ENGINEERING TOMORROW

Leanheat® | METFOR™

Locally optimized **weather forecasts**

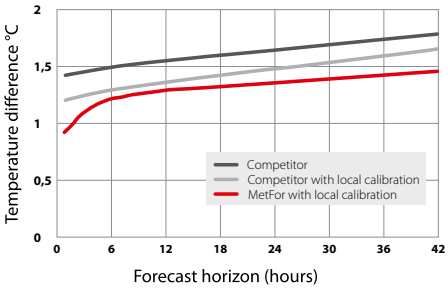
MetFor™ is a software system for high precision meteorological forecasting in a specific geographic location.

Why do you need **METFOR™**

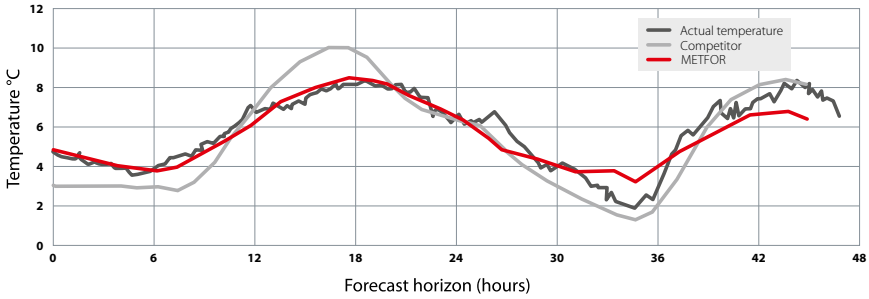
Global or regional weather models do often not capture local conditions with adequate precision. MetFor™ delivers a locally optimized weather forecast which can add significant value to highly weather dependent business activities.

Weather predictions from MetFor™ are used as input for heat demand forecasting, as it improves the forecast accuracy. This enables district heating companies to operate their network and production facilities more efficiently, save fuel cost and reduce CO_2 emissions.

Average deviation from actual temperature



MetFor and competitor forecast vs. actual temperature



Key **benefits:**

- Cost effective and high performing service solution
- Forecasts local weather more accurately than global and regional weather models
  - 5-8% more accurate on time horizons of 1-12 hours ahead
  - 6-10% more accurate on time horizons of 13-36 hours ahead
- Based on multiple weather models as input improves both accuracy and availability
- Proven operational track record with redundant server setup provides very reliable data delivery
- Delivered as a service with no or very limited maintenance and interaction required by the customer

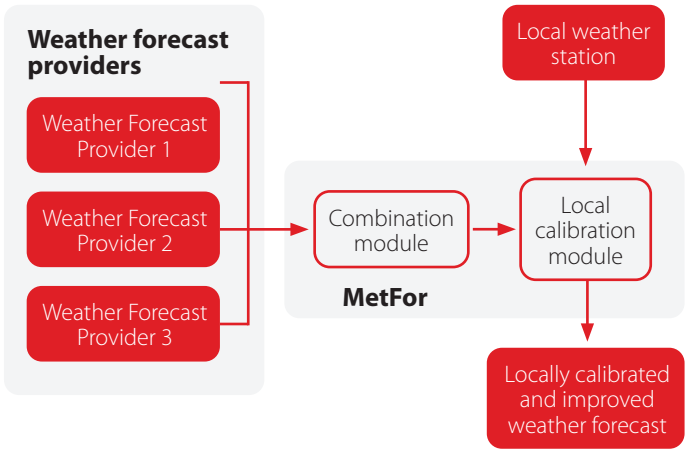
How does **METFOR™ work**

MetFor™ utilize multiple weather models as input and finds the optimal weight of each model for the specific location. This provides a better and more accurate forecast for the specific location. In addition, MetFor™ utilize local online measurements to calibrate the weather forecast to the specific location. This means that systematic deviations between the metrological models at the specific location are identified and corrected. Short term deviations from weather model forecasts are also identified (using real time data) such that the local weather forecast is continuously adjusted to the actual situation. The short term adjustment gives a significantly improved forecast on horizons up to 12 hours ahead.

MetFor™ is based on advanced machine learning forming a self-learning system. By combining meteorological forecasts and measurements from a local weather station, the system is not only able to produce accurate weather forecasts, but can also automatically and continuously improve the forecasts as more data is received over time.

MetFor™ can seamlessly be deployed and integrated with HeatFor™ and HeatTO™ as part of the Danfoss Leanheat® offering to district heating companies.

MetFor™ is provided as an integrated service from the Danfoss Leanheat® software suite, which also contains a data collection and validation module. Data streams are monitored 24/7 and the system is robust to missing/erroneous measurements and temporary failure of meteorological forecasts.



Danfoss Leanheat® software suite also provides MetFor™ with data integration modules through either FTP, SFTP or web-services such that MetFor™ can be seamlessly integrated with both weather stations, SCADA systems and other operational systems.

Key **features:**

- Self-learning and self-calibrating algorithms for accurate meteorological forecasting
- Forecast single or multiple locations up to 10 days ahead
- Forecast updated every hour
- Integrates seamlessly with:
  - Local weather measurements
  - Heat demand forecasting tool HeatFor™
- Data integration interfaces based on FTP, SFTP or web-services supporting numerous formats and file types (CSV, XML, SOAP, JSON etc.)
- Delivered as a service solution, with redundant setup, 24/7 monitoring of data streams

Danfoss Leanheat® is an innovative suite of AI, IoT & Cloud-based software solutions that empower the entire district energy value chain to optimize operational efficiency and reach decarbonization goals while adding ease and comfort to everyday life.