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矿业技术信息

Lifting South-East Asia

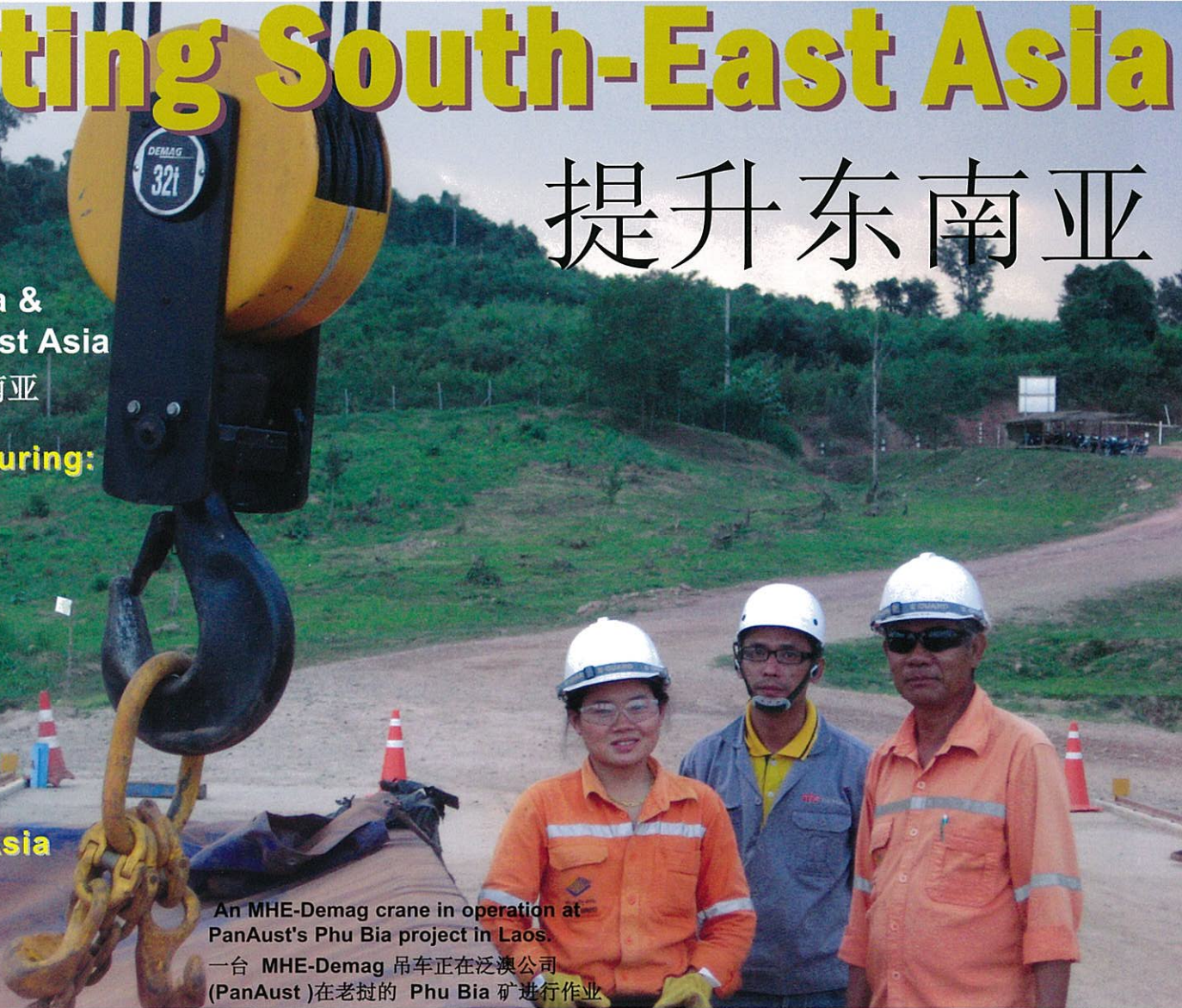
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An MHE-Demag crane in operation at PanAust's Phu Bia project in Laos.
一台 MHE-Demag 吊车正在泛澳公司 (PanAust) 在老挝的 Phu Bia 矿进行作业

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Simple refractory leaching technology

XSTRATA Technology provides a range of technologies that simplify the process of oxidation of refractory sulphide minerals.

They include the IsaMill ultrafine grinding system, a new oxygen gas sparging system, modular slurry leaching and storage tanks, and the Albion Process.

The Albion Process is a robust leaching process used to treat concentrates produced from refractory base and precious metal ores. The process utilizes a simple flowsheet based on hot oxidative leaching of finely ground concentrates at atmospheric pressure, which eliminates the complexity involved with using autoclaves or bacterial cultures. Refractory ore as well as 'dirty' concentrates can be treated enabling high metal recovery at much lower costs.

The process uses Xstrata Technology's IsaMill to grind refractory ore or concentrate to ultrafine sizes to increase the activity of the sulphide concentrates to a point where they can be oxidized readily in conventional open tanks. Oxidation is carried out without need for high pressure, expensive reagents or bacteria, resulting in a simple, robust process offering substantial operating and capital cost savings over bacterial or pressure leaching.

A big advantage is that all byproducts produced in the process can be disposed of as chemically inert residues, ensuring the mine site can be rehabilitated at the end of operations without any risk of leaching of contaminants from tailings.

Two projects using Albion Process are Envirogold's Las Lagunas tailings treatment project in the Dominican Republic and European Goldfields' Certej project in Romania.

The IsaMill technology provides a

Equipment

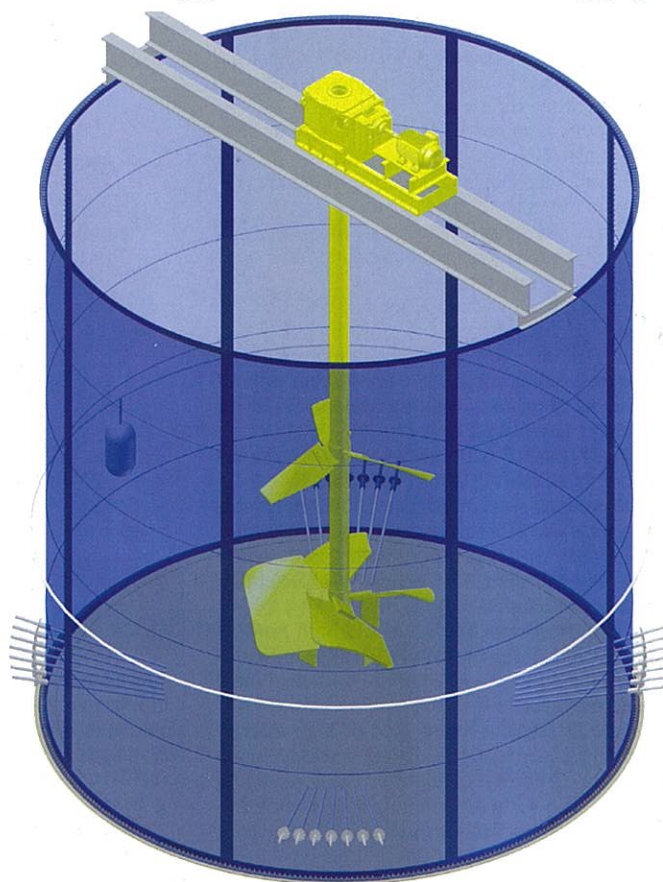
number of advantages. It produces a narrow particle discharge sizing, which reduces wasted energy used in over grinding particles, as well as reducing recovery loss to oversized particles. The high energy efficiency of the process, as well as the inert nature of the ceramic grinding media, ensures maximum metal recovery for lowest energy input.

IsaMilling the feed to the process introduces a high degree of strain into the mineral lattice, which imparts fractures in the grain boundary and lattice defects in the minerals. These lead to mineral 'activation', allowing leaching under less aggressive conditions.

Xstrata Technology has recently developed two new products, each a significant advance over existing technologies. The first is a gas sparger that utilizes a revolutionary design to increase oxygen transfer rates up to five times relative to existing sparging systems. The gas sparger also includes an intrinsically safe design that allows live removal of the spargers for inspection in a safe and reliable manner.

The second is a fully modular slurry tank. Slurry storage and leaching tanks can be provided in modular format with all parts transported to site in shipping containers. The tanks are erected using a revolutionary panel joining system that eliminates site welding. This reduces tank construction times by more than 60% and can reduce tank costs by 35-40%. Tanks sizes range from 20 to 2000 cubic metres.

■ For further information phone +61 7 3833 8500, email xstratatech@xstrata.com.au or visit www.xstratatech.com



ABOVE: Xstrata Technology's Modular Slurry Tank.

LEFT: M10,000 IsaMill providing fine grinding for the Albion Process.

简化了的耐火性矿物浸出技术

瑞士斯特拉塔科技公司提供一系列简化耐火性硫化物矿物氧化工艺流程的技术手段。

其中包括IsaMill超细研磨系统、新型氧气天然气鼓泡系统、模块化矿浆浸出和储存槽罐以及Albion工艺。

Albion工艺是用于处理耐火性基础金属和贵金属矿石所选出的精矿，是一种独具竞争力的浸出工艺。该工艺流程简单，即在常压条件下对极细粒的精矿矿粉进行高温氧化浸出，避免了使用高压釜或生物细菌浸出方法所带来的工艺复杂条件。适用于耐火性矿石以及“较脏”的精矿，金属回收率高，运营成本低。

该工艺首先要采用IsaMill超细研磨技术将耐火性矿石或精矿磨至超细粒，从而将硫化物精矿的活动性增至一定程度，使其能够在常

规的敞口槽罐中被稳定氧化。整个氧化过程不需要高温条件、昂贵的反应试剂或细菌，相对于细菌或加压浸出工艺而言大大降低了运营成本和建设成本。

该技术的另一大优势在于所产生的所有副产品均为不具备化学反应活性的残留物，只需简易处理。从而保证矿山在结束运营后可进行复垦，不会造成尾矿中含有浸出污染物的问题。

目前已采用Albion工艺的有Envirogold公司位于多米尼加共和国的Las Lagunas尾矿处理项目和European Goldfield公司位于罗马尼亚的Certej项目。

IsaMill技术也具有一系列独特优势。如使用该技术排放出的颗粒粒度范围较窄，从而降低了重复研磨带来的不必要能耗，以及避免了大粒径颗粒的回收率损失。该工艺的能源使用效率高，且采用的陶瓷研磨介质具有化学稳定性，保证了金属回收率最大化和能源消耗的最小化。

IsaMill技术的进料采用了攻击晶格的高级别

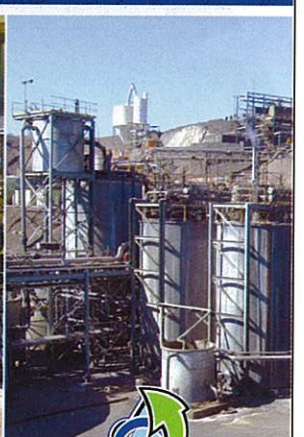
应力，因此导致矿物内部产生晶胞边缘破碎和晶格缺陷。从而矿物被“激活”，使得后续浸出流程所受阻力较小。

斯特拉塔科技公司最新的两项研发成果均大大领先于现有同类技术。其中第一个就是气体分布器，该技术采用创新性设计，将氧气转移率提高到现有同类水平的五倍以上。气鼓泡系统还包括一项内在的安全保护设计，实现了分布器的在线移除待查，性能安全、可靠。

另外一项最新科技成果是完全模块化的矿浆浸出槽罐。矿浆储存和浸出槽罐可以模块化的形式将所有部件用海运集装箱运至现场。槽罐系统的组装采用了创新性的面板咬合设计，不需要在现场进行焊接。这将槽罐项目的建设时间缩短了60%以上，节约费用35-40%。槽罐的容积在20至2000立方米之间。

如需更多信息，请致电 +61 7 3833 8500，或电邮 xstratatech@xstrata.com.au，或访问公司网站 www.xstratatech.com

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