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WHEN MINING MEETS ENERGY

GETTING ASSET MANAGEMENT RIGHT IN THE DIVERSIFICATION PLAY

Australia's biggest resource companies aren't just digging things up anymore. They're building wind farms, hydrogen plants, battery storage facilities, and solar arrays. Sometimes right next to the pit.

It makes strategic sense. The infrastructure is often already there: heavy electrical, water management, road networks, port access. The workforce knows how to run large, complex operations. And the balance sheets can absorb the capital outlay.

But here's the thing: the asset management capability that keeps a mining operation humming doesn't automatically transfer to energy assets. Different failure modes, different regulatory frameworks, different performance expectations, and very different risk profiles.

Organisations that get this transition right will build genuine competitive advantage. Those that don't will discover that operational readiness isn't something you can bolt on after commissioning.

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The Capability Gap No One Talks About

Mining asset management is mature. Decades of hard lessons have produced robust maintenance strategies, well understood criticality frameworks, and teams that know their equipment intimately.

A haul truck fleet, a processing plant, a rail loadout: these are well characterised assets with deep industry benchmarks.

ENERGY ASSETS ARE A DIFFERENT BEAST.

Wind turbines operate in fundamentally different duty cycles.

Battery energy storage systems degrade in ways that don't map neatly to traditional P-F curves.

Hydrogen electrolysers are still building their reliability datasets globally.

Solar farms, while relatively simple mechanically, introduce performance monitoring and degradation modelling challenges that most mining maintenance teams haven't encountered.

The gap isn't about competence.

Mining operators are among the most capable asset managers in the world. The gap is about context. The maintenance strategies, inspection regimes, and condition monitoring approaches that work brilliantly for fixed plant and mobile equipment need genuine rethinking for energy assets.

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Operational Readiness: Where Projects Succeed or Stumble

If there's one area where we've seen the mining-to-energy transition create the most risk, it's operational readiness and assurance (OR&A).

In mining, OR&A frameworks are well established. Most Tier 1 operators have mature stage-gate processes for bringing new assets into service. But those frameworks were built for mining assets, and they carry assumptions that don't always hold. Three areas consistently catch diversifying organisations off guard:

REGULATORY COMPLEXITY COMPOUNDS FAST

Energy assets have specific regulations, such as grid connection agreements, market operator obligations, environmental compliance for renewables, and distinct safety frameworks.

The operational readiness process must navigate approvals and compliance pathways that may be new to the team.

MAINTENANCE STRATEGY DEVELOPMENT STARTS FROM A THINNER EVIDENCE BASE

For a new SAG mill, you can draw on decades of industry failure data to build your initial maintenance strategy. For a green hydrogen electrolyser, you're working with manufacturer recommendations and a much smaller global dataset.

Your RCM analysis needs to account for this uncertainty explicitly, with review cycles built in as operating hours accumulate.

WORKFORCE CAPABILITY REQUIRES GENUINE INVESTMENT

This isn't a training course problem. It's a competency framework problem. The skills matrix for maintaining a 200MW wind farm looks fundamentally different from a processing plant.

Organisations need to map these gaps early (during FEED, not commissioning) and build realistic development pathways.

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What Good Looks Like: A Maturity Perspective

We assess asset management maturity across dozens of organisations each year, and the pattern for successful mining-to-energy transitions is consistent. Organisations that handle this well share three characteristics.

They treat energy as a new asset class, not an extension of existing operations

This means dedicated maintenance strategies, tailored criticality frameworks, and performance metrics that reflect energy asset realities. Trying to shoehorn a wind turbine into your existing CMMS structure without rethinking work order types, failure codes, and PM routines creates problems that compound over time.

They invest in data architecture early

Energy assets are data-rich. A modern wind turbine generates thousands of data points per second through SCADA systems. The analytics capability to turn that data into maintenance intelligence needs planning during project development, not as an afterthought. This includes decisions about edge computing for remote sites, data sovereignty for critical infrastructure, and integration with existing enterprise systems.

They build operational readiness assurance into the project lifecycle from the start

Not as a checklist exercise at the end, but as a genuine assurance framework with stage gates, evidence requirements, and independent review. The best programmes we've seen tie OR&A directly to capital project governance, with clear accountability for demonstrating that the organisation is genuinely ready to operate and maintain the new assets safely and effectively.

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Next-Gen OR&A: Artificial Intelligence

OR&A has traditionally been a point-in-time assessment.

You check the boxes, demonstrate preparedness, commission the asset, and move on.

But for organisations bringing energy assets into their portfolio, AI is changing what "ready" actually means.

Here's the thing: readiness isn't static anymore.

A wind farm that passes its OR&A gates at commissioning will behave differently six months in as bearing wear patterns emerge, blade degradation begins, and seasonal load profiles shift.

Organisations embedding AI into their OR&A frameworks can move from proving readiness at a single point to continuously assuring it across the asset lifecycle.

The good news for mining operators? The foundational capability is probably already there.

Data science teams, ML infrastructure, and condition monitoring platforms built for mining don't transfer their specific models to energy assets, but the organisational muscle to build, deploy, and govern those models absolutely does.

That's a significant head start.

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What changes is the application. For energy OR&A, AI adds three dimensions that traditional frameworks miss:

Continuous Readiness Assurance

Rather than periodic reviews, ML models monitoring SCADA data, vibration signatures, and thermal patterns can flag when an asset is drifting from its commissioning baseline. This turns OR&A from a project phase into an ongoing operational discipline.

Accelerated Learning on Thin Datasets

Energy assets, particularly hydrogen electrolysers and newer battery chemistries, don't have decades of failure data behind them. Transfer learning and federated approaches can bootstrap predictive models faster than waiting for your own failure history to accumulate. This directly addresses one of the biggest OR&A risks in the mining-to-energy transition: developing credible maintenance strategies when evidence is limited.

Sovereign, Edge-Deployed Real Intelligence

Edge AI keeps operational intelligence where it needs to be, with the added benefit of keeping sensitive performance data on-site rather than routing it through overseas cloud providers. For critical energy infrastructure, that's increasingly a board-level consideration.

The organisations getting this right aren't bolting AI onto their OR&A process as an afterthought.

They're designing their readiness frameworks with AI-enabled assurance built in from FEED stage, so by the time an energy asset reaches commissioning, the intelligence layer is ready to operate alongside it.

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Getting Started: Five Questions for Your Leadership Team

01 Have we mapped the capability gaps between our current asset management maturity and what energy assets require?

02 Does our operational readiness framework account for energy-specific regulatory, technical, and workforce requirements?

03 What's our plan for maintenance strategy development when industry failure data is limited?

04 Is our data architecture designed to handle the volume, velocity, and variety of energy asset data?

05 Have we allocated realistic time and budget for workforce development?

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The Bigger Picture

The mining-to-energy diversification trend across Australia's resources sector isn't slowing down.

If anything, it's accelerating as organisations respond to decarbonisation commitments, energy market opportunities, and the strategic value of controlling their own energy supply.

The organisations that will thrive in this transition are those that treat asset management capability as a genuine strategic enabler, not a back-office function that'll sort itself out.

They'll invest in OR&A with the same rigour they apply to geological modelling or mine planning. And they'll build the analytical capability to manage energy assets with the same sophistication they bring to their core mining operations.

The good news? Australian mining companies already have most of the foundational capability. The work is in extending it thoughtfully, with honest assessment of gaps and realistic plans to close them.

That's a challenge worth getting right.

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We help organisations measure what matters, model what's coming, and make the right call.