|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Company | **m3 / hour water flow** | **Selected Treatment Type** | **Chemicals / Materials** | **Cost in €-cents per m3** | Total Cost |
| Kloosterboer | 4.06m3 / hour | Aluminium Precipitation | Ratio of Alum to P is 1:2  667g/mol Alum : 62 g/mol P  Water = 6g/m3  Alum = 64.55g/m3  Add a dosing factor of 1.5  = 96.82g/m3 Alum  = 9.43kg/day Alum | $450 per tonne  =  $450 per 1,000kg  =  €404 per 1,000kg  =  €0.40 per kg | 96.82g Alum per m3  =  €0.04 / m3  =  €1,461.60 per year |
| 2-stage filtration process | 2 deep bed upflow continuous backwash filters in series with larger sand particles first followed by finer sand particles second | 0.3 € / m3 | €0.30 / m3  =  € 10,669.68 / year |
|  |  |  |  |  |  |
| **CSM** | 6.9m3 / hour | MBR System | Including anoxic, anaerobic and aerobic chambers | 0.08€ / m3 for 620m3/hr (this small scale will be much more expensive and we have taken a factor of 3 as an estimation) | €0.24 / m3  =  €14,506.56 / year |
|  |  |  |  |  |  |
| **Coroos** | 74.7m3 / hour | Aluminium Precipitation | Ratio of Alum to P is 1:2  667g/mol Alum : 62 g/mol P  Water = 1.11g/m3  Alum = 11.93g/m3  Add a dosing factor of 1.5  = 17.9g/m3 Alum  = 32 kg / day Alum | $450 per tonne  =  $450 per 1,000kg  =  €404 per 1,000kg  =  €0.40 per kg | 17.9g Alum per m3  =  €0.04 / m3  =  €468,530.35 per year |
| Rapid gravity sand filter | Coarse sand and granular media | 0.15 € / m3 | € 0.15 / m3  =  € 98,155.80 / year |
|  |  |  |  |  |  |
| **Lamb Weston Meijer** | 182m3 / hour | Ultrafiltration |  | 0.35 € / m3 | €0.35 / m3  =  €558,012 / year |
| Reverse Osmosis |  | 0.55 € / m3 | €0.55 / m3  =  €876,876 / year |

Calculating sludge production from Aluminium Precipitation:



All above are expressed in mg/l so the end value is in mg dry solids / l

**Kloosterboer example:**

Pin = 6.04

Pout = 0.91 (after 85% removal rate)

Al added = 4.66x10-8

SSin = 1

SSout = 0.15 (after 85% removal rate)

Answer = 36.4 mg dry solids per litre

**Coroos example:**

Pin = 1.11

Pout = 0.17 (after 85% removal rate)

Al added = 4.66x10-8

SSin = 19.9

SSout = 2.9

Answer = 40.94