

Integrated Network Planning as Basis for sustainable Investments

AGGM as the control area manager of the control area east of Austria has the duties

- to control the gas flows
- to manage third party access and networks transport capacities
- to care for needed infrastructure

All of this at level one of the gas grid in the control area.

Partly the provision of the necessary capacities is done by closing shipping contracts on the transit lines but mostly by managing the high pressure network owned and operated by some different network operators.

On the basis of information collected at the day-to-day capacity management and additional surveys at the members of the gas community, we make a yearly long term planning. The outcome of this is an outlook 5 to 20 years ahead about the issues

- development of demand and supply on capacity within the network
- emergent bottlenecks
- measures to deal with this bottlenecks

One precondition for sustainable and traceable results and also decisions on this complicated issues are an integrated data basis for all reasonable planning data as well as efficient analyzing tools.

Currently the individual components of the planning model created in 2003 and meanwhile considerably advanced were consolidated in an integrated IT-system named NEMESYS. NEMESYS, beyond the integration of all data basis will give an additional support by providing integrated GIS functionality. At the recent planning work, particularly at the decision process, often we had to make assessments on space related questions.

Obviously space relations are useful on planning pipeline routes by giving an impression of the landscape by the map sight but most notably the clearly arranged relations between existing lines and entry/exit stations as well as demand and supply points on a map are more important. The big advantage of an integrated GIS system versus the recently used solely geographically oriented tool is the ability to view objects differently depending on characteristics they have, e.g. age, diameter, pressure level etc.

At least crucial are the space relations for the assessments of alternative planning's. The decision which is the best solution to manage the bottleneck is not only made on cost criteria but also on strategic issues. Using decision-matrix method we proof the options on their ability to serve

- flexibility on changes

- in demand during the projects realization
- in market and competition situation
- according to maintenance measures
- operational security
- low impact on customers due to troubles at one component of the network

Without GIS support such questions can't be answered or at least with enormous efforts. By way of example due to low appearance of operational troubles and inefficient documentation of such cases in the existing networks, there are no significant and statistically relevant figures about probability of failure for system components. To get although an indication for the reliability of each planning alternative we take an approach counting certain components taking into account their technical reliability and complexity. For this assessment part lists derived from the integrated GIS using proper filters for the component attributes are very helpful.

Such part lists are also used for calculation of the project costs. At the end, both the project costs as well as an aggregated figure for the strategic value of the planning option leads to a ranking which supports the decision.