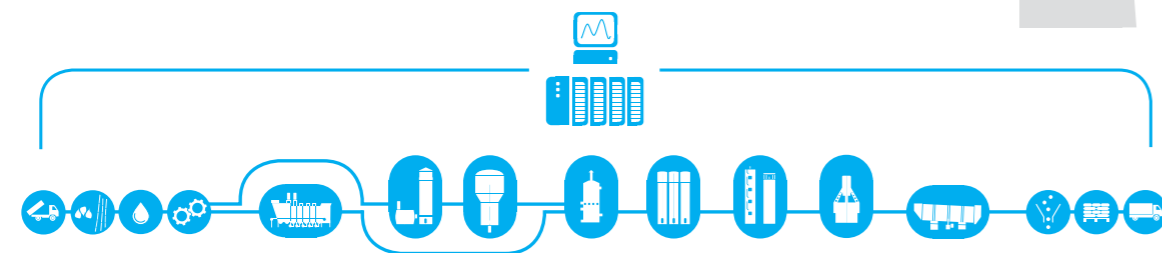
Engineering from start to finish

From an objective to the development of a concept, and to implementation planning: we can handle it all, for new plants, or plant extensions and upgrades.

From process design to control systems. The basis for life cycle engineering.

Engineering for plants, machinery and equipment

From raw materials to finished products.



Engineering for peripheral process equipment.

- **Energy:** generation, transportation and distribution plus optimised energy use
- **Water:** optimised use of water incl. wastewater management
- **Infrastructure:** building shell and outside plants

The BMA Engineering Network relies on an integrated engineering approach worldwide. Use of the BMA engineering platform with its logically and functionally linked modules ensures error-free data transmission. What's more, engineering and change processes can run concurrently, saving you time.

The process design, for instance, forms the basis from which the plant design and then the process control system are created, using the same data records throughout. The smart process control system implements the full operating process as individual control tasks. This ensures that

quality, energy efficiency and reliability objectives are met.

Factory data from ongoing operations are available in digital format. Real-time data from the process control system can be made available for maintenance and repairs, or transmitted digitally to the relevant tools. A continuous performance assessment indicates the plant status. Based on a common data platform, up-to-date information can be put to perfect use throughout the life cycle of a plant: for planning and implementing upgrades or extensions, for instance. This is what life cycle engineering is about.

Benefits of integrated engineering

- Few and unique interfaces in the planning and implementation phases
- Database containing all the documentation for a plant
- Basis for optimised spare parts management and troubleshooting
- Fewer errors with use of a CAE database
- Excellent transparency and availability

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BMA – Passion for Progress

For over 160 years, BMA has been developing and manufacturing machinery and equipment for the industrial-scale production of sugar. BMA system solutions for sugar factories and refineries are in demand wherever minimum energy consumption and consistently high product quality are top priorities. With our more than 600-strong workforce around the globe and in-depth knowledge of process engineering, BMA's service profile is unique in the sugar industry.



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