TerBe 1.1 - Weather Adaptive Load Schedule Forecast

In the liberalised energy market one of the most important tasks is the planning-, operative control- and settling of the energy schedule. The traders deal with the future, where the exact loads can only be estimated. A detailed estimation can be prepared only after a significance analysis of the factors affecting the load, such as season, temperature, lighting, wind, workshifts, etc. The effects differ among customers, too. To reach the most exact estimation one must use different algorithms with different customers. E.g. the regional load can be well estimated on the base of historical load-, meteorological- and day type data, but a load of a specific technological customer can be estimated mainly by its production plan.

The load forecast function is useful for all the players in the liberalised market that work with daily schedules, that have to produce such energy schedules (traders, public traders, eligible customers). Applying this function the announced schedules will be more precise, the cost of the used balance energy will be lower.

Power Consult Ltd. offers his stand-alone Load Forecast solution. The program can be used mainly for the middle term (10-14 days) prediction of daily schedules.

The historical database contains each 15 minutes load data of the last 1-2 years, but the hourly temperature and lighting factors can be taken into account, too. Other analogous values can also be used if some cause-effect relation can be found between the value and the load curve.

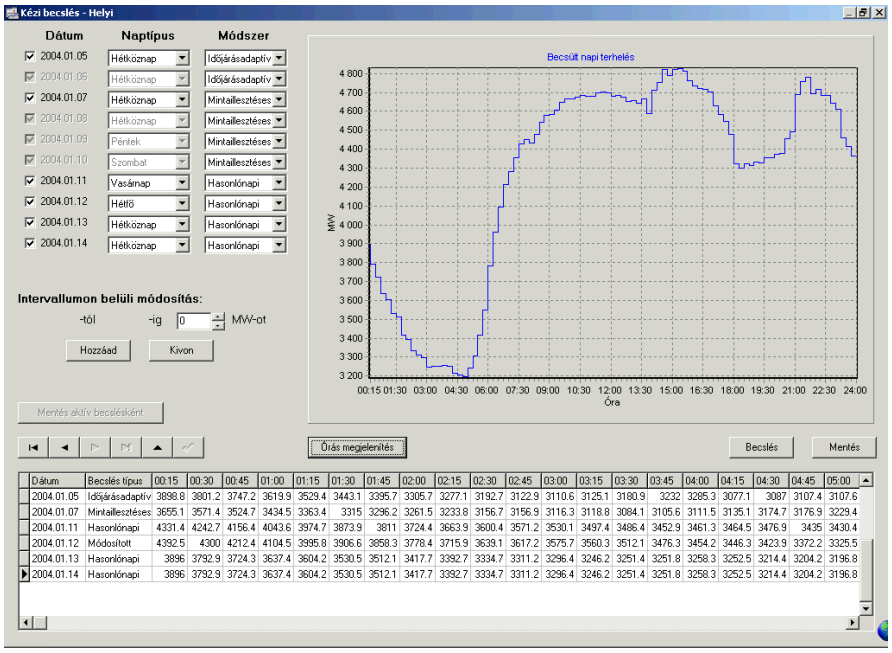
There are two operational modes:

- off-line estimation based on historical data
- on-line forecast based on historical and actual meteorological data, coupled to local ERP systems

The applied forecast algorithms are:

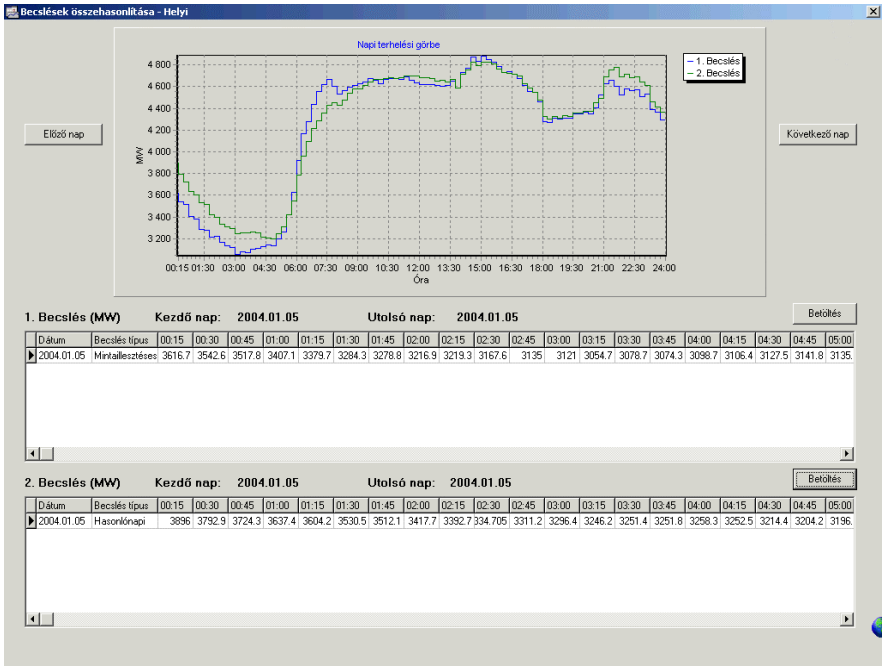
- "similar day"
  This is the one of the robust method. A weighted average is made for the different day types. The types and weights can be edited.
- "pattern matching"
  The pattern matching method compares the predicted meteorological data and the stored historical data (patterns). The best fitting day will be presented as the forecast. An operator can choose from the best-fit short list.
- weather adaptive
  The weather adaptivity method is based on a non-linear regression function. It seeks some correlation between the meteorological data, the load changes and load. It can be extremely useful in case of foggy days or in summer, when the air conditioners create extra load.

The methods mentioned above can be used in separately or in a mixed set. The following figure shows a case when the different forecasting methods are set for the different days.



Different days - different methods

The stored forecast files can be reloaded for comparison and error analysis. Such file typically contains 5-14 days, with 15 minutes units.



Comparison of forecasts

The later error evaluation function calculates the absolute-, relative error, its mean value and distribution too.

This program runs on average office PC under Win2000 or XP operation system. Remote data files can also be handled.

The compact version of the Load Forecast is offered as an off-the-shelf tool, but for the efficient application we recommend further consultancy concerning

- Load characteristics analysis
- Data capture in your system
- System integration plan
- HW/SW integration
- Documentation, training, tuning
- In case of necessity realisation of other forecast methods, as probability forecast, neural networks, etc.

Delphi in Greece is known about prophecy and oracles. It is a coincidence that we developed our Load Forecast in Delphi environment.

Delphi

Other related activities:

- Data mining for load forecast
- Connection to ERP system
- Forecast of other values
- Realisation of different data acquisition-, processing- and analysis functions

Call us for demonstration!

Further information:

Kádár Péter	06 20 944 7241
Bessenyei Tamás	06 20 555 6308
Mail:	info@powerconsult.hu
Web:	www.powerconsult.hu