

# Blackmer®



Where Innovation Flows

# Propane Feed into Asphalt Burners

## APPLICATION DOCUMENT

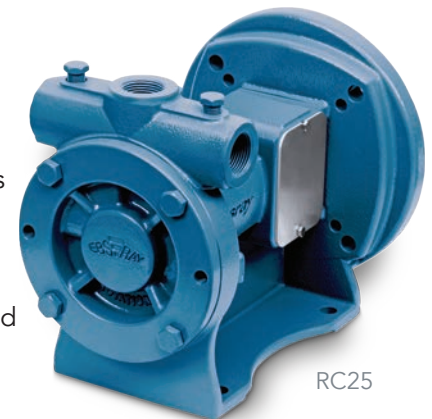
Because of its nature, it is imperative that the producers, transporters and users of asphalt identify and implement pumping technologies that can satisfy its many unique handling characteristics. A key piece of equipment in the hot-mix plants that are the foundation of asphalt production is the asphalt burners that enable the mixing of bitumen with aggregate.

Specifically, the burners heat the aggregate as the liquid bitumen is being sprayed on it, which allows it to adhere to the aggregate. Traditionally, the burners can be fired in one of three ways: 1) with fuel oil, though this method is considered archaic; 2) with natural gas, and 3) with liquid propane, with the burner atomizing the propane in order to convert it into a vapor.

Within the asphalt-burner application, a pump that is idled or operating improperly will disrupt asphalt production, which can be a continuous 24/7 process in many plants. Therefore, the pump must maintain a constant flow rate with very little fluctuation since any flow variations can create instability within the flame, which will affect the quality of the asphalt. Also critical is the pressure at which the propane is supplied to the burner, with any changes in pressure capable of causing “freezing” at the nozzle, which will also reduce product quality.

In this application, the best pumping solution can often be the Regenerative Turbine Pump, the design of which allows it to excel at transferring liquids with high pressure, low flow and low viscosity while handling entrained vapors or liquids that are at or near their boiling point, with little risk that cavitation and pulsation will occur. Specifically, Blackmer® Ebsray® Series Regenerative Turbine Pumps are designed with a

rotating, one-stage, non-contact, freewheeling impeller disc with 60 small cells on its periphery. As liquid enters the suction port, kinetic energy carries it around the narrow hydraulic channel around the cells, creating the energy and differential pressure that moves the liquid through the pump. Other advantages of Blackmer Ebsray Series pumps include a small footprint, high efficiency that requires smaller motors, quiet operation with no vibration and easy maintenance.



RC25

Blackmer Ebsray Series offers its RC Series Regenerative Turbine Pumps, which are available in three models – RC20, RC25 and RC40 – that deliver flow rates ranging from 12 gpm (48 L/min) to 53 gpm (200 L/min) at differential pressures ranging from 175 psi (12 bar) to 200 psi (14 bar). In cases where underground LPG storage is used and a submersible pump needed, Blackmer Ebsray Series has the RX Series with the RX10, RX33 and RX35 models having a flow-rate range of 24 gpm (90 L/min) to 42 gpm (160 L/min) at working pressures from 130 psi (9 bar) to 174 psi (12 bar). Finally, Blackmer Ebsray Series has further positioned itself as a go-to provider for the asphalt plant with its new HiFlow Series Regenerative Turbine Pumps. The R80/R82 models, which are used in base-mounted setups, have 3" (75mm) inlet and discharge ports. The R80 pumps can deliver smooth, non-pulsing flow rates up to 132 gpm (500 L/min), while the R82 models deliver flows up to 159 gpm (600 L/min), all at differential pressures up to 203 psi (14 bar). All of these models can be outfitted with a bypass valve that allows the pump to transfer vapor while it is priming.



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## BLACKMER EBSRAY SERIES SOLUTIONS

- [RC Series Regenerative Turbine Pumps](#)
- [RX Series Regenerative Turbine Pumps](#)
- [HiFlow Series Regenerative Turbine Pumps](#)

## COMPETITION

### • Sliding Vane Pumps

Can struggle in meeting the high differential pressures that may be needed to move the propane to the nozzle of the asphalt burner, while they are also less well suited for continuous-duty operation.

### • Side-Channel Pumps

Can achieve high differential pressures, but require a larger physical footprint for installation. This results in higher maintenance costs due to the number of internal components the pump has. Also may need as many as five to seven impeller stages to create high flow rates, compared to just one stage for regenerative turbine pumps.

### • Multi-Stage Centrifugal Pumps

Like side-channel pumps, more impeller stages require more components, resulting in a larger footprint and higher maintenance costs.

### • Other Regenerative Turbine Pumps

May need to upsize the pump motor in order to achieve higher flow rates, which reduces their efficiency when compared to Blackmer Ebsray Series models that can operate with a smaller motor with less horsepower that requires less electricity and less overall operating costs.



## GLOSSARY

**Rotodynamic** – a type of pumping technology in which energy is continuously imparted to the pumped liquid by means of a rotating impeller, propeller or rotor.


**Asphalt** – a mixture of dark bituminous pitch – usually made through the distillation of crude oil – with sand, gravel or another aggregate, used for the surfacing of roads, flooring, roofing, etc.

For more information on these additional solutions, visit us at [blackmer.com](http://blackmer.com).

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