Recuperación de Oro
Recuperçcão de Ouro
Récupération de l'or
Добыча золота

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Patents Pending

iCON Gold Recovery is proud to present the

IGR 10K Alluvial Plant

100 Tons Per Hour

Specifically designed for Fine Gold with/without Clay

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As alluvial and eluvial deposits vary greatly in feed size distribution and clay content, an alluvial/eluvial plant needs the capacity to process an extreme range of conditions. It is common in the equatorial regions of the world to feed a plant with a dredge and/or an excavator. This plant can handle the range of material and various feed options.

The IGR 10K A-La-Carte plant will have the versatility to process a broad spectrum of conditions from clean gravel to laterite and saprolite clays. Alluvial Channel/Gravel conditions may involve 20% to 90% of the solids feed passing 2mm- and continuing to the concentrators. Clays may have 90% passing 2mm- and continuing to the concentrators. This plant will work in conditions of both gravel and clay. Plant throughput and efficiency will vary with the condition of the material.

The A-La-Carte structure of the plant will allow the client to purchase only the components they need. The modular design will allow the purchaser or operator to add or remove components without obsoleting that which they already have and without requiring engineering design.

An operator may choose to start with or without the scrubber. This decision will be made based on knowledge of the clay content and capital investment. As the user gains experience they may choose to add the scrubber or remove it from their system; this is 'A-La-Carte' – the client can add or subtract components at will without re-design. Additionally, the user may desire to add options such as DMS or Jigs for diamonds and/or cyclones for dewatering/de-sliming.

The plant can be fed by excavator/loader or land dredge. Our plant including the scrubber is ideal to be fed by a loader/excavator. When feeding by a land dredge the user may opt to leave the scrubber out of the system. The land dredge will do a decent job of dispersing the clay – though not perfect. The land dredge also delivers slurry at maybe 15% solids by weight. This is considered very thin slurry for efficient scrubbing. Operators in some regions insist on scrubbing the dredge discharge. Field testing will provide the best information on your material.

Sepro/IGR always recommend sample testing. Met-Solv Labs offers a specific lab test for laterite and saprolite clays – We will write a performance guarantee for our equipment based on lab testing. This analysis will determine the ideal plant for your regional material.

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IGR 10K Alluvial Gold Plant Description

The IGR 10K is an 'A-La-Carte' plant. This means that the user can order components from a list of existing part numbers without paying for engineering designs. The user can select options at the time of purchase or add components in the field without obsoleting the components they may already have.

Features include:

- Hopper/Monitor/Grizzly
- Scrubber
- Vibrating Screen
- Dewatering Cyclone
- iCON Concentrator Battery – ideally suited for remote regions
- Falcon Concentrator
- Oversize Conveyor
- DMS or Jigs for Diamonds
- Magnetic Separator
- Finishing Table

An alluvial plant controls the amount of water entering the system: the solids vary in tons per hour and gravel size distribution.

Feeding the Grizzly

This plant can be fed by dredge pump or Loader/Excavator

An operator will feed material onto the grizzly. A water monitor fluidizes/mobilizes the material allowing it to pass through the grizzly where it continues to either a scrubber or vibrating screen. It is the fluidizing action of the monitor that controls the feed rate of solids into the system. Clean gravels will mobilize easily with the monitor and provide the maximum flow rate of solids. Clay will require more water to mobilize the material allowing it to pass through the grizzly. A wider grizzly allows larger clay balls to pass. This keeps the solids to water ratio high which leads to maximum efficiency in the scrubber and maximum solids throughput of the plant.

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Sepro Scrubber

The scrubber works best at 50% solids. A scrubber uses large rock as the 'grinding' media. A scrubber will lift the solids to 1 o'clock and drop the solids back to 7 o'clock causing an energy intensive lifting and dropping action. It is the attrition of the rock on rock action that acts to disperse the clay. Clay processing is based on energy input and 'retention time' inside of the scrubber. To scrub better, the operator can increase the retention time or literally add large rocks to the scrubber.

Sepro-Sizetec Screen

After the scrubber the material passes to a double deck vibrating screen. Typically the upper deck cuts at 12mm and the lower deck cuts at 2mm. These can be specified by the customer. The 2mm- passes to a slurry transfer pump and on to the concentrators. The 2 to 12 mm middling is recombined with 12mm oversize and pass to the oversize stacking conveyor.

Oversize Conveyor

1 standard conveyor is provided with each plant. The discharge of the conveyor can be considered tails or can be further treated: generally using a DMS or Jig for diamonds.

Concentrator Battery

Each 7x i350 Battery is designed for a nominal 60 tph of solids at -2mm. 180 m^3 of total slurry is distributed to 6 active concentrators. There is always 1 concentrator rinsing.

A max of 90 tph of solids can be fed to each battery without harm to the system. A minimum of 6 tph of solids is recommended to each battery. The intent is to always use 6 concentrators regardless of the feed rate. The slurry water capacity of 700 gpm +/-10% is intended to remain constant regardless of the solids feed rated. No control system is required for the slurry water.

A Carousel Distributor is used to distribute the slurry from the head tank to the 6 active concentrators. The distributor also blocks the flow to the 7th concentrator allowing the operator to rinse the rich concentrate. An operator will manually rotate the distributor and operate the valves on each concentrator.

Tails are piped to a common tails launder and with an 8" flanged outlet. The launder is designed for gravity discharge. (Pumping the tails requires modification to the depth of the launder to avoid cavitation.)

The rich concentrate flows by gravity to a single iPump used to transport this slurry to your cleanup facility.

All equipment is mounted on a single skid designed to fit in a 20' container. The skid includes a roof structure with corrugate roofing. The container will arrive with the majority of the assembly already complete. Some site assembly will be required. This includes erection of the portions too tall to fit in the container and installation of the roof panels.

Options

The screen fractions can be processed separately if the customer desires. This would require an additional conveyor. Also, one may choose alternate screen apertures: a top deck at 30mm where the 2mm to 30mm fraction is passed to a DMS or jig for diamonds is an option. In this case only the 30mm+ would pass to the tails conveyor.

The customer may choose a dewatering cyclone. This would remove excess water and clay/slimes just before the concentrators.

Overall highlights

- Can be fed by dredge pump or Loader/Excavator
- The plant is based on the world famous iCON i350 Concentrator and Sepro's industry leading Tyre Driven Scrubbers.
- The plant is designed to be easily shippable and fits into standard 20' shipping containers which fit on the Bedford trucks of Guyana.
- No Break-Bulk shipping is required. Over-Size or Break-Bulk is not possible into the remote regions like Guyana.
- The plant is designed for the bush for minimum maintenance with no computerized controls. It is intended to be serviced with hand tools available on site. Remote plants are generally operated by uneducated persons meaning that the functions must be simple and forgiving.
- The manual Carousel Slurry Distributor is extremely simple and requires no pinch valves or compressed air.

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- The multi iCON array eliminates the need to ‘by-pass’ to a complex sump/slurry pump system.
- This is generally a gravity flow process with no need for excess slurry pumps and associated controls. (Only the 2mm- slurry will get pumped)
- Plumbing is provided to distribute feed slurry and process water to all plant equipment.
- Piping on the plant for the clean process water is provided including a distribution manifold and connection to each iCON.
- Electrical controls: All electrical distribution and controls are included. This system distributes electricity from a single source to the Scrubber, Concentrators, iPump, Process water pump, Screen and Conveyor. VFDs (Variable Frequency Drives) are included for all iCON equipment. Socket/Plugs are provided at the panels as a means to disconnect each item.