

ALPIQ Challenge



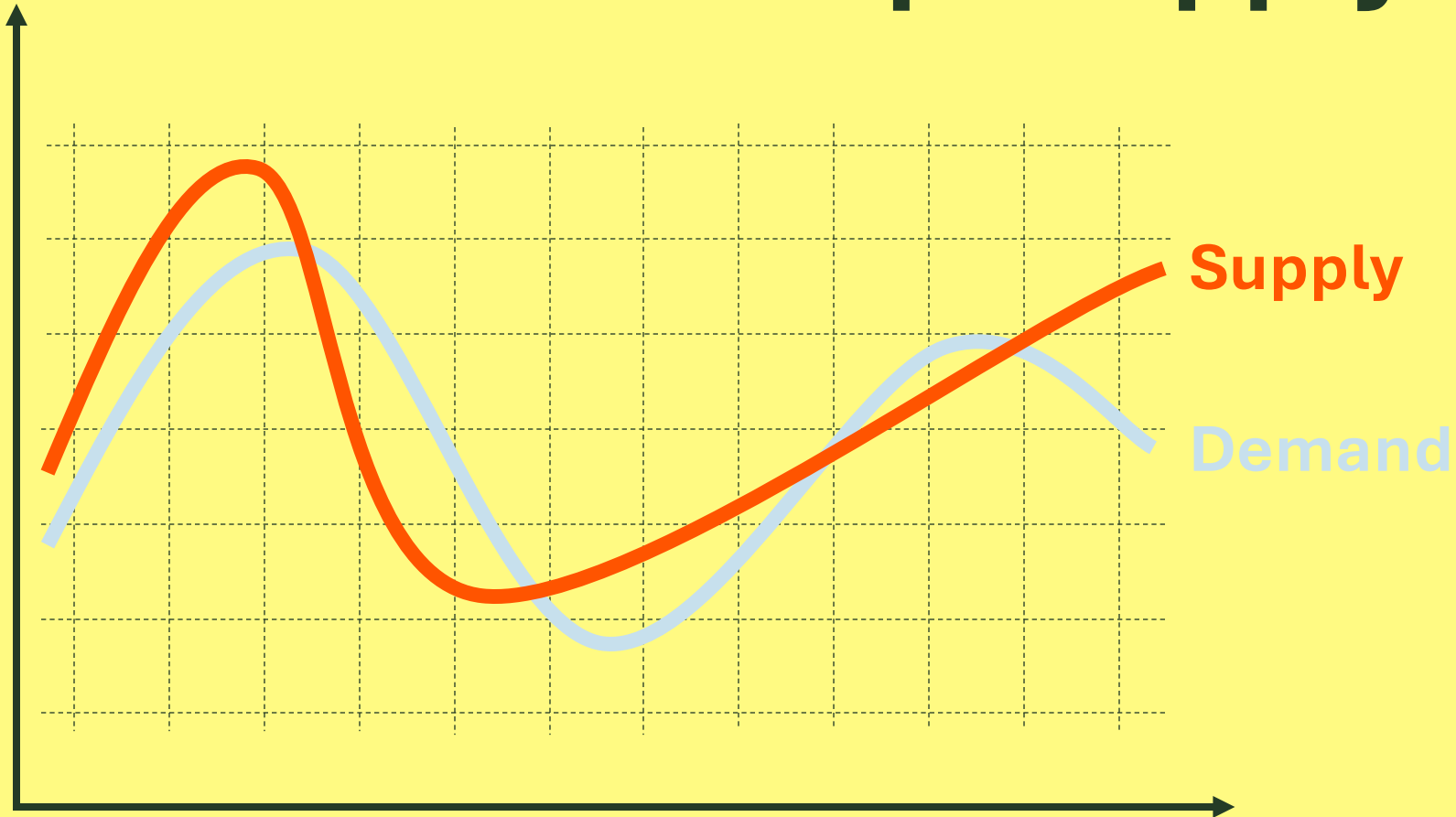
ALPIQ

The Problem



ALPIQ

Goal: Predict Demand to Adapt Supply



\$

Penalty

ALPIQ

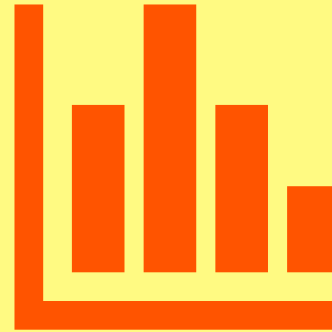
Data used



Holidays



Rollout
Forecast



Demand
2022 - 2024



Weather

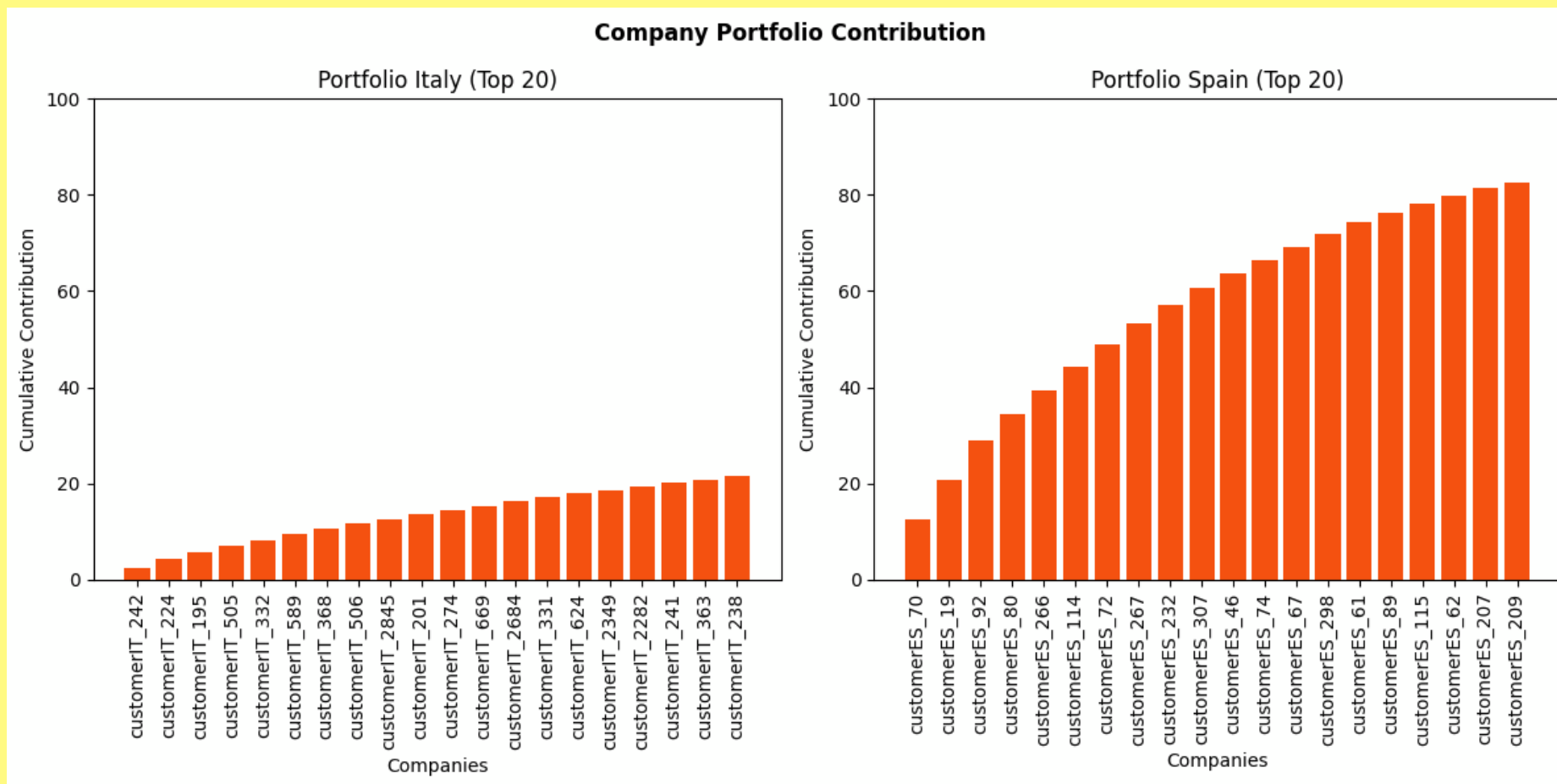


Price of Oil



MSCI IT & ES

Company Contributions



Our Approach

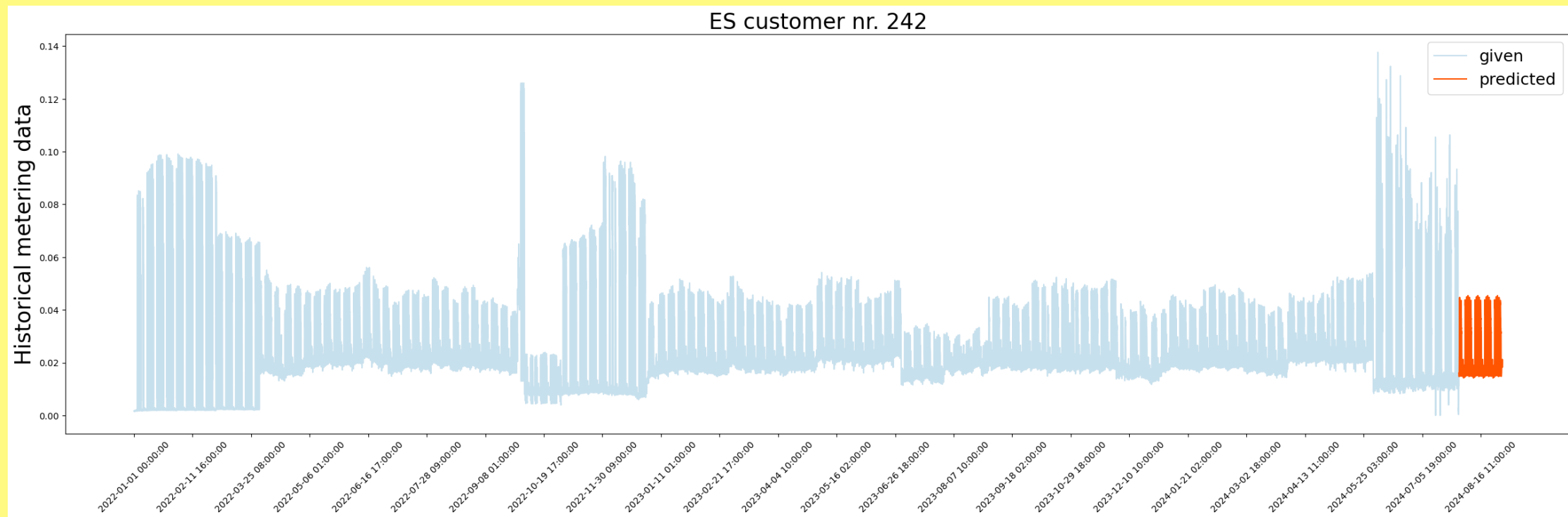
Different methods proved **more effective** for different clients.

Our models:

- Gradient Boost
- Seasonality Analysis
 - Mean
 - Hourly Mean
 - Hourly Mean 7
- Hourly Mean 7 + Gradient Boost on Residuals

ALPIQ

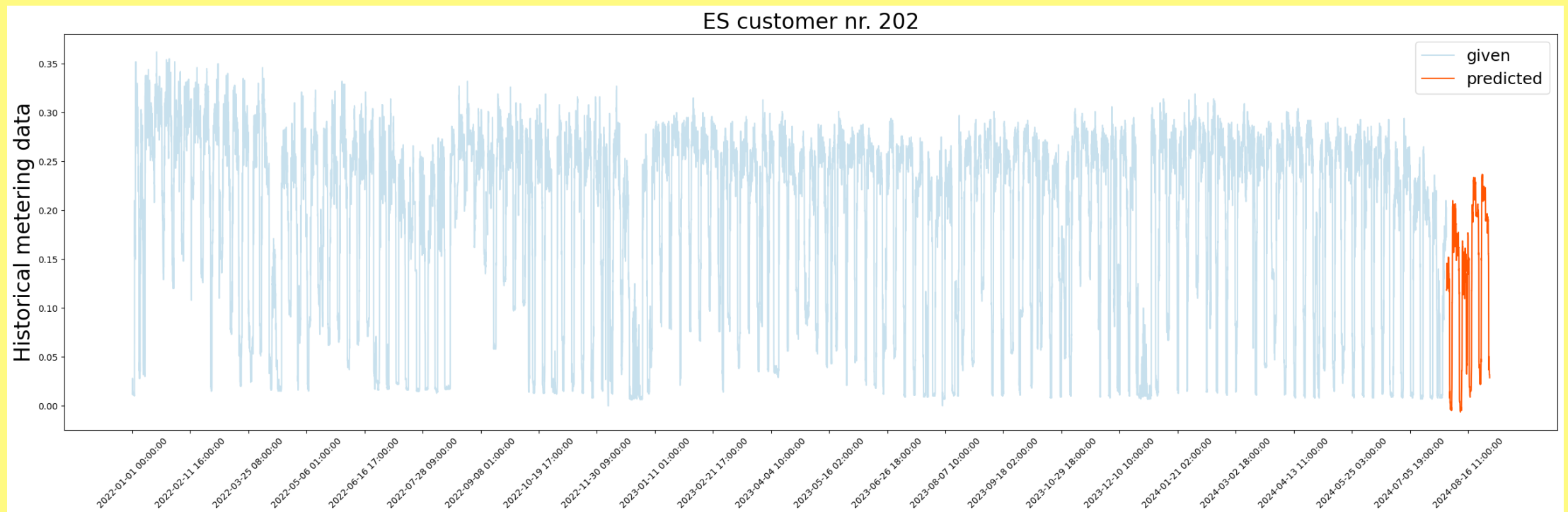
Seasonality Analysis



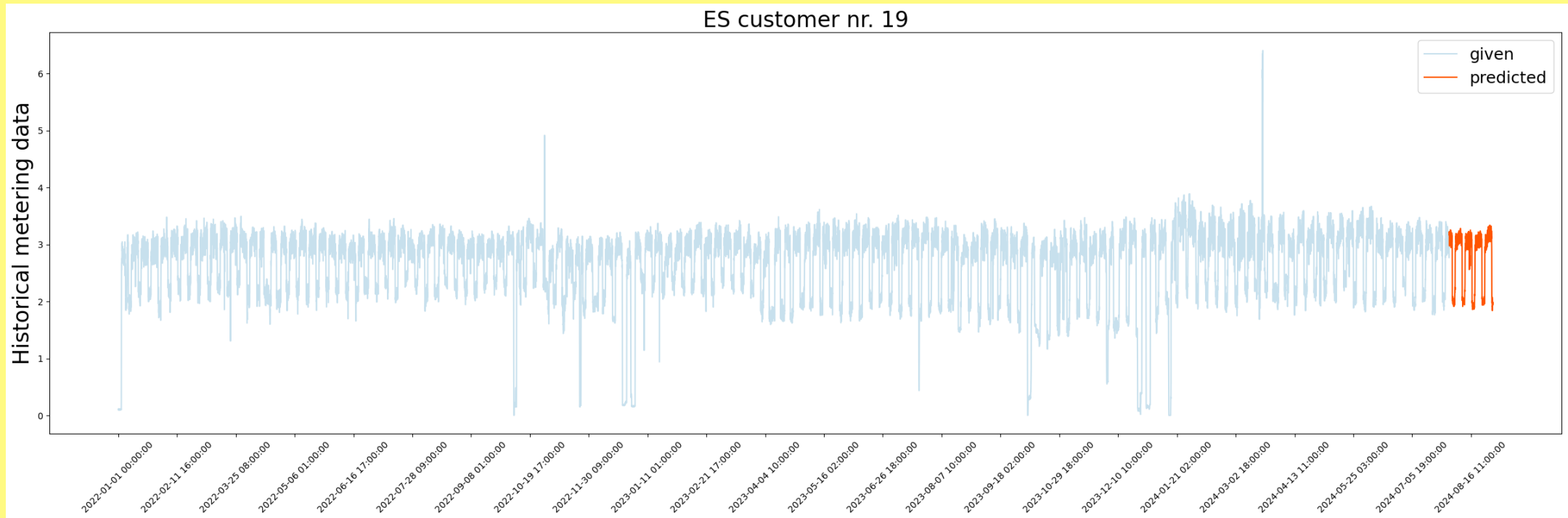
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Gradient Boost

- **Ensemble Method:** Combines many Decision Trees
- **Boosting:** Each new model corrects error of the previous one
- **Gradient Descent:** Minimizes loss by fitting to residuals



Learning the Noise



**Gradient boosting on
residuals of Hourly Mean 7**

ALPIQ

Model Contributions

Prediction Model Usage

