

AMC Surface SRUTM facilitated the early completion of a civil construction project

CASE STUDY

AMC client, DM Civil, experienced delays and loss of productivity as a result of highly dispersive clays overloading their system. Large pumps on equipment in the system exacerbated dispersion of clays in the fluid and significant time was lost dumping fluid and cuttings.

Challenge

DM Civil had experienced a decline in their mud properties at the Sewerage Expansion project in Armadale, Western Australia. The project consisted of several Micro Tunnelling shots up to 176 metres at 860mm in diameter, drilled with two metre pipe lengths.

Once a new mud system was introduced, the initial two pipes would progress well with good mud properties. During the third and fourth pipes, they would decline significantly with increased viscosity, mud weight, sand content and reduced rate of penetration. Other issues, including the need to evacuate the lines to reduce pressure in the circuit, resulted in substantial downtime.

When the drilling fluid reached a viscosity of 40 seconds, the mud properties worsened significantly as the program progressed. The mud system quickly became inoperable and progress of the project came to an immediate halt.



Results

- Initial 176m shot completed in record time, 9 days ahead of engineering schedule
- No further drilling fluid systems were required to be dumped once AMC Equipment was paired with AMC Drilling Fluid systems
- Rate of penetration remained high and unimpeded without mud property issues for duration of the shot
- AMC SRUTM removed between 50 – 100kg highly dispersive clay every 2m product length cut.

AMC Surface SRU™ CASE STUDY

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Solution

AMC's experienced equipment specialists and fluid engineers identified the AMC Surface SRU™ would address issues caused by existing equipment, including dispersion caused by large pump rates and minimal de-silting capabilities. Additionally they engineered the system to be run autonomously, adding two Aqua-Plus submersible pumps to transfer fluid from the shaker storage system to the AMC Surface SRU™ and returned once fluid was processed.

The new operational system only required a crew member to remove a wheelbarrow full of cuttings every 15 minutes and for a member to clean the centrifuge and shaker screens at the end of each shift.

Once the AMC Surface SRU™ was in place, the micro tunnel project progressed well with a consistent level of viscosity and optimal mud weight and sand content levels. No further dumping of fluid was required for the remaining 144m of the project.

MUD PROPERTIES SUMMARY

BEFORE AMC SRU™	AFTER AMC SRU™ / DILUTION + 2.5KG / L AMC CLAY DOCTOR™				
	36 secs	40 secs	31 secs	32 secs	32 secs
Viscosity	36 secs	40 secs	31 secs	32 secs	32 secs
SG	1.08	1.1+	1.02	1.04	1.05
600	16	19		8	10
300	4	6		1	4
PV	12	13		7	6
YP	8	7		6	2
Sand Content	2.0%	3.0%	Trace	0.2%	0.25%
Filtrate	10ml	10ml			12ml
Cake	10mm	11mm			2mm



Pipe in the hydraulic jack hole.

Project Outcome

AMC Surface SRU™ facilitated the early completion of the micro tunnelling project with productivity improvements reducing the project by four to seven days, while a further five days saving was gained by eliminating the need to dispose of up to 137,500L of fluid along with treating the same amount of fresh make up fluid in replacement. The AMC Surface SRU™ significantly improved the efficiency of the operations including;

- No further fluid disposal following the AMC Surface SRU™ setup on-site
- Significantly reduced disposal costs
- Closed loop system reduced time spent managing and mixing fluids, allowing personnel to focus on completing the drilling program
- Improved productivity, resulting in a saving of 4 days for the life of the project
- Initial 176m shot was completed 9 days ahead of engineering schedule
- Consistency changes in the clay spoil from the AMC Surface SRU™ improved crews understanding of the formation and torque readings as a result
- Rate of penetration remained high and unimpeded without mud property issues for duration of the shot
- AMC Surface SRU™ removed between 50 – 100kg highly dispersive clay every 2m product length cut.

The use of the AMC Surface SRU™ was praised highly by the DM Civil crew and will be kept on hire for future use in other planned projects for the company.

"The AMC Surface SRU™ is very easy to use and is continuing to pull clay from the system even though the formation has become predominately sandy in nature. We will be keeping the unit for future planned bores." Drill Rig Operator

Further Information

For more information about this case study, please contact amc@imdexlimited.com or your local AMC representative.

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