



Activated
Carbon
for Gold
Recovery



Jacobi
THE CARBON COMPANY

The Carbon Company

THE GOLD EXTRACTION industry faces perennial challenges even in times when gold prices are high. Mines must strive to process ore of diminishing quality, yet control operating costs at a level that maximizes the return on investment. The need to maintain environmental responsibility adds to the challenge.

Gold recovery rates, material losses, plant performance issues and disruption in supplies are critical factors. Now, more than ever, selecting a partner with high quality activated carbon is vital to the bottom line of the entire operation. Maximizing efficiency has made high quality activated carbons one of the most valuable products in gold mining today.

JACOBI CARBONS IS the world's largest activated carbon manufacturer for the gold mining industry. Nearly 50% of all Adsorption-Desorption-Recovery (ADR) plants worldwide use our activated carbons – GoldSorb® and PicaGold®.

All our products are made from the highest quality coconut shells with specific properties that respond well to the continuous regeneration in a gold recovery circuit. These materials provide an efficient, cost-effective and environmentally friendly way to reclaim precious metals from both rich and low-grade ores. We continually develop our products with focus on consistent quality and availability, but also provide unrivaled on-site support so that our customers get the most from their recovery circuits.

Our production sites are located on three continents with an extensive range of distribution points and on-site support. This allows us to provide an unparalleled security of supply for mining operations worldwide.

Superior know-how, secure deliveries and on-site support are added values that provide mine operators with effective gold recovery while meeting their fiscal and environmental responsibilities.



Grade	Gold Loading (K-value)	Gold Kinetics (R-value)	Platlet content (%)	Rolling bottle attrition (%)	Particle sizes (mesh)	Mean particle diameter (mm)
GoldSorb® 4500	28kg/tonne	45%	<7	<2.0	8x16 6x12	1.55 2.48
GoldSorb® 5500	28kg/tonne	55%	<7	<2.0	8x16 6x12	1.55 2.48
GoldSorb® 6000	32kg/tonne	65%	<7	<2.0	8x16 6x12	1.55 2.48
PicaGold® G208AS	28kg/tonne	50%	<4	<1.0	8x16 6x12	1.55 2.48
PicaGold® G209AS	28kg/tonne	55%	<4	<1.0	8x16 6x12	1.55 2.48
PicaGold® G210AS	28kg/tonne	60%	<4	<1.0	8x16 6x12	1.55 2.48
PicaGold® G210Ultima	30kg/tonne	60%	<1.5	<0.7	8x16 6x12	1.55 2.48

Properties	GoldSorb® 4500	GoldSorb® 5500	GoldSorb® 6000	PicaGold® G208AS	PicaGold® G210AS	PicaGold® G210Ultima
Initial fill of recovery circuit	✓			✓	✓	✓
Ore has high 'preg-rob' potential			✓		✓	✓
Ore has low 'preg-rob' potential		✓				
Extremely high gold adsorption capacity is required				✓		✓
Ore has extreme hardness and high attrition potential				✓		✓
Ore contains high loading of copper, lead, silver and zinc				✓	✓	✓
An AAC Pump Cell Circuit is in use				✓	✓	✓
Interstage screen type (esp. wedge wire) requires low platelet count				✓		✓
Gold concentration in the head grade slurry is very high (50g Au/l ore)			✓		✓	✓
Gold concentration in the head grade slurry is very low (<1g Au/l ore)				✓		✓

*HIGH ATTRITION IN CIRCUITS CAN BE ATTRIBUTED TO VARIOUS FACTORS INCLUDING SHARP ANGLES AND ROUND EDGES IN PREG. CONTACT WITH PUMP IMPELLERS AND TANK AGITATORS

Resistance to attrition in the adsorption circuit has a direct influence on gold recovery rates. GoldSorb® and PicaGold® feature highly uniform granules that are specifically designed for recovery of precious metals. Our activated carbon products are used extensively in Carbon in Pulp (CIP) and Carbon in Leach (CIL) circuits.

Jacobi Carbons' research and technical staff continue to find more opportunities for mine operators and metallurgists. The adoption of GoldSorb® and PicaGold® is sure to yield benefits for our customers for many years to come. PicaGold® G210Ultima is our most recent development. Its highly refined characteristics will further improve gold recovery yields, enhance elution rates and lower reactivation losses.



We are committed to safeguarding our planet's future and protection of the environment. Jacobi Carbons has invested heavily in the use of renewable raw materials, like coconut shell, to provide sustainable products that can be used in a wide range of applications around the world.

COCONUT SHELL IS plentiful, renewable and sustainable and is the hardest carbonaceous substance available. Jacobi Carbons refined the manufacturing process to make the best use of this highly valuable resource with a negative carbon footprint.

The critical assessment of an activated carbon is how well it maintains its properties after months of use in an ADR plant. Selecting the correct coconut feedstock is key to the manufacture of high quality activated carbon for use in gold circuits. The shells should have a thicker profile and durability that better withstands the carbonization and activation processes. We source only the highest quality, and most durable coconut shells so that our factories can provide a consistent supply of the final product.

The Quality Company

Only the finest quality coconuts can withstand the intense manufacturing process. Selecting the correct feedstock is crucial.



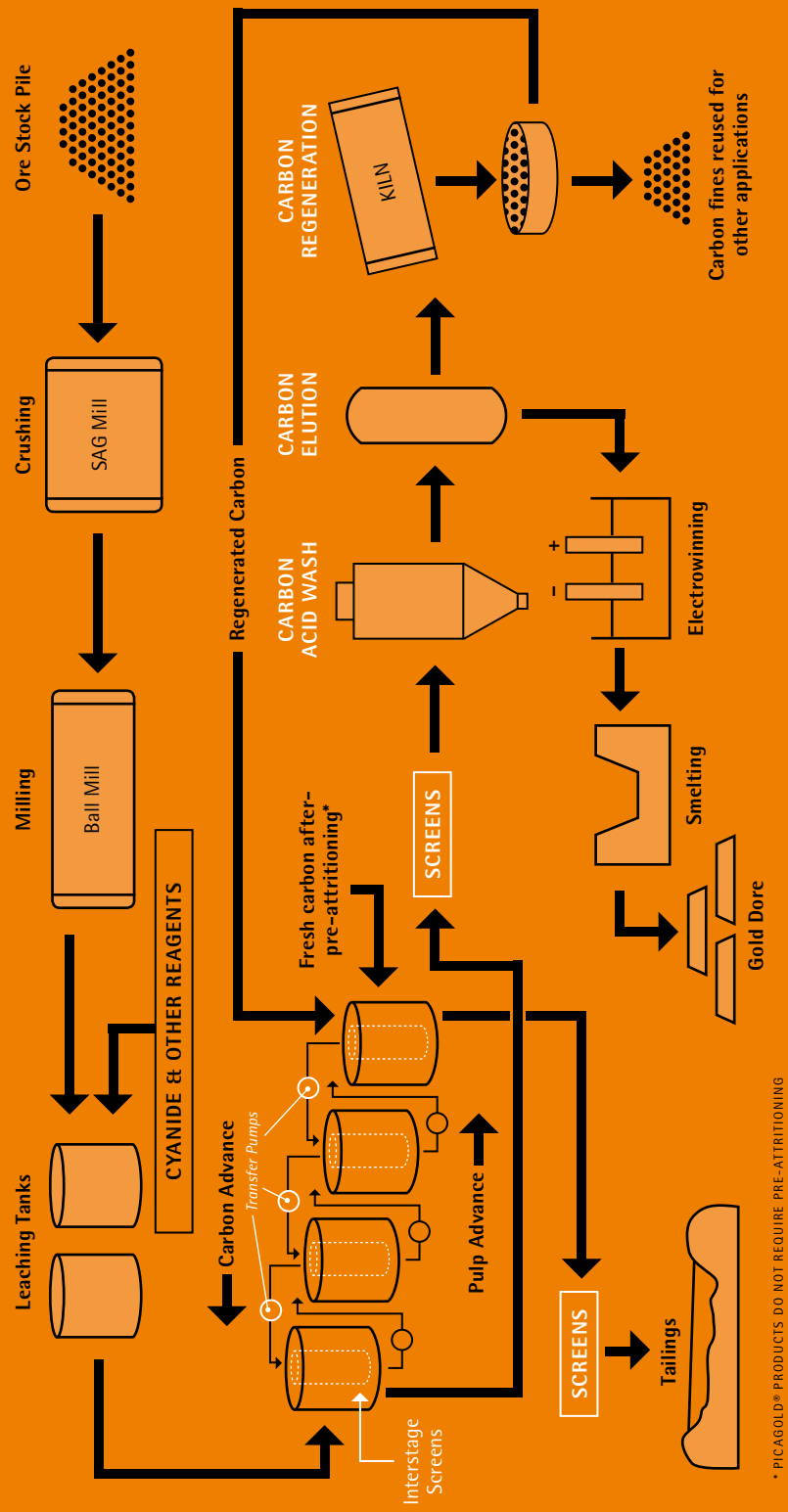
A select few coconuts have the correct profile to withstand the carbonization and activation processes. Coconut shell usage represents a net reduction in atmospheric carbon dioxide (CO₂) levels.



**JACOBI CARBONS
PROCESS FOR GOLD
ORE EXTRACTION AND
REACTIVATION**

After crushing and milling the ore is introduced to mixed cyanide and other reagents. The solids are separated and the pregnant solution is repeatedly contacted with granular activated carbon to strip the gold complex from the liquor. From the contact tanks the loaded activated carbon is transferred to the elution and regeneration phase. The now barren carbon is returned to the contacting phase where any losses are made up with virgin activated carbon. The gold is then recovered by a process known as electrowinning.

Areas highlighted in white are points where poor quality activated carbon may create gold and carbon losses from the circuit.



A team of application experts provide assistance on all aspects of Carbon Management, Circuit Performance and Process Control including on-site visits, recommendations and training.



We continue to identify more opportunities for mine operators and metallurgists showing how our activated carbon products will yield benefits for many years to come.

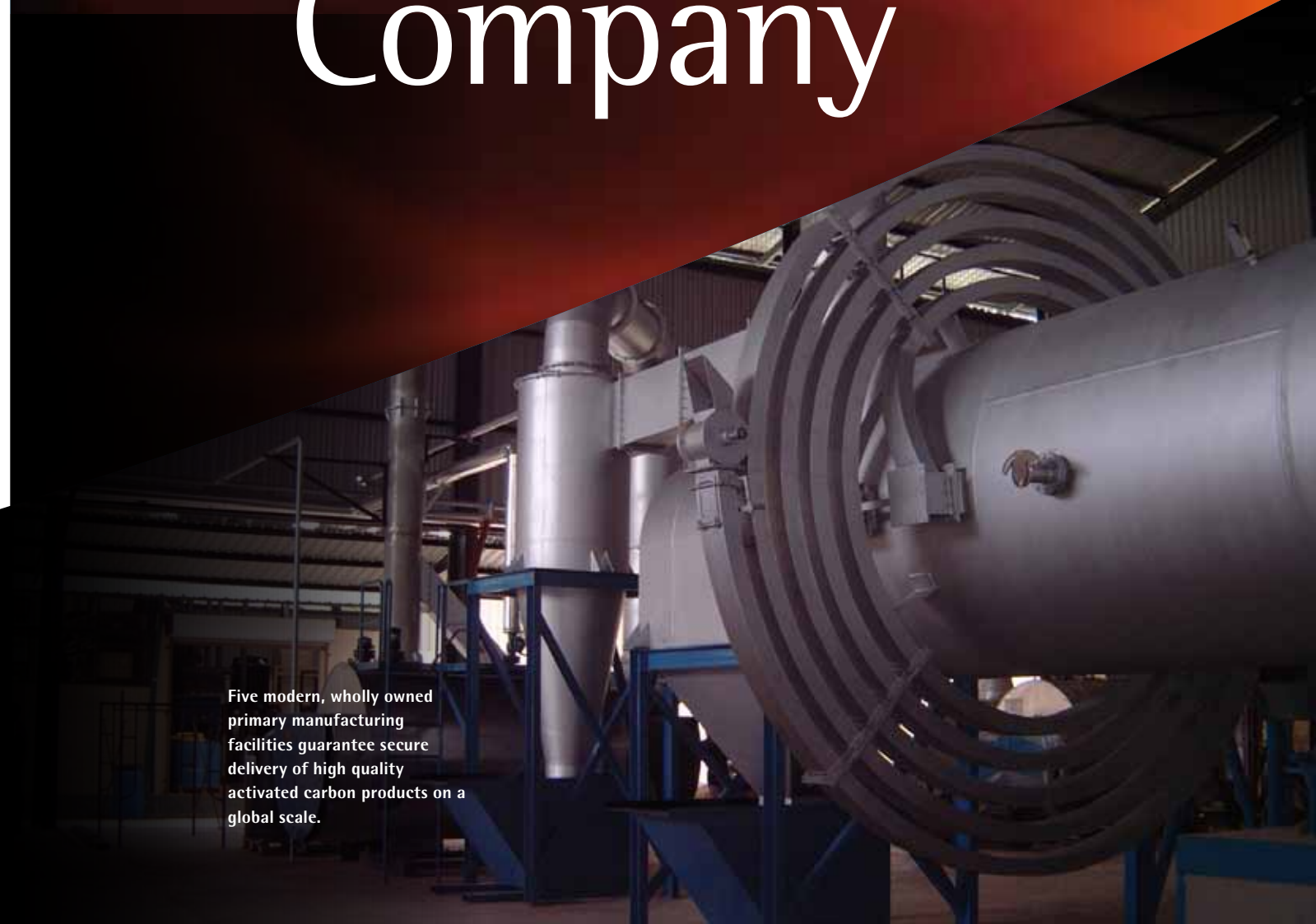
JACOBI CARBONS HAS the most diverse production base in the industry with facilities in over 10 countries around the world. GoldSorb® and PicaGold® products are manufactured in our facilities located in France, Sri Lanka, India, Vietnam and the Philippines. Products are kept in stock in all mining regions at our own warehouses or partner distribution networks. Security of supply for our customers is unrivalled.

It is **important** for us to be more than a supplier of high quality products; we also strive to be the best support partner for our customers. Our in-house research and technical experts have great knowledge of all applicable procedures and provide assistance on Carbon Management, Circuit Performance and Process Control. Detailed reports and recommendations are often followed by on-site visits to assist mine operators and metallurgists. Training and regular technical seminars are held to provide helpful advice regarding good practice in carbon inventory management.

Our Carbon Management Program (CMP) helps customers to understand the behaviour of the adsorbent in the recovery circuit. Activated carbon behaviour is monitored by analyzing the events in key parts of the plant and how they affect circuit performance and ultimately gold recovery levels. Particular focus is placed on operations in leaching tanks, interstage screening, acid washing, elution procedures and the reactivation stages of the process. This gives us a clear view of what is happening in our customer's processing plants and allows us to anticipate and solve issues that may arise – now and in the future.

The Competence Company

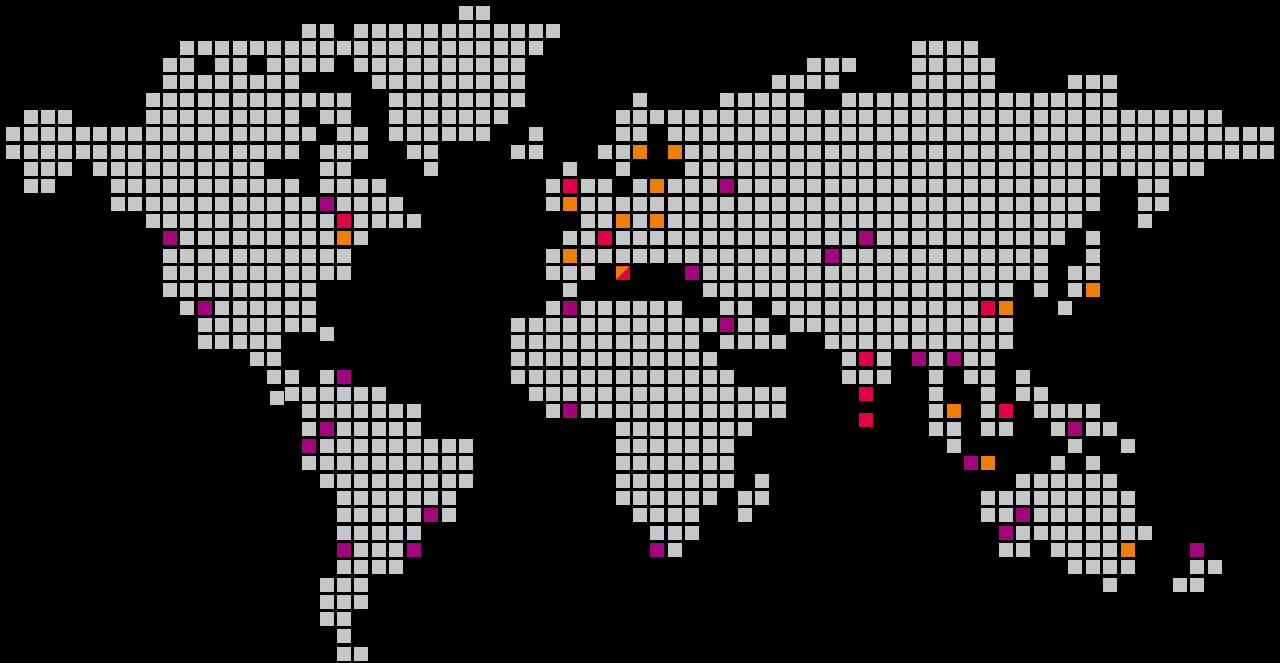
Five modern, wholly owned primary manufacturing facilities guarantee secure delivery of high quality activated carbon products on a global scale.





Jacobi Carbons has developed the most diverse production base in the industry with manufacturing plants, reactivation plants and sales offices located in 19 countries around the world.

The Global Company



MANUFACTURING PLANTS

China
France
Germany
India
Italy
Sri Lanka
The Philippines
United Kingdom
United States
Vietnam

SALES OFFICES

Australia
China
Finland
France
Germany
Italy
Japan
Malaysia
Poland
Singapore
Spain
Sweden
Switzerland
United Kingdom
United States

GOLD PRODUCT DISTRIBUTORS

Algeria
Argentina
Australia
Brazil
Canada
Colombia
Ghana
Chile
Ecuador
Indonesia
Kazakhstan
Mexico
Myanmar
New Zealand
Papua New Guinea
Peru
Saudi Arabia
Russia
South Africa
Turkey
United States
Uzbekistan

PICA
A JACOBI CARBONS
COMPANY

JACOBI CARBONS HEAD OFFICE

Address: Slöjdaregatan 1, SE-393 53 Kalmar, Sweden.
Tel: +46 480 417550 | Fax: +46 480 417559 | E-mail: info@jacobi.net
Web: jacobi.net


Jacobi
THE CARBON COMPANY