

# Multotec Process Equipment In Switzerland

Multotec Process Equipment In Europe

## Bernd Bohle



**Bernd Bohle has been representing Multotec in Europe for the past 25 years when the first Spiral order was placed in 1992**

Thus a growing market exists for implementation of technologies such as biological remediation, thermal treatment, soil washing, vitrification and vacuum extraction.



**Multotec proudly announces the successful commissioning and staff training at BSH-TIB Mezzovico Soil Washing Plant in Switzerland, the most modern plant of this design in Europe.**

Pollution and soil contamination has recently become one of the major European environmental issues. The scale of contaminated areas in the European Community is huge and, although not yet fully quantified, is thought to be well in excess of 300 000 sites.

Technologies for treatment of contaminated land fall into two main categories, methods based on conventional engineering and alternative decontamination technologies. The latter are more recent innovations where the polluted soil is treated to obtain redeveloped sites or the contaminants are immobilised or destroyed by utilising physical, chemical and biological reactions.

Many of these technologies, especially soil washing, have been successfully demonstrated and introduced on a commercial scale to the markets in the United States, Germany, Switzerland and the Netherlands. Others are still at the research and development stage. Seen geographically, the largest market is Germany and Switzerland, accounting for over 50 % of the EU total. The UK and the Netherlands also have significant markets while the French and Italian markets are expected to grow rapidly and assume prominence by the end of the decade.

Practically all former industrial sites are considered to have the potential of being contaminated, it is thus understandable that, as new legislation continues to become more stringent, the pressure to clean up is often triggered either by site redevelopment or the detected spread of contamination.



Most of the soil cleaning techniques involve on-site soil washing where the material is treated to separate the contaminants from the soil for further naturalisation.

Meanwhile, Multotec cyclones and spiral concentrators have found implementation in a wide range of the soil washing applications. Above all, spiral concentrators have continued to become an important integrated component for soil washing processes. A typical soil washing flowsheet incorporating spirals for the separation of light and heavy fractions is shown in Fig. 1.

#### **Separation of contaminant of low specific gravity**

In many instances, spills of contaminant hydrocarbons in industrial areas have, over a period of time, been adsorbed onto the carboniferous phases in the soil. These are frequently a combination of coal, lignite, charcoal, tar and organic detritus. In such cases removal of this material by physical means results in the separation of the contaminated hydrocarbon fraction into a low-density product for further treatment and/or disposal. Here spiral concentrators with more flat angles like large diameter coal spirals remove the low-density material from the soil bulk.

#### **Heavy particle removal**

Wherever heavy particle removal is imperative in any soil washing plant, heavy mineral spirals have proved suitable for this part of the process. Typical heavy mineral spirals with pitch angles 21 degrees are used to remove metallic matter, oxides, sulphides, carbonates and slags from contaminated soil from industrial sites. This applies, for example, when a contaminated soil of a former automobile scrapyards has to be treated or even new applications such as the treatment of the surface soil from a clay pigeon shooting range can be achieved by spiral concentrators to recover the metallic lead to protect the local groundwater.

Table 1 indicates how a combination of large diameter coal spirals and heavy mineral spirals successfully supports the decontamination process in the TIB Mezzovico stationary soil washing plant with a feed capacity of 70 t/h solids.

The pre-screened 0-1.8 mm material (27 - 40 t/h solids) is pumped to a VV350-15-1 Stacker cyclone (170 m<sup>3</sup>/h slurry capacity), the re-diluted underflow fed by gravity to a spiral bank of 8/8SX4/4/B/3 for lights decontamination.



The heavy sand product is then pumped to a VV350-15-1 Stacker cyclone, the re-diluted underflow fed by gravity to a spiral bank of 8/8SC21/5/B/3 for heavy particle removal.

The commissioning and staff training in September 2017 was successfully executed in simultaneous language German/Italian by Bernd Bohle and Manuel Nava, our customer and partner of comp. Tenace/SST in Italy.

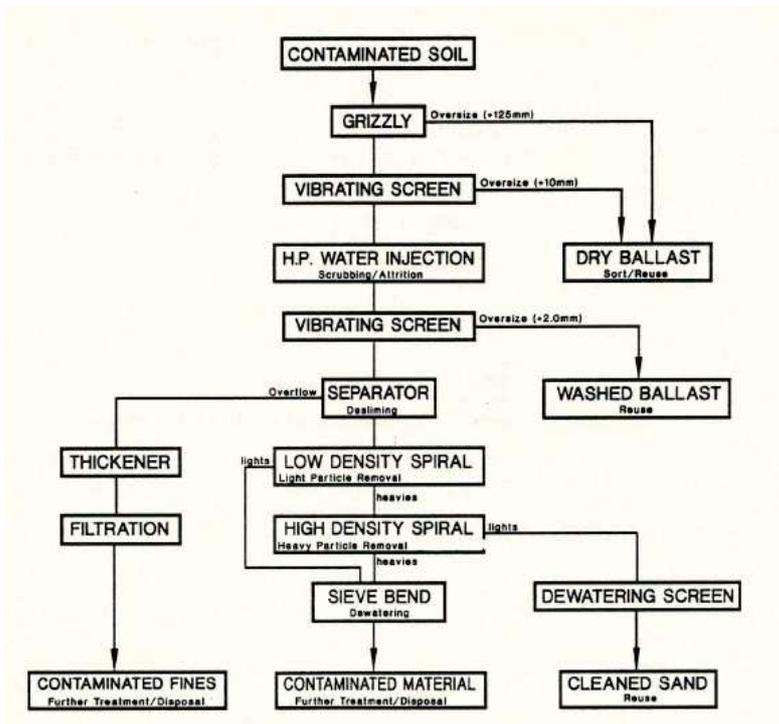


Fig. 1.

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Table 1: Examples of soil decontamination with the aid of spiral concentrators

Soil type	Origin	Feed Contamination mg/kg TS	Residue Contamination mg/kg TS
gravel/ soil mixture	railway track ballast	KW 14800	435
		PAK 24 Cu 466	1.7 20
soil refillment	industrial area	KW 2500	252
		Pb 1480	141
		As 149	< 5
		PCB 60	0.07
filter gravelling	colliery	KW 1560	94
sand/clay mixture	oil refinery	KW 1490	75
soil refillment	industrial site	KW 1000	105
		PAK 87	4
		DDT 2.5	< 0.001
		Pb 275	23
		Cr 142	10.2
		Cd 4	0.6
soil refillment	industrial site	KW 1000	26
		EOX 5	< 0.5
		PAK 75	4
filler sand material	petrol station	KW 1590	160

Table 1.

