Predictive Maintenance as a Retrofit – The Fortune Toolbox

Condition-based and predictive maintenance (PdM) can play a pivotal role in improving sustainability, rentability and equipment uptime. This is achieved through live monitoring of an asset and predictions of potential faults and maintenance tasks.

The ForTune Toolbox, developed as part of the ForTune project under the iCampus initiative in Cottbus, is a modular, solution for predictive maintenance. It empowers retrofitting of existing assets by supplying the hardware and software essential for building and deploying predictive-maintenance solutions.

for monitoring and analyzing movements and positions across various applications.


Key Features

- **Modular retrofit-focused architecture**
  Upgrade long-lived assets with all needed hardware and software for condition-based and predictive maintenance
- **Diverse, off-the-shelf sensor suite**
  including analog MEMS microphones, IMUs (accelerometers and gyroscopes), magnetometers, and ultrasonic transducers
- **Hybrid sensor-fusion & AI frameworks**
  Feature-level fusion with classical ML (SVM, Random Forest, etc.) and data-level fusion with deep learning (DCNN, LSTM), plus hybrid variants
- **Built-in PdM analytics**
  One-class anomaly detection, multi-class health-state classification, and regression-based remaining useful life prediction
- **Scalable back-end & UI**
  Reduced digital twin approach with database software for real-time data-stream handling, and User-dashboards, complete with alarms and triggers for live monitoring, and past data analysis

Application Fields

- Retrofitting legacy assets
- Early anomaly detection
- Health-state detection
- Remaining useful life (RUL) prediction
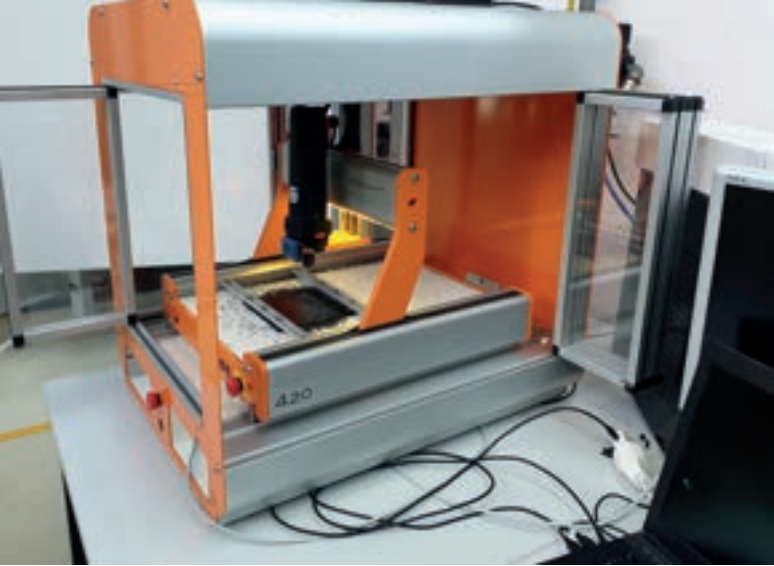
Technology Demonstrator in the Model-Factory of BTU Cottbus-Senftenberg
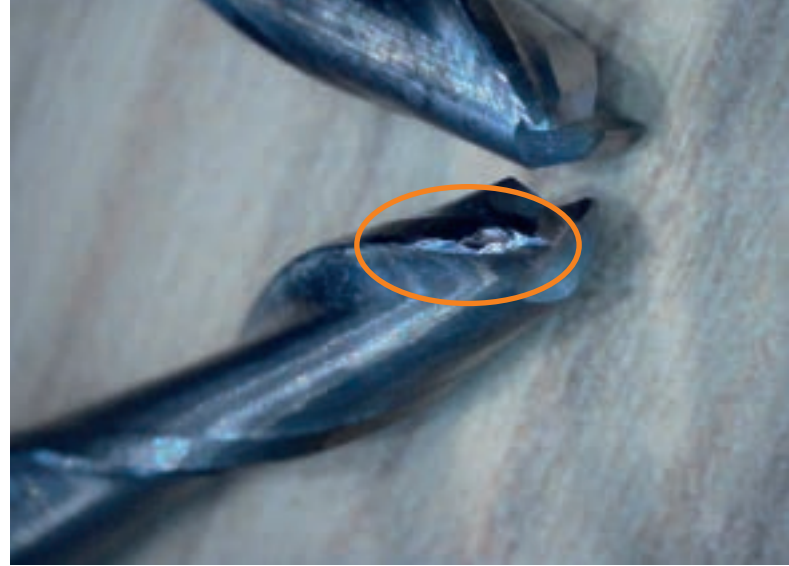
A fault in the milling cutter (circled orange), which the toolbox can predict based on sensor readings

Join us in shaping the future of predictive maintenance

As a joint initiative of the Brandenburg University of Technology (BTU) and Fraunhofer IPMS, we invite forward-thinking organizations to partner with us in co-developing and deploying the complete ForTune PdM stack.

Whether your machinery operates in wind farms, conveyor systems, agriculture, robotics, or other sectors, you can benefit from our combined academic and industrial expertise. Together, we can tailor our modular, retrofit-friendly hardware and software to meet your specific maintenance challenges.

Bring us your use case.

Let's collaborate to advance predictive maintenance in your enterprise. With BTU's strong foundation in engineering research and Fraunhofer's proven experience in industrial implementation, we are well positioned to help you scale a solution that maximizes uptime, minimizes unplanned downtime, and brings the full benefits of a PdM strategy to your operations.

Join us in shaping the future of predictive maintenance!

www.icampus-cottbus.de

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Further Reading:

REAL-IZM Blog
🔗 Maintenance for Industry 4.0: How Multi-Sensor Technology, AI, and Data Fusion Advance Machine Maintenance

Paper MST-Kongress 2023 Dresden
🔗 The ForTune Toolbox: Building Solutions for Condition-Based and Predictive Maintenance Focusing on Retrofitting