

SUSTAINABLE SEDIMENT MANAGEMENT AT THE CITY OF HELSINKI - FROM LOW-QUALITY SOILS INTO CONSTRUCTION MATERIALS

NOORA LINDROOS¹, JUHA FORSMAN¹, KATA KREFT-BURMAN¹, EMMA NIEMELÄINEN², JUHA SORVALI², VELI-PEKKA PERTTINÄ², MIKKO SUOMINEN², HANNU HALKOLA², SATU-PIA REINIKAINEN³, EEVA JERNSTRÖM³, HELI SIRÉN³

¹Ramboll Finland Oy, ²City of Helsinki, STARA/HKR, ³LUT Lappeenranta University of Technology

In the City of Helsinki in Finland mass stabilization technology has been applied to improve the technical properties of the dredged sediment in order to utilize the material in construction. Fly ash from coal combustion has also been used as binder for the stabilisation.



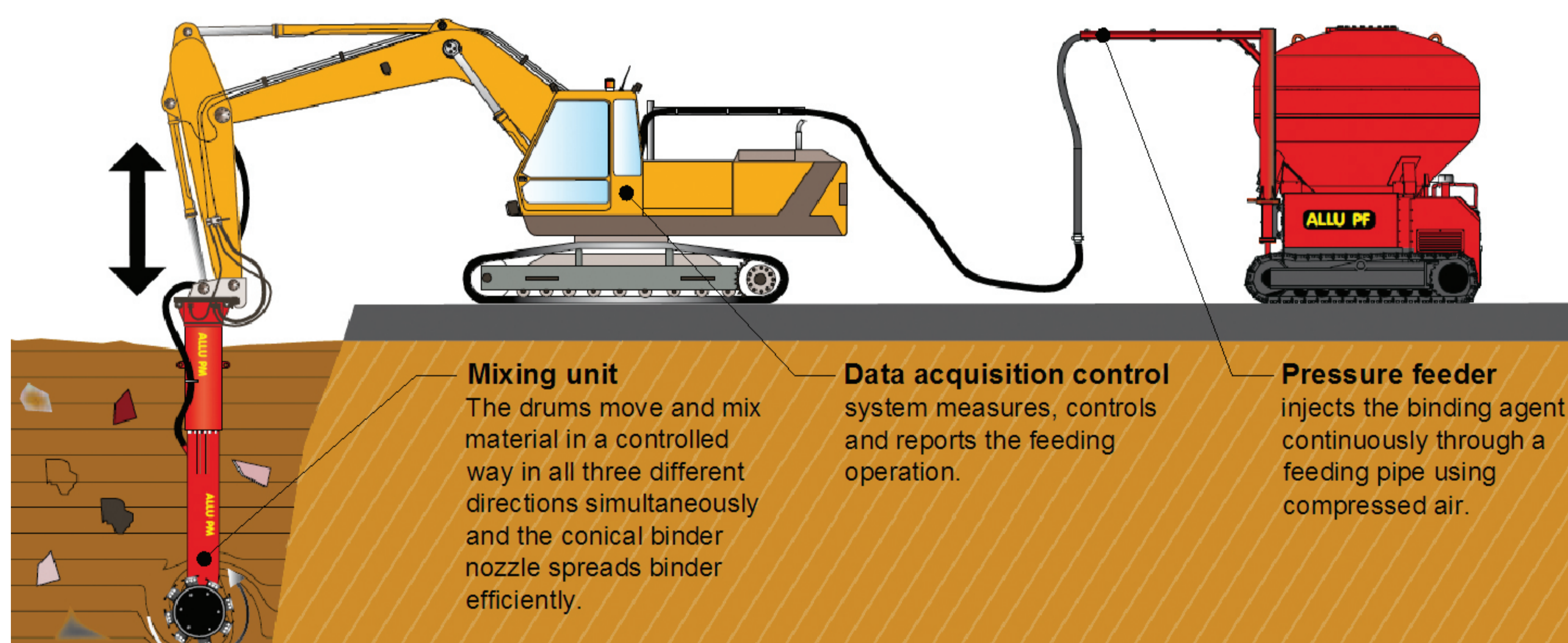
Stabilisation Pools in West Harbour in Helsinki.

In West Harbour, in Helsinki, the dredged sediments were disposed to stabilization pools, mixed with binders by mass stabilization and then transported to final utilization sites - e.g., noise embankments and landscaping purposes. The stabilisation works in this site in 2011 and 2012 have allowed for the utilisation of about 110 000m³ of dredged sediments for the construction purposes. If not the project piloting, they would have to be deposited to landfill.

The use of mass stabilization method allows for the processing of low quality and polluted sediments into construction materials. Remarkable cost savings could be achieved by replacing part of cement with binders based on fly ash in the stabilization. The stabilization/solidification binds also contaminants effectively to a low-leaching state.



Ongoing Mass Stabilisation.



Principle of Mass Stabilisation.

The stabilization technology requires technical and environmental material tests in the laboratory before the launch of construction works and follow-up studies afterward. Also an active quality control in all stages of work is indispensable.

Jätkäsaari I and II pilots in the West Harbour in Helsinki are part of the five-year ABSOILS project which demonstrates the utilization of surplus and low-quality soils as construction materials. It is co-financed by the EU LIFE+ Environmental Policy & Governance programme (LIFE09 ENV/FI/000575). Pilot III will be implemented in 2014. <http://projektit.ramboll.fi/life/absoils>



LIFE09 ENV/FI/575 ABSOILS



Open your mind. LUT.
Lappeenranta University of Technology

RAMBOLL

BIOMAA

Rudus



YMPÄRISTÖMINISTERIÖ
MILJÖMINISTERIET



ESPOO
ESBO



Helsingin kaupunki



VANTAAN KAUPUNKI
VANDA STAD