AUTHORIZED REPRINT

THE NORTHERN MINER

NOVEMBER 2025 / **GLOBAL MINING NEWS • SINCE 1915**

JOINT VENTURE ARTICLE

Mining Insights: Dundee's clean-tech solutions unlock value in complex ore projects

BY NORTHERN MINER STAFF

As the mining industry faces growing pressure to manage arsenic in complex gold and copper deposits, **Dundee Sustainable Technologies** (CSE: DST) is gaining traction with its innovations.

The Quebec-based company's GlassLock process safely removes and stabilizes arsenic, while its CLEVR technology improves metal recovery – two advances now drawing attention from major miners.

In this follow-up conversation, Mining.com anchor Devan Murugan speaks with Dundee CEO Jean-Philippe Mai about how partnerships with leading producers are expanding, why responsible arsenic management is becoming a commercial advantage, and how the company's Canadian and African facilities are paving the way for wider industry adoption.

Above: Mining.com's Devan Murugan, left, and Dundee Sustainable Technologies CEO Jean-Philippe Mai. THE NORTHERN MINER

Right: Fluid bed reactor for arsenic removal at DST's industrial facilities in Thetford Mines, Que. DUNDEE SUSTAINABLE TECHNOLOGIES

Below: Stabilized arsenical glass using DST's GlassLock Process. DUNDEE SUSTAINABLE TECHNOLOGIES

Devan Murugan: Jean-Philippe Mai, thanks for joining us.

Jean-Philippe Mai: Hello, Devan. Pleasure to be here – thank you for having me.

DM: Last time we spoke, you explained how your GlassLock process could safely remove arsenic from concentrates. Since then, Dundee seems to have been building momentum. Can you give us an update on how miners are responding to that technology?

JM: It's been great. This is something we've been doing for quite some time, and it's become a major part of our business. Over the past year, working with arsenic-bearing sulphide concentrates has represented more than 60% of our business. That reflects how miners and project developers are recognizing the added value and benefits of using alternative approaches to deal with complex, arsenic-rich concentrates.

"Being able to remove arsenic lowers penalties [and] also opens up more options."

DM: There are now quite a few results and case studies to look at. Revival Gold is one of them. Their results showed higher gold grades with almost no arsenic left over. How significant was that outcome for you, Jean-Philippe?

JM: It's been very positive working with various companies, especially those that are proactive about publicizing results and showing shareholders what's achievable. It's a strong showcase for our work. For many years, working with arsenic was seen as a bit of a taboo. Often, we were involved in projects quietly because companies didn't want to highlight the problem. Now, more of our clients are disclosing results, which demonstrates the efficiency of the process and raises awareness in the market.

DM: Let's get into the technical side. For people not too deep into the subject, why is arsenic such a challenge for gold and copper producers? And how does turning it into glass solve the problem long term?

JM: Arsenic has been a growing issue for years. Oxide deposits are depleting, and more deposits are at depth where base metals are associated with sulphide minerals. Very often those sulphides – arsenopyrite, enargite, tennantite, cobaltite – contain arsenic. When you produce sulphide concentrates, arsenic levels are often high, and those levels have been trending upward over the past decade.

The smelting and concentrate market is very competitive, with strict regulations and penalties for arsenic content. That affects costs and marketability. Being able to remove arsenic not only lowers penalties but also opens up more options and longer-term perspectives for projects. Without that, companies are often limited to short-term offtake agreements. Removing arsenic provides more flexibility and market access.

DM: You mentioned before that Dundee operates plants in Canada and at a copper smelter in Africa. Have those plants opened doors for commercial adoption?

JM: Absolutely. Bringing new technologies into mining is always challenging. Having plants has been a great tool – providing operational data at scale, building confidence, de-risking, and raising awareness. When people visit our Thetford Mines facility, they see the process and the equipment and realize we're using industry-standard gear – sometimes for different applications or at different scales. That operational data and process understanding have been very valuable.

DM: How does removing arsenic from concentrates give miners more flexibility in planning – and what responsibility do producers have when it comes to managing arsenic safely?

JM: It's difficult to plan long term when you're subject to market forces. Being able to remove arsenic gives you far more options. There's also a clear responsibility on miners and producers. If you're producing a product with high arsenic content, even if you send it abroad, there's still responsibility for how that arsenic will be managed.

With the GlassLock approach, we can address both issues – providing an effective operational method to remove arsenic, and ensuring safe, permanent handling of it through vitrification.

DM: Jean-Philippe, your aim is to make GlassLock and CLEVR standard practice for gold and copper miners dealing with complex ores. What's the next step in achieving that?

JM: Our intention has always been to provide options – to be a tool for the industry, operators, and developers to assess what works best for their projects. We've built strong relationships with miners over the years, and several projects are moving quickly toward commercial adoption. Africa has been a very active market for us, as have smelters in the Asia-Pacific region and the Americas.

CLEVR and GlassLock can work separately or together, depending on the project. For example, CLEVR can solubilize arsenic, which is then precipitated and vitrified using GlassLock. Every project is different, so we remain project-focused. Things are going well, and we continue to encourage the industry to be curious and use us as a tool to see the value these new approaches can bring.

DM: It seems as if you're not just solving an environmental problem – you're unlocking stalled projects. Are you seeing that recognition from investors or developers now?

JM: Yes, indeed. Both of our processes have always focused on providing operational efficiency while solving environmental challenges our industry is facing. We've developed expertise with complex material, which in turn provides solutions for projects that might not proceed due to metallurgical challenges or restrictions. In this sense, we offer a tool and an option for stalled or metallurgically complex projects to move forward.

For some clients, this can provide positive answers, de-risk and comfort investors involved in developing complex ore bodies, and even offer the key and leverage to acquire complex assets at a discounted price due to environmental or metallurgical issues.

DM: How do you see Dundee evolving over the next few years – in terms of scaling up operations, revenue growth, and global reach?

JM: I believe the next few years look very positive for Dundee Sustainable Technologies. We've been developing excellent projects in recent years, with new on-site operations expected in the short term. These will have a direct impact on our growth, revenue, and global positioning.

We remain project-focused, and the outlook is strong. Dundee Sustainable Technologies is well positioned to deliver key solutions and meet the industry's evolving needs.

DM: Jean-Philippe, thanks for your time.

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