

A close-up photograph of a person's hand holding a white stylus, pointing at a tablet. The tablet screen displays a vibrant, multi-colored data visualization with streaks of blue, green, yellow, and red. The background is dark and out of focus, suggesting a professional or technical environment.

OUR BLUEBEE® PLATFORM ENABLES
AI-DRIVEN DATA PREPARATION—
EXTRACTING PREVENTIVE MAINTENANCE
INSTRUCTIONS FROM O&M MANUALS
AND SAVING OVER 90% OF TRADITIONAL
LABOR WHILE MAINTAINING ENGINEER-
LEVEL ACCURACY.

HOW TO MOVE PAST IT ENTANGLEMENT TO UNLOCK AI-BASED ASSET MANAGEMENT

Modern energy facilities are more automated and interconnected than ever. From rooftop solar and district cooling in bustling Asian cities to large-scale WtE plants and grid-scale renewables, these facilities face unique challenges: intermittency in solar and wind output, rapid asset aging in humid/tropical climates and cascading risks across urban grids. Yet they remain heavily dependent on scarce high-skilled personnel. In this high-stakes environment, where technical problems can cascade into unplanned outages, environmental non-compliance, financial penalties and reputational damage, can AI help transform how we manage the physical assets that power our world?



When companies explore AI for asset management, conversations default to predictive maintenance. Let's step back. According to ISO 55000:2024, Asset Management is the "coordinated activity of an organization to realize value from assets." Maintenance fits within this framework as an operational enabler. Predictive maintenance is a specific technical activity that may or may not suit a given asset. True AI-powered asset management is far broader. Roughly speaking, predictive maintenance is the domain of the technician and machine supplier; asset management, that of the manager and plant owner.

Energy companies are well-resourced, with deep operational experience and robust IT infrastructures. They have long relied on EAM and CMMS systems, often supplemented by in-house mobile apps and portals, yet remain dependent on countless Excel sheets and paper records. They have experimented early with IoT, digital twins and now AI. Yet many have observed how legacy IT and entrenched practices obstruct real progress. This article draws on four decades digitalizing asset management, two in Asia.

Context Matters

Despite the promises, few AI attempts by asset owners advance beyond pilot stage. Makers of standardized equipment like turbines have developed mature predictive maintenance approaches. But from the plant owner's perspective, scaling remains elusive. Variability in equipment, site conditions and integration challenges complicate deployment. Most efforts focus solely on real-time sensor data. Alerts are generated, but what should a technician do? A vibration alert doesn't distinguish imminent failure from sensor drift. Without understanding the failure mode, cause and past interventions, the alert remains untrusted. False positives compound the problem: teams that respond to nothing wrong learn to ignore the system. Black-box AI deepens distrust. Teams cannot verify recommendations and when predictions prove wrong, there's no path to understand why. Experiments with LLMs (and most energy companies have tried plugging ChatGPT into IoT data) introduce hallucinations that seem sensible to non-experts but make engineers wince.

This brings us to the core issue: context matters more than raw real-time data. Relying solely on sensors fails long-term due to noise, false positives, cost and incomplete failure mode coverage (corrosion, human error, lubrication issues). Real-time inputs need rich historical and operational context. This holds for predictive maintenance and even more for AI support of asset management. If maintenance fails without context, strategic asset management fails without an even broader context: capital plans, risk registers, financial constraints, regulatory obligations, organizational objectives. AI is not the starting line, it is the finish line, achievable only after the data foundation is sound.

The Three Bottlenecks

Three bottlenecks prevent AI-powered asset management:

- 1 Incomplete as-built data**
Plants inherit poor databases from construction, gaps in hierarchies, naming conventions, failure history. This undermines every strategic decision: risk assessments, life cycle analysis, investment prioritization.
- 2 Data silos**
Information scatters across ERP, CMMS, Excel, paper, in-house apps, IoT platforms. The result? Painful mobile apps no one uses, broken sync, half-finished Power BI dashboards reliant on Excel exports, shared Google Sheets and (most tellingly) unauthorized WhatsApp use to request work orders with pictures and voice messages. Field data (closest to physical reality) is often missing. This contradicts ISO 55000's requirement for coordinated activity grounded in verifiable field data to prove strategy implementation and drive continuous improvement. Adding AI on top of fragmented systems only amplifies these existing issues, creating more noise without real insight.
- 3 Incumbent lock-in**
Strong legacy suppliers and entrenched vendor relationships create patchwork environments where new entrants face insurmountable procurement and IT compliance hurdles. IT teams often

block integration to protect existing systems, while procurement processes favor incumbents and demand exhaustive compatibility checks that make meaningful change impossible. For asset management, this means organizations struggle to introduce innovative solutions without massive disruption or outright rejection.

These challenges make incremental pilots impossible, they require massive upfront effort without guaranteed ROI. Breaking free demands a different starting point: one where data foundations are built right from day one.

A Practical Path Forward: Clean Smart O&M on a New Plant

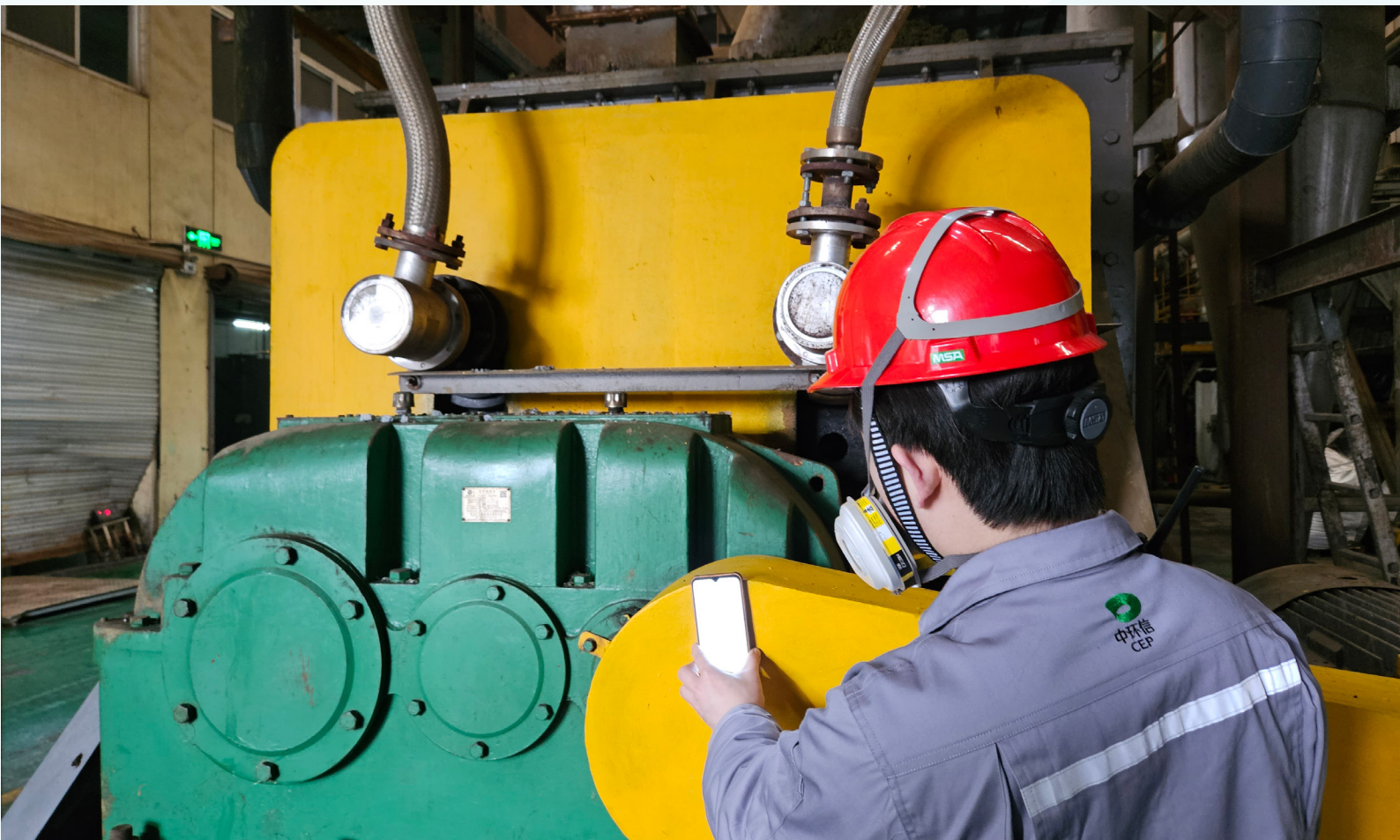
The path forward? Forty years in the field tell us what works.

Seek "clean slate" opportunities such as a company's first biomass project, first WtE plant, or other greenfield project or major retrofit where legacy systems can be avoided. Crucially, fund through construction CAPEX, not as a separate IT project. Corporate procurement will derail post-construction "add-ons."

Build data structures during construction, leveraging supplier contracts. Ideally, include Smart O&M in the EPC contract, allowing the builder to deliver all plant documentation directly within the system. Our bluebee® platform enables AI-driven data preparation—extracting preventive maintenance instructions from O&M manuals and saving over 90% of traditional labor while maintaining engineer-level accuracy. Finally, ensure data is site-verified during commissioning using the integrated mobile app.

Once implemented, a comprehensive Smart O&M platform such as bluebee® fulfills all core CMMS/EAM functions with mobile support, without disrupting corporate legacy systems. Guided by ISO 55000, bluebee® creates closed data loops: field workers feed real data, AI processes it, decisions flow back transparently. Interfaces with corporate ERP allow value-added data upstream, enhancing group visibility without overhaul.

Asset health scoring prioritizes historical and structured data for contextual predictions, avoiding sensor-only pitfalls.



Conversational queries let technicians and managers access insights naturally, including quick regulatory compliance checks or risk register queries, all grounded in verified historical context.

For energy operators ready to move beyond pilots, this approach delivers reliable asset health insights throughout the plant lifecycle, reduced risks, and sustainable progress. Let's build it right, together with your next plant.

AI IS NOT THE STARTING LINE, IT IS THE FINISH LINE, ACHIEVABLE ONLY AFTER THE DATA FOUNDATION IS SOUND.



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Bruno Lhopiteau is a 25+ year veteran of the Asian energy and infrastructure markets, specializing in the digitalization of asset management and maintenance. As CEO of Bluebee Tech (www.bluebeecloud.com), Siveco China (www.sivecochina.com), and affiliated companies, his teams have delivered Smart O&M solutions for over 1,000 client sites across Asia, the Middle East, and Africa, working either directly for the plant owner-operator or under the EPC.

French-invested Bluebee Technologies was founded in 2013. It is headquartered in Singapore, with R&D center in Shanghai, offices in Hong Kong and Bangkok, value-added partners all over Asia.

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Bluebee Technologies

bluebee® supports Industrial Risk Management, Asset Management and Operation & Maintenance by enabling industrial decisions based on true data from mobile workers and connected objects.

Digital transformation in Asset Management: 40 years history, 20 years in Asia.

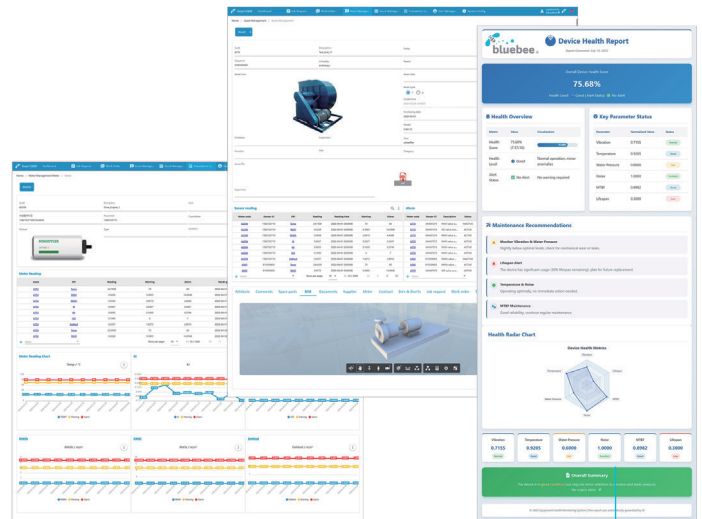
Over 1,000 client sites use bluebee® in Environment, Energy, Infrastructures, Manufacturing, and Facilities.



bluebee® Asset Health Scoring: AI for Predictive Maintenance

An advanced AI-powered feature within the Prognostics and Health Management (PHM) module of bluebee®. Unlike systems reliant on real-time sensors, Asset Health Scoring leverages historical records, particularly underutilized inspection logs, alongside live data to deliver precise, actionable insights.

For maintenance teams, it prevents failures and guides technical decisions. For managers, it answers key questions: Where and when should we invest next? How can we reduce risk without exceeding the budget?



Why it stands out:

- ✓ Fully integrated in our CMMS/EAM solution
- ✓ Backed by deep domain expertise
- ✓ All R&D done in Asia

The conversational AI-driven Q&A engine simplifies complex queries, delivering context-aware insights and tailored recommendations for better decision-making.

Talk to our team for:

- ✓ CMMS / EAM / Mobile solutions
- ✓ Maintenance & asset management audits

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