



Purification of IMOG leachate by **Molecular Unique Separation Technology**

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Purification of leachate by MUST



Picture 1: IMOG landfill in Harelbeke, Belgium is a dumping site, mostly for construction waste. COD value of leachate waste water is ca 800 mg/l and it contains many harmful inorganic and salty chemicals. Chemical Biological Treatment of leachate has not been feasible. The permit limit of COD to the recipient river is 200 mg/l.

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Picture 2: 6000 liters of leachate water from IMOG was brought to the pilot site of MUST for optimizing the purification and reduction of COD -value to less than 200 mg/l.

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Picture 3: One of the 3 cascaded electro-chemical cells used in the MUST Pilot.

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Picture 4: The stable floc with impurities is distinctly floating on the surface of the purified water as seen in the see through glass when the preliminary test with the first cascaded cell was completed.

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Picture 5: The floc, which is floating on the purified water in the basket, was settling from the leachate after it was pumped through the first cascaded cell and was collected from the see through glass, in the preliminary test, before introducing the flocculating mixture into the floc separation tower.

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Picture 6: The floc separation tower extends above the MUST cell. The dewatering floc will glide down along the vertical dropping tube in the upper center of the picture. The purified water will be collected from the bottom of the tower in the bottom right corner of the picture.

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Picture 7: The Purified Water starts to separate from gas containing solid floc in the expansion part of the tower, when leachate leaves the MUST cell and enters into the floc separation tower .

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Picture 8: The foamy, white colored floc is dewatered when it rises up to the top of the tower. From the open top of the tower the floc will enter into the dropping tube without mechanical devices. The purified water flows downwards from the sharp “rack level” in the expansion part of the tower.

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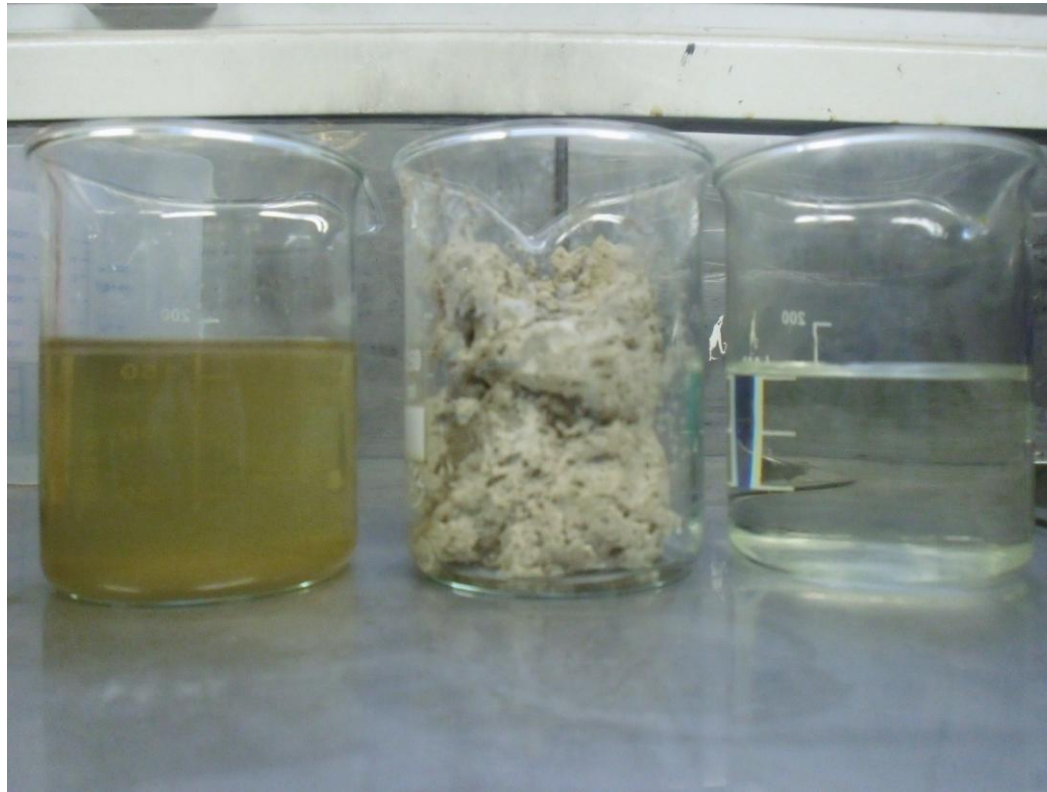
Picture 9: Video clip: Pollutants in the floc are continuously removed upwards from the purified water, which flows downwards. Floc glides along the dropping pipe into a decanter for dewatering.

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Picture 10: Video clip: The separated floc from the tower drops to the decanter for further dewatering where it will dry by itself up to the dry matter of 90 % .

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Picture 11: From left to right: 99 % of COD of ca 800 mg/l in the yellowish leachate is removed into the light, solid floc in the middle, leaving COD of 25 mg/l into the clear purified water on the right. The COD is well below the permit limit through the cascaded aluminum- iron- aluminum cell with power of ca 5 kWh/m³ of leachate.