Genotech Inc. USA

Total Water Management

www.AmsolvUSA.com

Supply industrial water, wastewater, and enzyme products

WASTEWATER SOLUTION
廢水解決方案

Application: Reduce the amount of sludge sedimentation, and reduce the cost of sludge treatment for those accumulated sludge in pulp and paper wastewater lagoon.

運用： 減少在紙漿和造紙廢水瀉湖內那些積累污泥沉積的量、並降低處理污泥的成本、

W-ZYM
Master Water Treatment Enzyme

BioRod 1000/ EW1000

13.5 cm long and 4 cm in diameter Rod

BioRod1000 offer a new way to minimize settled sludge volume and reduce solids handling costs in pulp and paper wastewater lagoons. BioRod1000 are made via a process that creates a dense spike that rapidly sinks to the bottom of a lagoon, even when applied at the water's surface. This makes dosing easy and ensures contact between the microorganisms and the sludge. It is also easily applied to problem build-up areas to eliminate short-circuiting.

BioRod1000 提供了一种新的方式，在制漿造紙廢水的瀉湖減少沉淀的污泥量，減少固體污泥處理的成本。BioRod1000 創建一個密集的工藝污泥處理的尖端制成，即使在水的表面上、也可迅速將那些生化污泥下沉到瀉湖的底部。BioRod1000 可确保微生物和污泥之間的接触。此 BioRod1000 也可非常方便地應用到那些累積大量污泥的問題區域，以消除水流的流動。

BioRod1000: Reduce dredging costs and improve system efficiency in wastewater lagoons.
BioRod1000：降低疏浚成本，提高废水的泻湖系统的效率。

BioRod1000 sink to the bottom of the lagoon and release billions of microorganisms, powerful enzymes, and essential micronutrients directly into the sludge layer. This combination ensures rapid stimulation of biological activity and reduction of the sludge layer. This reduces the dredging frequency, increases hydraulic retention time, and improves overall lagoon performance.
BioRod1000 可沉到瀉湖的底部並釋放出數十億微生物，此強大的脢，及必需的微量營養素將會直接進入污泥層。這樣的組合保證了生物活性並能減少污泥層快速的變化。如此減少了疏浚的頻率，並可增加水力停留時間，并提高了整體瀉湖性能。

Benefits　優點

Lagoons offer an economical way to treat the high cost of wastewater flows which generated from pulp and paper mills. Despite effective treatment, solids accumulate at the bottom of the lagoons, resulting in short-circuiting,

reduced hydraulic retention time, and ultimately poor treatment. The most common way to alleviate this problem is through costly dredging.
潟湖提供了一種非常具有效的經濟方法、來處理那些從製漿液體所產生的廢水、及需求高成本的方法、儘管有效的處理方法得宜，污泥固體將會分別積聚在潟湖的底部，造成水流的流動，減少水流動的停留時間，因而導致處理效果效果較差。通常解決這個問題、最常見的方式是使用昂貴的疏浚法。

BioRod1000 offer a biological alternative to dredging. The combination of beneficial microorganisms, enzymes, and essential nutrients stimulates biological activity in the sludge and provides a cost- effective way of reducing sludge volume and improving treatment. The dense BioRod1000 are applied at the water surface and sink directly into the settled sludge layer. They are easily applied over a broad area and to target hot spots where sludge has accumulated.
BioRod1000 提供了一個生物替代疏浚方法。結合有益微生物、腌和必需的營養素可促進污泥生物活性，並提供一個具有較低成本且能減少污泥體積量的辦法，同時也可提高污泥處理的有效途徑。此具有高密度的 BioRod1000 可丟入污水表面、進而直接沉入到那些沉澱的污泥層。投入此 BioRod1000 可很容易應用在一個廣泛的區域，針對欲投入積累的污泥熱點，也非常容易.

The microorganisms and nutrients in BioRod1000 stimulate biological activity in the sludge layer, allowing floc particles to become larger and more dense. Denser floc particles contain less water and lead to greater compaction. The enzymes in BioRod1000 help to degrade substances that hold decaying biomass together at the lagoon bottom. Benefcial microorganisms further complete the degradation of decaying biomass and result in a lower and more compact sludge layer.

在 BioRod1000 內的微生物和養分可刺激在污泥層的生物活性，允許絮凝物顆粒變得更大和更密集。密集的絮狀顆粒含有較少的水而導致更大的壓實。在 BioRod1000 的腌有助於降低持腐爛的生物物質聚集在一起沉澱在潟湖底部。有益微生物可進一步完成生物質的降解及腐爛，從而導致污泥固體沉澱較低和形成更緊湊的污泥層。

Performance 性能

BioRod1000 have proven effective at reducing the sludge volume in pulp and paper mill wastewater lagoons. Individual results vary according to the sludge makeup and the initial volume.
Figure 1 shows results from three treatment areas in a pulp and paper application. After 60 days, sludge levels in the treated areas dropped 0.56 m (1.8 ft) lower than untreated control areas. This increased treatment capacity by 81% in the treated areas. If these results were extrapolated over the entire 58-acre lagoon, BioRod1000 would provide an additional 34 million gallons of treatment capacity

and over 31 hours of hydraulic retention time.

BioRod1000 的功效已完全被證明能有效降低紙漿和造紙廠廢水塘內的污泥體積。根據污泥的體積變化和初始體積間發生的變化、個別實驗可證明其結果。

圖 1 表示在一個造紙紙漿廠內污泥處理的三個區域實驗的結果。 60 天后，對比未經處理的區域部位的污泥水平已下降了 0.56 米（1.8 英尺）。這種污泥處理的方法可增加水污泥處理能力提高 81%。依這些結果推斷、整個 58 英畝的潟湖，BioRod1000 的效益可另外增加 34 萬加侖的處理能力和增加 31 小時的水力流動停留的時間。

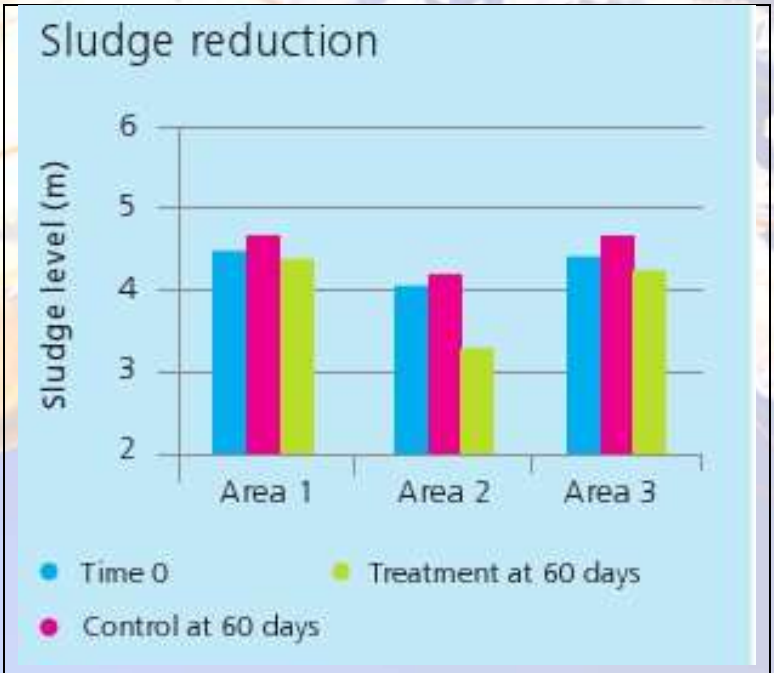

Fig. 1. The application of BioRod 1000 ® reduces the sludge level by an average of 0.56 m (1.8 ft) compared to controls.

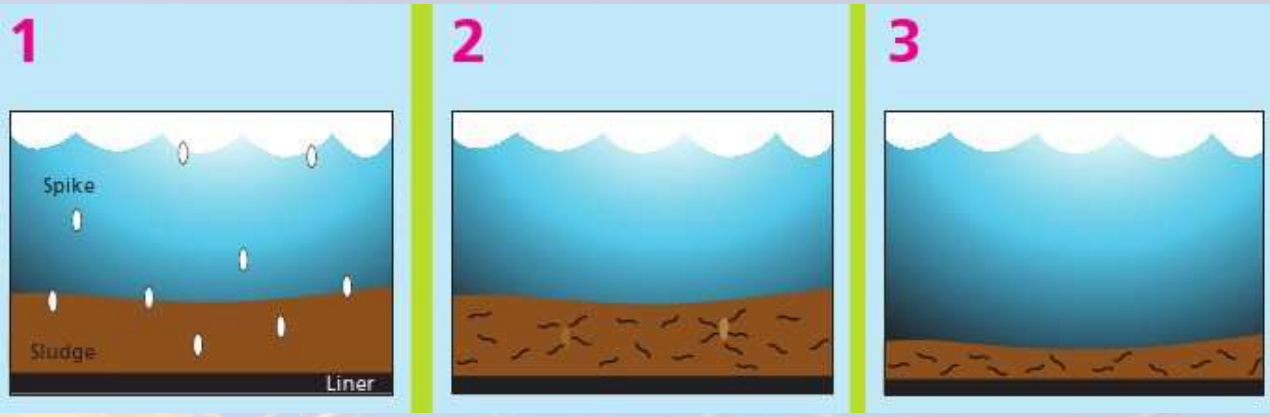

Fig 2.
Picture 1. BioRod1000 are dropped at the water's surface and sink directly into the sludge layer.
Picture 2. Microorganisms permeate through the sludge layer.
Picture 3. Microorganisms, enzymes, and nutrients stimulate biological activity and reduce the sludge layer.
圖 1。 BioRod1000 被丟棄在水的表面，並直接沉入污泥層。
圖 2。微生物滲透穿過污泥層。
圖 3。微生物，胰，以及營養素刺激的生物活性和減少污泥層。

BioRod1000 sink to the bottom of the lagoon and release billions of microorganisms, powerful enzymes, and essential micronutrients directly into the sludge layer. This combination ensures rapid stimulation of biological activity and reduction of the sludge layer. This reduces the dredging frequency, increases hydraulic retention time, and improves overall lagoon performance.
BioRod1000 沉到瀉湖的底部、並可釋放數十億微生物，強大的胰，以及必需的微量營養素後直接進入污泥層。這樣的組合保證了生物活性和減少污泥層的厚度。這結果可減少疏浚的頻率，併增加水流停留的時間，並提高了整體瀉湖的性能。

Figures 3 and 4 show difference in floc size and density in sludge samples taken from treated and untreated areas. Floc particles appear larger and denser, which suggests that the sludge compacts more readily. These changes occurred in parallel with a reduction in the sludge layer depth.
圖 3 和圖 4 示出了絮泥狀顆粒大小和密度的差異，污泥樣品取自處理和**未經處理的區域。出現的絮狀顆粒更大**，**更密集**，**這表明**污泥壓縮也**更容易。這些變化發生在平行的**污泥層深度內逐漸**減少**。

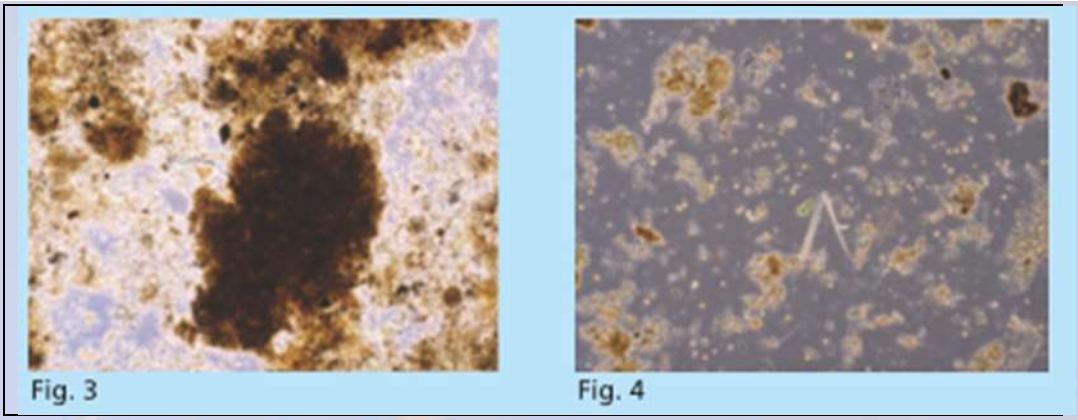
Fig. 3 Fig. 4

Figures 3 & 4. Floc particles from treated areas (Fig. 3) are much larger and denser than foc particles from untreated areas (Fig. 4).
圖 3 和圖 4 的絮凝物顆粒從處理後的區域（圖 3）是更大的形狀，及較告的密度相對于那些未經處理的區域（圖 4）的絮凝物顆粒。

Figure 5 shows the difference in color between treated and untreated sludge samples. Increased biological activity results in a further oxidized and darker sludge.
圖 5 顯示了在處理和未經處理的污泥樣品之間的顏色差異。較暗的部份為進一步氧化的污泥生物、此為 活性增加的結果。

Fig. 5. Treated settled sludge samples from the bottom of a lagoon appear darker than untreated settled sludge and mixed liquor suspended solids (MLSS).
圖 5。從潟湖底部出現的沉澱污泥樣品比未處理的沉澱污泥和混合液懸浮固體（MLSS)暗。

The dark color of the treated settled sludge sample (left) shows that it is further oxidized, which is an indication of increased biological activity compared to untreated areas (center). A drop of the MLSS (right) is shown for comparison purposes.

顏色較深（左）的污泥、已被證實它已被進一步氧化的跡象、這是一個比未經處理區**域（中心）**污泥有**較高的活性**、

Recommended use **推薦使用**

BioRod1000 applied over a broad area reduce the overall sludge layer in a lagoon. BioRod1000 applied at a higher dosage in problem areas or hot spots yield greater sludge reduction. The dense BioRod1000 sink to the bottom of the lagoon and are easily applied at the lagoon surface from a boat. PVC piping can be used to position BioRod1000 in hot spot areas where accuracy is critical.
BioRod1000 可應用在廣泛的領域區內並減少瀉湖整體淤泥層。 BioRod1000 劑量添加在問題領域區或熱點地區、將會帶來更大的污泥減量。從一個船瀉湖表面上、很容易將高密度的 BioRod1000 沉到瀉湖的底部。PVC 管子可被用來定位那些熱點區域添加 BioRod1000、對 BioRod1000 而言、此定位的準確性是非常重要。

Sludge quality varies with system design, sludge age, amount and type of inert material, and compaction. This affects the degree to which the sludge depth can be impacted, dosing, and dosing frequency.
污泥的質量與系統的設計，泥齡，數量和污泥材料的的惰性類型，及污泥壓實的質量而有不同的情況。這將會影響污泥深度、此類的影響，會受到劑量和添加的頻率影響。

For applications over broad areas, an initial dosage is recommended to reduce the existing sludge volume. Follow-up applications at reduced dosages are recommended every 30–90 days, depending on the sludge accumulation rate and compactability. Hot spot dosing is recommended for areas where sludge has a tendency to accumulate at an accelerated rate and lagoon effciency is impacted. In pulp and paper mill lagoons, results may vary depending on the concentration of inert solids found in the sludge.
對於添加在廣泛領域區域內、初始劑量考量是以減少現有的污泥量為目標。後續較低的劑量應用，建議每隔 30-90 天之間添加、添加的情況，取決於污泥積累率和緻密性。熱點劑量的添加、取決區域內污泥累積的傾向，如累積污泥快速度的成長、將會影響瀉湖達到高效率處理的結果。 在紙漿和造紙廠瀉湖內污泥濁水，結果可能會因污泥內惰性固體中所發現的濃度而有不同的變化。

Product characteristics

Each BioSpike is 13.5 cm long and 4 cm in diameter (5.3 in x 1.6 in) and weighs approximately 150 g

(5 oz).

Product characteristics **產品特點**

Each “BioRod 1000” is 13.5 cm long and 4 cm in diameter (5.3 in x 1.6 in) and weighs approximately 150 g (5 oz).

每個“BioRod1000”是 13.5 厘米長，直徑 4 厘米（5.3 x1.6 英寸），重量約 150g（5 盎司）。

Safety and handling 安全性與處理：

Store in a cool, dry place at 10 –35 ºC (50–95 ºF). Avoid inhalation of dust. Wash hands thoroughly with soap and water after handling. Avoid contact with eyes.

儲存在陰涼，乾燥的地方，在 10-35C（50-95F）。避免吸入粉塵。處理後，用肥皂和水徹底洗淨雙手。避免接觸眼睛。