Progress DataRPM Cognitive Predictive Maintenance for Manufacturing

Complete asset reliability by reducing unplanned downtime

SOLUTION BRIEF

HIGHLIGHTS

✓ Harness machine sensor data to gain predictive insights

✓ Predict asset failures before they occur using predictive analytics

✓ Boost asset reliability by eliminating emergency incidents

✓ Reduce maintenance costs and optimize operations with cognitive intelligence

Using Machine Data to Create Insights and Gain Asset Reliability

A study conducted by Pricewaterhouse Coopers and Iron Mountain found that despite spending billions of dollars on big data, 43% of organizations "obtain little tangible benefit" from their data, while 23% "derive no benefit whatsoever." Given that a mere 10% increase in data accessibility by a Fortune 1000 company can boost annual net income by as much as $65 million, this is a gap that needs to be addressed. Data exists everywhere, but the real dilemma sprouts from judiciously using this data to create value.

Industrial machines work continuously, generating millions of data points every second. The ultimate objective as a manufacturer should be to utilize all this data to gain visibility into the equipment's health and optimize overall asset maintenance. If manufacturers can connect these massive streams of data from machines to workflow processes, asset reliability is possible. With increased reliability comes a greater understanding of how machines function, enabling businesses to finally reduce unplanned downtime.

Further, with asset reliability, users can make critical decisions by applying real-time insights to deliver tangible results. Organizations are equipped to not only harness their valuable data stacks but also use this data to empower people and mitigate risks. With a holistic view, machine health can be assessed, operational strategies can be implemented and finally cognitive predictive maintenance can be initiated.

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Progress DataRPM Cognitive Anomaly Detection and Prediction (CADP) is a one-stop solution for achieving asset failure management to help maximize overall output. CADP uses meta-learning technology to automate predictions of asset failures. Users can finally leverage the deluge of data generated by their machines to gain accurate insights into predicting asset breakdowns. Also, field technicians can take well-informed and proactive decisions to ensure minimal disruptions on the production floor. All this is possible by automating cognitive predictive maintenance, a process that is beyond human management.

The result?

By automating predictive maintenance, manufacturers can generate an 80% increase in prediction accuracy and get these predictions 30 times faster, with a combined savings of $37 million.

How Does CADP Work for You?

Use case: Fortune 100 manufacturer predicts asset failures by using CADP for inventory optimization

The Challenge: A large scale manufacturer wanted to identify the exact issues hindering spare part optimization. If the appropriate spare parts weren't available to fix broken machines, the entire production line was disrupted, creating huge losses.

The Impact:

✓ Reduction in spare part inventory by 57% in just three months

✓ Optimization of personnel time, leading to an 8% increase in worker efficiency

✓ Overall 38% boost in productivity by being more prepared for any unplanned downtime, plus greater control over production schedules

The Solution: By adopting an automated anomaly detection and prediction approach, a decade of machine data was analyzed to predict which parts were likely to fail and why. The CADP solution consumed this machine sensor data and created automated models, empowering the client with powerful machine insights. This enabled the client to be better prepared for machine failures, with the right spare parts always in stock at the right time.

Read More Case Studies

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THE CADP ADVANTAGE:

✓ Move from preventive to predictive maintenance

✓ Minimize disruptions

✓ Enhance machine utilization

Transform Your Industrial Data with the Cognitive Anomaly Detection Advantage

The CADP solution connects to your data lake and then automatically runs multiple machine learning experiments to find patterns and anomalies in your industrial data. Using this, it creates an ensemble of predictive models to automate predictive maintenance. Finally, what you get is a complete closed looped system that is descriptive and predictive in nature. This is possible by integrating these actionable insights through APIs to ERP, CRM and CMS systems.

No More Unplanned Asset Downtime

The biggest deterrent to operational reliability is equipment failure, which accounts for more than 43% of unplanned downtime. CADP nips unplanned failures by harnessing machine signals at the right time, by filtering out critical signals from the noise. This ensures continuous operation of your production line. The product also enables monetization of the trillion-dollar opportunity in Industrial IoT (IIoT) by analyzing the flood of manufacturing data received from your machines. By predicting catastrophic failures earlier in the chain, you can avoid total breakdown and save billions of dollars.

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Get Greater Asset Reliability with Predictive Maintenance Decisions

It costs around 50% more to fix a failed asset than if the problem was identified prior to the failure. A bad operational decision can lead to multiple problems along the production chain. With accurate predictive maintenance support, manufacturers can ensure better conservation of assets, thus enhancing overall equipment life and boosting reliability significantly. CADP helps save time and money using your factory's own data to diagnose and correct chronic failure points in your machinery and overall plant.

The CADP advantage:

- Fix before broken

- Create viable insights to drive business decisions

- Positive bottom line impact with increased profitability

Optimize Inventory and Personnel to Achieve More with Less

Managing inventory levels and maintaining them to the optimum level is one of the most dreaded aspects of manufacturing. Studies show that organizations using predictive maintenance solutions have an increased production output of 20-25%. By accurately predicting component failures, manufacturers can forecast inventory requirements and optimize purchase orders. CADP helps effectively plan the field personnel and skill level required to handle issues even before they can occur.

The CADP advantage:

- Boost operational agility

- Enhance asset life

- Be better prepared for managing inventory deficit/surplus

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CADP Delivers Real Outcomes

Research shows that manufacturing organizations that have implemented comprehensive predictive maintenance solutions have achieved conclusive results, such as:

- ✓ 1.7% unplanned asset downtime

- ✓ 91% OEE (overall equipment effectiveness)

- ✓ 20% return on assets (ROA) vs. corporate plan

- ✓ 31% reduction in maintenance costs

Why CADP?

With critical business value locked up amid all the unused data generated by IIoT sensors, today's asset-intensive industries face a huge data problem. To complicate matters further, simply scaling manual data scientist work is not an option due to the ever-increasing volume of generated data.

Now, imagine if you could:

- Predict all your maintenance needs by scheduling manufacturing processes optimally
- Increase your overall asset lifespan and augment utilization
- Discover underlying asset failure patterns and be prepared for future contingencies
- Anticipate impending disasters and prevent them from occurring

To achieve 100% asset reliability, a complete paradigm shift of processes and mindset is required. The IIoT has sparked this shift by connecting millions of manufacturing assets and providing avenues to leverage this unexplored treasure trove of data. And by predicting asset failures, organizations can tap an opportunity which is worth almost $630 billion. Progress uses this novel approach of teaching machines how to do machine learning. By automating predictive maintenance, CADP is the only product that ties the series of these multiple failure triggers together to provide highly accurate prediction for the next likely failure.
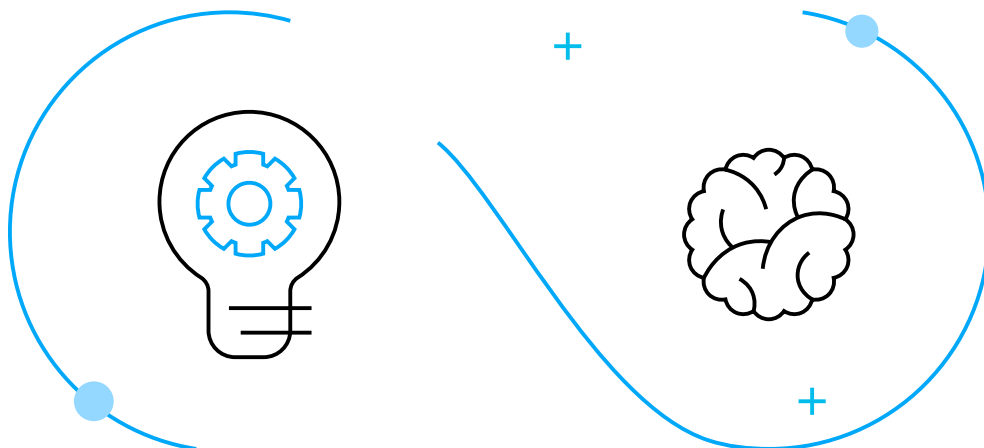
The traditional approach of data science predictive analytics is failing when it comes to predictive maintenance because:

1. The sampling-based approach that builds generalized models for all assets based on the data generated by a few assets doesn't work. Since 80% of the failures that happen in the field are random and unique to assets based on their environmental and operating conditions, generalized models don't work.

2. Industrial machines generate a barrage of unlabeled data that is unstructured. When trying to predict for random and unknown failures, there is no prior labeled data to train the models in a supervised way. Hence unsupervised learning is required for unlabeled training data, which is only possible using predictive models.

3. Static models cannot foresee dynamic and unpredictable failure events that depend on changing environmental and operating conditions. In fact, the practice of building models offline and then deploying them on the production floor (a process that in itself takes weeks or even months of effort) doesn't work in a dynamic industrial environment.

The CADP solution empowers businesses to autonomously detect and predict the 80% of the seemingly random failures that occur on the production floor for any asset-based industry. This requires modeling for each asset, and the ability to discern the normal from the anomaly. When there are hundreds of thousands of assets (millions in machine-intensive industries like the automotive industry) to consider, building that many models manually is impossible. CADP's cognitive capabilities achieve this by teaching machines to learn, much like data scientists would. This is where we apply the concept of meta learning, which enables machines to digitally capture their experience in running machine learning experiments on data and learn from that to build faster, better predictive models for every asset in an autonomous manner.

A New Revolution Has Begun

The digital revolution kindled by the IIoT has unlocked new opportunities for manufacturers to challenge conventional norms. They are better able to rethink how products can be developed, operations can be managed and supply chains can be optimized. CADP is the pacesetter of this revolution with its cognitive anomaly detection techniques and its myriad of service offerings. Contact us today and become an intelligent manufacturing organization.

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About Progress

Progress (NASDAQ: PRGS) offers the leading platform for developing and deploying mission-critical business applications. Progress empowers enterprises and ISVs to build and deliver cognitive-first applications that harness big data to derive business insights and competitive advantage. Progress offers leading technologies for easily building powerful user interfaces across any type of device, a reliable, scalable and secure backend platform to deploy modern applications, leading data connectivity to all sources, and award-winning predictive analytics that brings the power of machine learning to any organization. Over 1,700 independent software vendors, 100,000 enterprise customers, and two million developers rely on Progress to power their applications. Learn about Progress at www.progress.com or +1-800-477-6473.

Worldwide Headquarters

Progress, 14 Oak Park, Bedford, MA 01730 USA

Tel: +1 781 280-4000 Fax: +1 781 280-4095

On the Web at: www.progress.com

Find us on (f) facebook.com/progresssw (y) twitter.com/progresssw (▶) youtube.com/progresssw

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