

Use of nitrogen injection in porous plug technology

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Today, with a stringent economic and environmental climate prevailing in the copper business, there is an increased interest in evaluating new processing alternatives for production. Kansanshi Copper Mining in Zambia adopted a method called 'porous plug technology' using nitrogen gas injection.

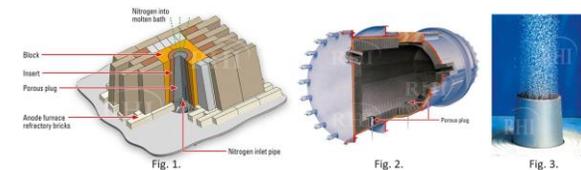
OXYMAT has recently supplied a duplex nitrogen generator to Kansanshi Mining in Zambia. The system includes two independent nitrogen generating systems installed in a 20 feet frame (see image below). The system is built as a plug & play system. With a frame built plug & play system the customer has many benefits, such as easy transportation, lower foot-print and trouble-free installation on-site.



2 x Nitrogen Generator N190, Capacity: 87 Nm³/hour; Purity: 99%; Outlet pressure: 8 bar(g) each.

The nitrogen produced is used for porous plug technology. The use of porous plug technology on anode furnaces is well established, and the technology has been installed in several copper smelters throughout the world.

The technology is based on the controlled injection of inert nitrogen gas into the molten copper through porous refractory plugs located in the bottom and lower regions of the anode furnace. See Figs 1, 2 and 3 below.



Porous plug benefits:

The main potential benefits associated with the use of porous plug technology on anode furnaces in a copper smelter are: a reduction in fossil fuel consumed, improved control of SO₂ in anode furnace stack emissions, reduced refractory attack and increased cycle and annualized capacity due to the elimination of solid accretions inside the furnace. The mentioned benefits are due in large part to the stirring and mixing caused by the introduction of the inert nitrogen gas into the molten copper bath through the porous plugs.

Own on-site nitrogen production saves costs:

More and more mines are investing in nitrogen generators. Reasons being: to cut costs and to become independent from nitrogen supplies. There are several ways to be self-sufficient with nitrogen, however OXYMAT nitrogen generators holds several advantages: the mine is guaranteed a continued nitrogen supply of the exact quality and quantity

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needed.

Furthermore, OXYMAT plants can deliver nitrogen purities from 95% to 99.9999% and can be supplied with options such as multi-flow with two paralleled supplies in two different purities! Our generators are easily installed and will run automatically after installation. The systems are compact with small footprints and low noise levels, which makes it possible to install the units in most factories – there are no reasons to not make this investment!

OXYMAT A/S

OXYMAT has more than 40 years of experience in manufacturing PSA oxygen and nitrogen plants, and is specialized in designing and developing custom built small and large tonnage units. Recently, OXYMAT has invested heavily in robots and CNC technology to make the most automated production facility in the world, producing PSA systems to reduce production costs and to offer customers the best quality systems at very competitive prices. Our investments in R&D has made it possible for us to offer you high end systems with better performance than any other PSA system on the market, which includes significant improvements in kW consumption.

For more information regarding OXYMAT A/S and our solutions for mining, visit www.oxymat.com, e-mail sales@oxymat.com or call at +45 4879 7811, and one of OXYMAT's competent employees can guide you to the right solution for your needs. 