

VACUUM EXCAVATION CHALLENGE CASE STUDY



ADVANCED
DRY SUCTION
EXCAVATION
TECHNOLOGY



VAC-EX CHALLENGE

It has been long debated within the vacuum excavation industry that the process used by hydro vacs produces the fastest and most efficient rates of excavation when compared to dry vacs. But with the introduction of European high-velocity fan power to a market comprised typically of positive displacement blowers manufactured in North America, that age-old debate has taken a new turn.

The majority of dry vac equipment known to Canada and the US, ranges in air flow strength anywhere from 300 to 1,500 cubic feet per minute (CFM), so it's easy to conclude that the air flow is not significant enough to compete with the excavation rate of a hydro vac. However, the twin-fan technology patented by German engineering firm MTS, has been designed specifically to optimize dry suction excavation equipment and generates 24,000 CFM. When used in conjunction with pneumatic ground disturbance tools, the rates of excavation are very impressive, but one thing still remains: a direct comparison to hydro vac equipment. The main premise of The Vacuum Excavation Challenge is to observe and document the excavation rate of a dry suction excavator from the MTS Dino Series in a side-by-side scenario with an industry standard hydro vac. The task given to each experienced crew is identical and soil is tested to take digging conditions into consideration.

The results should first and foremost indicate that dry suction excavation technology known globally as the most efficient form of non-destructive digging, is far superior to North American dry vacs. Furthermore, evidence should indicate that the MTS Dino Series has a rate of excavation that is equal to or better than the hydro vacs commonly used in today's vacuum excavation industry.



OBJECTIVE

Safely dig 1.8 yards, 1 per truck. Measure time it takes for each truck to complete.

- ▶ 4 by 4 feet wide
- ▶ 3 feet deep

OPERATORS

- ▶ 2 per truck,
- ▶ over 10 years of experience

ROUND 1

VS.

ROUND 2

VS.

The first installment of The Vacuum Excavation Challenge features the MTS Dino 8 dry suction excavator and the Vactor hydro vac. Both pieces of equipment are fairly common choices for non-destructive excavation and seeing as this was the pilot for the program, the digging conditions were kept rather standard with a gravel and sand mix.

These pieces of equipment are highly efficient when it comes to excavation so it was no surprise that they both finished the task in under an hour.

The official time for the dry suction excavator was 23:11, and the time for the hydro vac was 43:23. So their respective rates of excavation were 4.7 cubic yards per hour and 2.5 cubic yards per hour, giving the MTS Dino 8 an edge in excavation rates by almost half the time, or twice the productivity.

For the second round of The Vacuum Excavation Challenge we wanted to feature some heavier competition for the MTS Dino 8 dry suction excavator and decided to feature a Super Vac with a 10" dig tube. This was expected to create an advantage for the hydro vac and keep the rates of excavation a bit more comparable.

The industry-wide topic of conversation tends to always circle back to how a particular vacuum excavator will perform in clay, so the location was chosen specifically for its soil content which was primarily clay.

The performance and productivity of both pieces of equipment was very good but the official time for the dry suction excavator was 14:15, compared to the Super Vac with a time of 24:05. So their respective rates of excavation were 7.6 cubic yards per hour and 4.5 cubic yards per hour, giving the MTS Dino 8 clear advantage while excavating in one of the industries toughest known digging conditions.

GRAVEL..... 41.1 %
SAND..... 33.8 %
SILT..... 20.2 %
CLAY..... 4.8 %

DINO SERIES
SUCTION EXCAVATOR

4.6 yds/hr

VACTOR
HYDROVAC

2.5 yds/hr

GRAVEL..... 0 %
SAND..... 3 %
SILT..... 33 %
CLAY..... 64 %

DINO SERIES
SUCTION EXCAVATOR

7.7 yds/hr

SUPERVAC
HYDROVAC

4.5 yds/hr



CONCLUSIONS



INCREASED PRODUCTIVITY

The powerful compressor and CFM of the MTS Dino 8 was able to perform consistently better than a hydro vac in a couple of different digging scenarios. In the first episode the productivity was further realized by the fact that the dry suction excavator was able to dump and backfill while the hydro vac was still digging. This factor further illustrated an increase in productivity when compared to a hydro vac, as in order to do the same job, backfill would need to be ordered, delivered and restored by different pieces of equipment which would all contribute to a much lower productivity rate as a result of using a hydro vac.



DECREASED PROJECT COSTS

In episode 1 of The Vacuum Excavation challenge the MTS Dino 8 is seen, dumping, backfilling, and tamping the excavated area once the excavation was complete. In episode 2 we see the Super Vac leaving with its load to transport off to a processing facility. Whether your project is omitting backfill equipment as a result of utilizing the MTS Dino Series, or you're watching your dry suction excavator continue to dig on site while your competitor's hydro vac is driving off to go and dispose of its spoils, it's quite easy to see that there are direct cost savings catalysts that support using a dry suction excavator over a hydro vac.

Ox Equipment Inc. is the exclusive North American distributor for industry leading MTS Dino Series of Dry Suction Excavators. Currently the global standard and preferred option for safety, dry suction excavation utilizes powerful vacuum technology without the use of water, and eliminates issues related to slurry disposal as well as overweight truck loads while it remains on site until the job is finished. The innovative Twin-Fan System generates over 24,000 CFM used in conjunction with a 10-inch diameter suction hose which is manipulated with precision via the mechanical Power Arm. The MTS Dino Series also features side-tipping functionality along with many other onboard elements that elevate the level of safety and productivity when using this equipment.

Ox Equipment Inc. has over 50 years of combined experience in the utility construction business which enables them to be as performance driven as the cutting-edge excavation technology they're delivering throughout North America. Ensuring that the many benefits of this innovative equipment is being realized by its end users from municipalities, utilities, and the contractors who serve them.



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SERIES

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