

RARE METALS LLC.

Dry Electrostatic Air Separation

Gold & Heavy Mineral Recovery

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Dry Electrostatic Air Separation

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Introduction

Dry Electrostatic Air Separators

The Dry Electrostatic Air Separator (ESAS) has proven to be as efficient as any wet gravity system in regards to the recovery of Gold, other precious metals and heavy minerals. Rare Metals LLC. is currently exploring all potential applications for the unit. The ESAS provides high rates of recovery without the use of water or chemicals, which in turn greatly diminishes exposure to environmental liability. Consistent and reproducible Gold recoveries of 95 % or better on particle sizes down to 75 microns are achievable. The ESAS produces to ratio of concentrations in the area 300 : 1 and can handle materials with moisture contents of up to 10 %. This technology now makes low grade deposits, mine tailings, mine waste material (dumps) more economically viable if water or environment contamination were processing concerns.

Interest generated in the technology has been greatly furthered by Rare Metals LLC's excellent reputation and integrity in mining business. Rare Metals LLC. has invested five yeas of extensive research in hands on application and proper operation of the ESAS system. In 2005 Rare Metals LLC. was invited to prepare an in-depth report (paper) to be presented at the SME (Society of Mining Engineers) conference.

Rare Metals LLC. is currently testing all three models available in the ESAS product line:

S-10 model :

Processes up to 6 tons per hour of bank run material. Can be fed directly from a back hoe for field testing and is trailer mounted.

S-100 T model :

Processes up to 200 tons per hour of bank run material. Production unit design to be placed in conjunction with multiple units using common conveying and screening system.

S-100 C model :

Processes up to 150 tons per hour of bank run material. Production unit complete with screening plant and radial stacking conveyor for tailings

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The following information is a brief recap of *some* testing work conducted by RMC at its test facility utilizing the ESAS recovery system.

Study #1: Gold Placer Ore Arizona

April 2003

Project: RMC Lab # 03-91-1, 03-92-1, 03-93-1

A total of 28.7 tons of Arizona, USA placer was processed using the ESAS system. Moisture content of this placer material averaged 6% to 8 %. The material was passed over an S-10 unit. The 28.7 tons was concentrated down to 1417 lbs. For a ratio of concentration of 40.51 to 1. This material was then reprocessed wet for gold recovery, but in production this material could be re-concentrated dry one (1) more time to produce a higher ratio of concentration. A total of 4.162 grams of gold was recovered for a recovery of .145 grams per ton.

Tailings from the Dry Electrostatic Separation were then passed through a Knelson Wet Gravity Separator. A Total of 74.62 mg of gold was present in the entire 28.7 tons of tails. This calculates to a recovery of **98.23** % by ESAS.

<u>RECAP</u>			
Feed Material	0.148	grams per ton	
Ratio of Concentration	40.51	to 1	
Recovery	98.23%		

Study #2: Gold Placer Ore Urubamba River Peru, South America

April 2003

Project: RMC Lab # 03-127-1

A total of 5 tons of Peruvian placer (surface sample) was processed using the ESAS system. The material was passed over an S-10 unit. The 5 tons was concentrated down to 230 lbs. For a ratio of concentration of 43.48 to 1. This material was then reprocessed wet for gold recovery, but in production this material could be re-concentrated dry one (1) more time to produce a higher ratio of concentration. A total of 29.9 mg of gold was recovered for a recovery of 5.98 mg per ton. A Total of 13.5 mg of gold was present in the entire 5 tons of tails. This calculates to a recovery of **70.3** % by ESAS. It should be noted that this sample was a surface sample which contained very small amounts of micron Gold (less than 150 mesh or smaller). This study does prove that the ESAS is very efficient at recovering micron size Gold Particles.

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Study #3: Drilling Program Placer Ore Rochester District, Nevada USA

September 2003 through January 2004

Project: American Canyon Drill Program – Miranda Mining

A total of 200 Drill Samples from placer material in Northern Nevada were processed over the S-10 concentrator. Each sample represented 1.5 cu. Yards of material or approximately 3500 lbs. On average when free gold was present in the samples recovery for Gold was 95 % or better using the ESAS system. Moisture content of this placer material averaged 5% to 9 %. This study was showed that when the S-10 unit is used on a constant daily basis, it can provide extremely consistent recoveries.

Study #4: South American Placer

1000 pounds of dry placer material as passed over ESAS with gold recovery at 95.001 %.

Study #5: Arizona Silver / Gold Cyanide Mill Tailings

Tailings were being processed on site by ESAS. Material was very fine (40% -200 mesh) and virtually no oversize was present, material was being fed at a rate of 1 ton per hour due to fine grind of feed ore. Recovery was 43.21% for gold and 94.74% or the silver.

Study #6: Arizona Gold / Copper Hard Rock Ore

Coarsely ground -20 mesh hard rock ore was fed over ESAS at a rate of 1.5 tons per hour. The liberated free gold present in the ore was 85% minus (-200 mesh). The Dry ESAS recovered 50.38% of the “free” liberated gold present in the coarse ground ore.