

# Target network planning as a challenge

in the context of distributed generation, storage technologies and electromobility

The development and optimization of electrical grids and the increased requirements resulting from distributed generators and charging of electric vehicles present operators, local authorities and planners with a variety of challenges. With its comprehensive electrical engineering portfolio and many years of experience, Iqony supports its customers in the industrial and municipal sectors to ensure sustainable, individual and future-oriented grid solutions.



## Our key areas of expertise

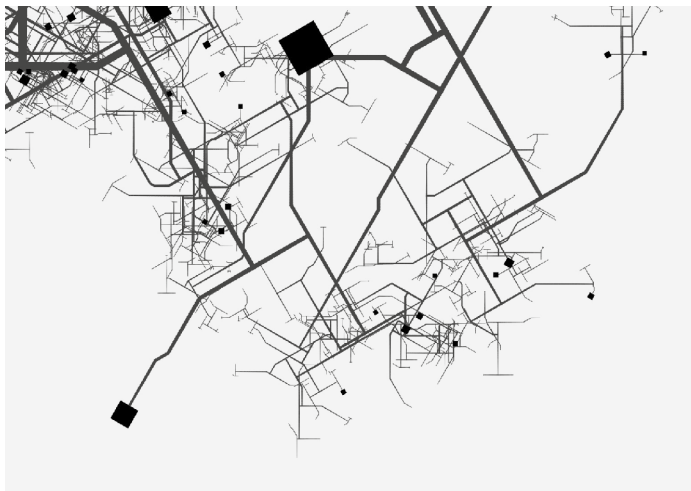
For more than 40 years, Iqony has been providing services and consulting in the municipal and industrial sectors. Our experience and consulting portfolio includes in particular static and dynamic network analysis as well as studies for individual protection concepts. We design the grid connections of production and generation plants according to regulatory requirements and render planning services for the integration of thermal and renewable generation assets in compliance with VDE application guides and other codes of practice.

Developing concepts for the black start capability of generation plants is also part of our portfolio, as are studies for the integration of battery storage solutions into existing or new plant concepts.

## Our comprehensive approach

With the interests of the customer in mind, Iqony takes a holistic approach to planning and consulting. This begins with assessing the current situation, analyzing weak points and drawing up concept studies. If required, this is followed by basic engineering, preparation of supplier-neutral tender documents and contract negotiations with suppliers. In the project implementation phase, Iqony provides expert support during acceptance testing of electrical components, construction supervision and coordination of commissioning. Our consulting approach covers both the generation and the grid side. We analyze and determine requirements for generation units in conjunction with their integration into the grid and enable our customers to fully understand the static and dynamic behavior of their systems.

The incentive regulation of the German Energy Industry Act (EnWG) forces municipal distribution network operators to systematically reduce their grid costs. Target network planning is a key method of asset management aimed at optimizing electricity supply networks. In target network planning, historically evolved network topologies, feed-in points, degree of meshing and the equipment used are put to the test from both a technical and an economic point of view.



Together with decentralized generation such as photovoltaics, new consumer scenarios are also emerging, e.g. e-mobility and heat pumps. Iqony helps distribution network operators to adapt the technology of their grids to the future requirements and make their operation even more economical.

## Contact person

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## Grid design services

- Short-circuit current calculation according to DIN EN 60909 / VDE 0102
- Load flow calculation by modeling of grid topology and loads (lines, transformers, generators, motors, etc.)
- Reliability assessment in the analyzed network area
- Determination of interruption frequency index H(U) and non-availability index Q(U)
- Designing the future network structure considering the equipment utilization, the admissible voltage range, the (n-1) availability and the intended service reliability
- Cost-effectiveness analysis for the proposed measures
- Supplementary services: developing protection concepts for electric equipment and recommendations for the setpoints of the protection relays considering selectivity aspects
- Electric arc studies

## Selected references

- Power supply and HV grid connection of data centers in Frankfurt and Berlin
- Planning and project implementation of the 110 kV main grid station of Evonik Industries at the Marl plant
- Redesign of 110 kV plant feed-in to replace the existing 35 kV feed-in of Evonik Industries at their Herne plant
- Grid calculations for plant expansion of Evonik Industries at their Antwerpen plant
- Developing the protection concept for the medium voltage network of Evonik Industries at their Worms plant
- Fundamental target network planning study for the BP/Ineos site in Cologne
- Analysis of the black start capability of the Currenta CCGT plant at their Dormagen site
- Protection and selectivity analysis of a Total refinery
- Short-circuit current calculation for the Hoesch steel mill in Hohenlimburg
- Electric arc study for the BP refinery in Gelsenkirchen Scholven