



## Dust and Dirt on Jobsites? Move Materials with a Material Conveying Pump

### Introduction

An important focus in today's construction market is creating a safe, risk-free work zone not only for the workers on the jobsite, but for the environment. Workers inhaling or ingesting dust, debris, and other particles from a jobsite can cause harm to the workers and put them at risk for potential accidents. OSHA requires that core drilling equipment manufacturers design their equipment in a way that prevents dust from escaping into the environment and reduces the chance of dust clouds in a given work area. Exposure to these substances can carry serious risks as well as major health problems resulting in creating a solution to this problem. In this case study, we briefly discuss the potential advantages of using a material transfer

pump in construction and heavy equipment industries to reduce dust particles flying in the air.

### Need for Clean Environment

In an effort to reduce operating costs and avoid replacing entire long sections of public roads, highway departments contract local construction companies to replace small sections of roads and highways that are in minor disrepair. They look for sections of the road that are small and often one lane ranging from five to thirty feet in length. Workers will cut out and remove concrete sections that are in disrepair, but leave intact the surrounding concrete that is still in working condition. Workers use a core drilling machine to drill holes into the remaining



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sections of the usable concrete located around the perimeter of the dug-out holes, extending into the sides along a horizontal plane. The workers then place reinforced bars of steel in the dug-out area. The ends of the rebar are placed in the drilled holes of the concrete. The purpose of the core holes are to provide a supported area for the ends of the rebar to be placed. When new concrete is poured into the hole, the rebar helps to support the concrete section of the road. The ends of the rebar that were placed in the side of the original concrete section help stabilize and hold the newly poured concrete and the original concrete together. The issue comes when the core holes are drilled out, releasing large volumes of dust and debris into the air surrounding the machine. When this happens two issues are created to the public:

- > The concrete dust is potentially ingested by the local workers in the immediate area.
- > The cloud of dust could present other risk factors including individuals' vision being impaired when driving other machinery, resulting in striking other workers or machinery nearby.

### Prevention of Dust Particles

By utilizing a material transfer pump, manufacturers that use core drilling equipment can collect small dust and solid particles of concrete debris from the drill site and transfer it to a receptacle. This material transfer pump provides a low-cost and efficient method to safely collect and transfer the material. With a straight-through design and no moving parts, the pump allows material to transfer through at high speeds without interference or clogging. The pump is compact and lightweight which are highly important attributes for design engineers that are tasked with modifying machines out in the field or designing future machines. The pump is driven by compressed air (electricity is not required), which is readily available at most jobsites in these types of industries.

### Spraying of Aggregate

Another use for the material transfer pump in the bridge and roadway construction industry is for the spreading of aggregate. This application is the opposite of the core drilling application. Instead of collecting the dust, the material transfer pump is now used to spread the aggregate in a controlled manner to minimize dust. The material transfer pump is used to eliminate the need for manual hand spreading of aggregate on the bridge deck or road surface. These high-speed pumps spray materials such as glass, mineral fragments, stone dust, metal filings, ceramics, and other high friction surface materials. The pump produces a conical spray pattern that allows for the precise placement of aggregate minimizing waste. The spray pattern also helps to contain dust within the air flow reducing dirt in the air. A material conveying pump provides a semi-automated safe, efficient and economic process for spreading aggregate by reducing costly labor-intensive manual operations and controlling the waste. When the body of the pump inevitably wears out, it can easily be replaced, eliminating the cost to purchase an entire new pump. Replacement kits allow the pump body to be quickly swapped out in the field in just a matter of minutes using only a pair or retaining ring pliers that minimizes downtime and costs.

### Industry Benefits of Material Conveying Pump

Material transfer pumps are quickly becoming more popular in the bridge and roadway construction industries which is not surprising due to its efficiency making aggregate easier to spread and reducing dust particles in the air. The material transfer pump produces a controlled output for a precise, consistent application allowing you to move the materials you need in a timely fashion while reducing waste and keeping the environment clean.



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