

## The EVO Series™ Process Pump For Carbon Black Powder Applications

**Do you think that the EVO Series™ positive displacement technology can pump powder? The answer is yes!**

Surprised? Actually when powder has low bulk density and is duly fluidized by means of a dry gas (air or nitrogen), can flow through the pump exactly like a fluid.

This is what happened with a customer producing carbon black for battery market.

### ► The Product

Carbon black is a material used in a lot of chemical manufacturing industries as a colorant, a filler or to increase mechanical properties of materials.

About 90% of carbon black is used in rubber applications, with the remainder used as an essential ingredient in hundreds of applications miscellaneous, such as plastics, pigments and coatings.

As of today, carbon black is produced starting from petrochemical industry waste. Typically there are two types of carbon black manufacturing processes: furnace carbon black and thermal carbon black.

For the carbon black production, this oily material is burned at very high temperature, fumes are then condensed by means of heat exchangers. Heat is used to produce energy and condensed part is concentrated and purified. It results in carbon black.

Carbon black can be produced in different particle size and purity according to the final application. Tires, rubber and plastic elements production require it to be quite rough. The electronic industry requires a good level of purity, but **the highest purity with extremely thin particle is reserved to the battery industry**, which is basically provided by thermal black production process.

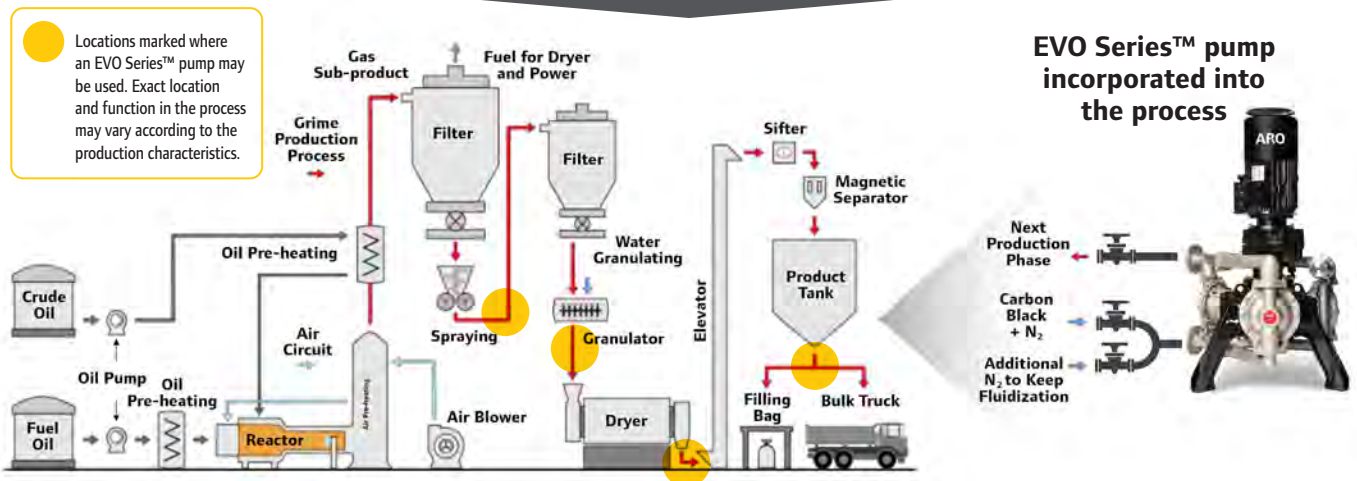
Carbon black producers have developed through the years different ways to move powder from one processing phase to another up to final packaging. Some of them use pneumatic diaphragm pumps and others use big blowers or vacuum conveyors. Those systems may be optimized for certain types of carbon black production, but less efficient or less adapted for some others.

## EVO SERIES™

THE EVOLUTION IN PROCESS PUMPS

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### Carbon Black Production Process



## ► The Customer and the challenge

With the construction of the new line, the customer wanted to use the **most adapted solution** for production of battery grade carbon black powder. Solution had to be efficient, robust, minimize production waste and operational costs and be eco friendly.

## The answer was the ARO® EVO Series™ Process Pump.

For more than 10 months the customer has tested EVO Series™ pumps in parallel of their existing technologies in their existing production line. This allowed both customer and ARO® to identify EVO Series™ advantages. The customer and ARO® have worked in close contacts in order to provide the best solution and to design the new line ensuring EVO Series™ pumps were working in optimized conditions.

**After 10 month of tests, ARO's EVO Series™ process pump has been selected the technology of choice for the new production line.**

## ► Application details

The pumps selected were the 2" EVO Series™ aluminum constructed pumps. Carbon black is filled with inert gas at pump inlet (nitrogen or compressed air according to the process phase) in order to keep the powder fluidized.

Every single pump is set up to transfer about 570 lbs/h (260 kg/h) of carbon black, this is happening with the pump running high speed at 25 PSI (1.7 bar) of pressure. Every single pumping station have multiple pumps running in parallel and pumping stations are located in different position along the process. Temperature ranges between 140°F and 248°F (60°C and 120°C). Pumps are planned to run under a continuous 24/7 duty.



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