



Haigh Equipment Concept

**Haigh concept is from Screen
to Landfill, and for the
Whole Life Cost's of the
equipment's working Life
Cycle.**

A key feature of the Lisep Package is Volume Reduction and this comes from washing the organics out of screenings.

Maceration is widely recognised to provide cleaner screenings, but maceration alone doesn't separate the faecal organics reliably

Liseps provide the separating force to scrub the Faecal organics out of the rag and paper to give clean, low odour screenings



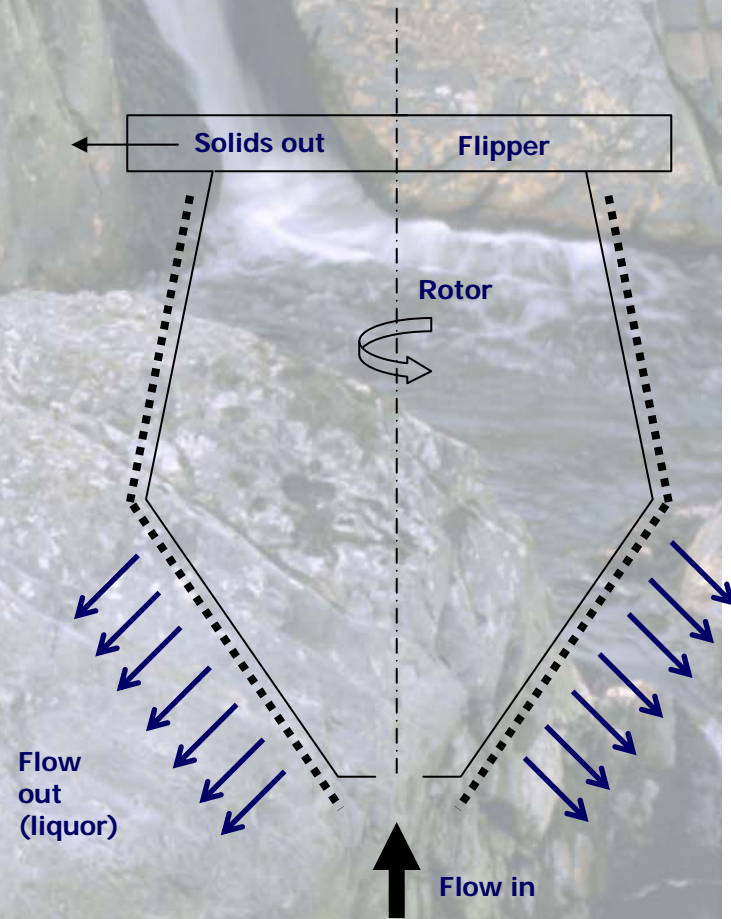
Screenings Dewatering & Compaction

Liseps comprise of two conical screens, within which a rotor operates.

LIKE A SPIN DRIER - FLUID EJECTED

SOLIDS RETAINED

LIPACTOR - SIMPLE COMPACTION



The Lisep is a unique piece of technology

Whole Life Costs

Traditional models for 'Whole Life' costs tend to focus on

- Capital Cost of Plant
- Power Consumption
- Wash Water Consumption
- Spares Costs and Utilization Rates
- Maintenance Man-hours

Apart from sludge's, Sewage Screenings are the other mass byproduct of sewage treatment.

Screenings disposal is the largest on-going cost of the screenings removal process

The key measure of performance is screenings volume and mass reduction.





Why does lower volume and mass reduction matter?

Lower Volume and Mass comes from Cleaner screenings, which means;

- **Less and easier disposal to landfill - in absolute terms, less water and organics goes to landfill.**
- **Landfill is costly therefore installing the correct screenings handling plant can save waste water treatment plants vast sums of money over the life of the plant.**
- **Reduced environmental impact from screenings - less obnoxious landfill sites.**
- **Significantly fewer truck movements through sensitive residential areas - better community relations.**
- **In processes with downstream biological treatment maximum washing means maximum organics return and hence better biological filtration.**



Screenings Removal and Disposal Costs

Ordinary compactors reduce the volume of wet screenings by 70%, so 30% of the volume gets skipped



Washing compactors reduce the volume of wet screenings by 80%, so 20% of the volume gets skipped



Liseps reduce the volume of wet screenings by over 90%, so less than 10% of the volume gets skipped



Lipactors reduce the volume of wet screenings by up to 94%, so around 6% of the volume gets skipped



For the same screenings input, Liseps/Lipactors will massively reduce the skipped quantity and hence the disposal costs associated with admin, transport, landfill or incineration

Example

In 2004, Haigh delivered screenings handling plant to a retrofit installation in Sydney NSW.

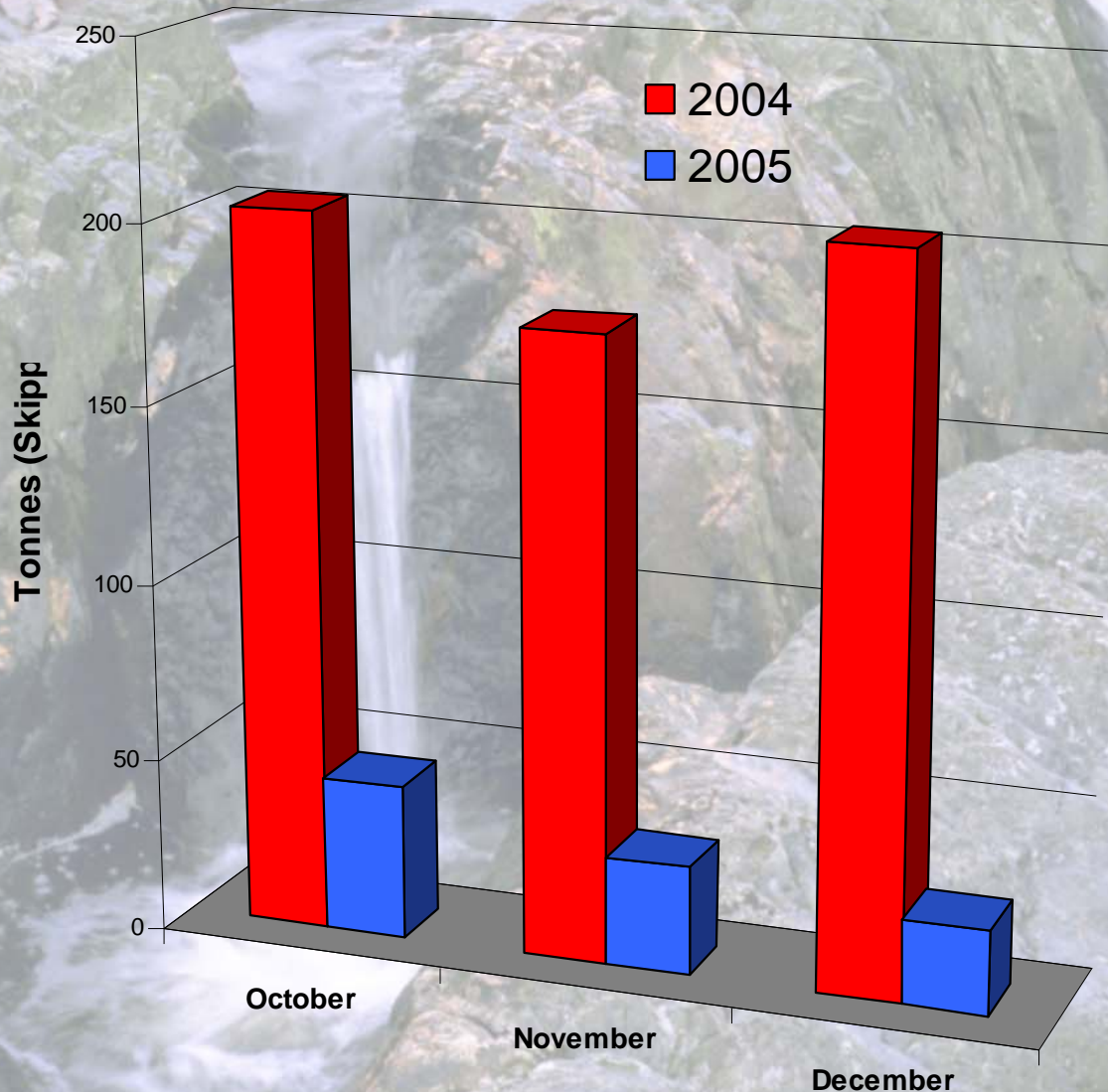
The installation served a p.e of 500,000

The plant replaced existing screenings handling plant comprising of grinders and washing compactor.

The inlet screens were simultaneously upgraded to increase capture rates

Data on screenings MASS skipped over comparable months has been recorded

Dryness of screenings was typically 35%, though this is increased now to 42%



Data for 2004 relates the mass of screenings and grit skipped using a compactor fitted with a spray bar wash.

Over the course of 2005, this system was replaced by a custom Lisep package.

For direct comparison, figures for 3 consecutive months were obtained where the 2005 figures record the mass of screenings and grit skipped when using the Liseps.

Data from Sydney Water recordings.



Environmental Impact (14001)

Each trip to landfill that a skip truck takes generates 94 kg of CO₂.

- 450Kg of CO₂ are produced from every 7m³ skip as the organic content is broken down.
- Organic's within 1 Kg of waste can generate 0.085 kg of Methane. (equivalent to 1.8kg of CO₂ in greenhouse effect)
- Each 7m³ skip will generate 445 kg of Methane (equivalent to 9.3 tonnes of CO₂ in greenhouse effect.
- If harvested or burnt at landfill, the methane content would generate 1100kg of CO₂ .
- Therefore at best, each 7m³ skip will generate 1.5 Tonnes of CO₂ in greenhouse effect.



Environmental Impact (14001)

Screenings Volume Reduction is achieved through the Washing Process of Haigh equipment.

The Washing process puts BOD back in the flow so Methane generating fraction can be locked in the activated sludge or trickle filters.

The Methane generating fraction can therefore be harvested in the sludge or go for a controlled burn to get the energy back.

True Cost Impact to Waste Water Treatment Plants by using a LISEP Package

We have shown that the LiseP Package achieves exceptional volume reduction when compared to other systems. Other systems only achieve 80% volume reduction compare to Haigh's 94%. Put in simple terms for every one skip the LiseP Package will fill our competitors will fill approximately four.

On a Haigh screenings handling plant that fills one skip per week, an alternative system would create on average 4 skips per week. Therefore over one year in the order of an additional 150 skips will be filled. We do not know the cost to dispose of a skip in your region but it is probable that the cost is in the order of \$750.

Therefore $150 \times \$750 = \underline{\$112,500 \text{ per year or } \$2,240,000 \text{ over twenty years}}$.

These figures are a rough estimate only and the number of skips and the cost to dispose of the skips may vary, but whichever way you look at it the savings in skip disposal costs that can be achieved at a site using a Haigh LiseP Package are enormous. Any operational differences in the costs of running competitor systems in comparison are insignificant.