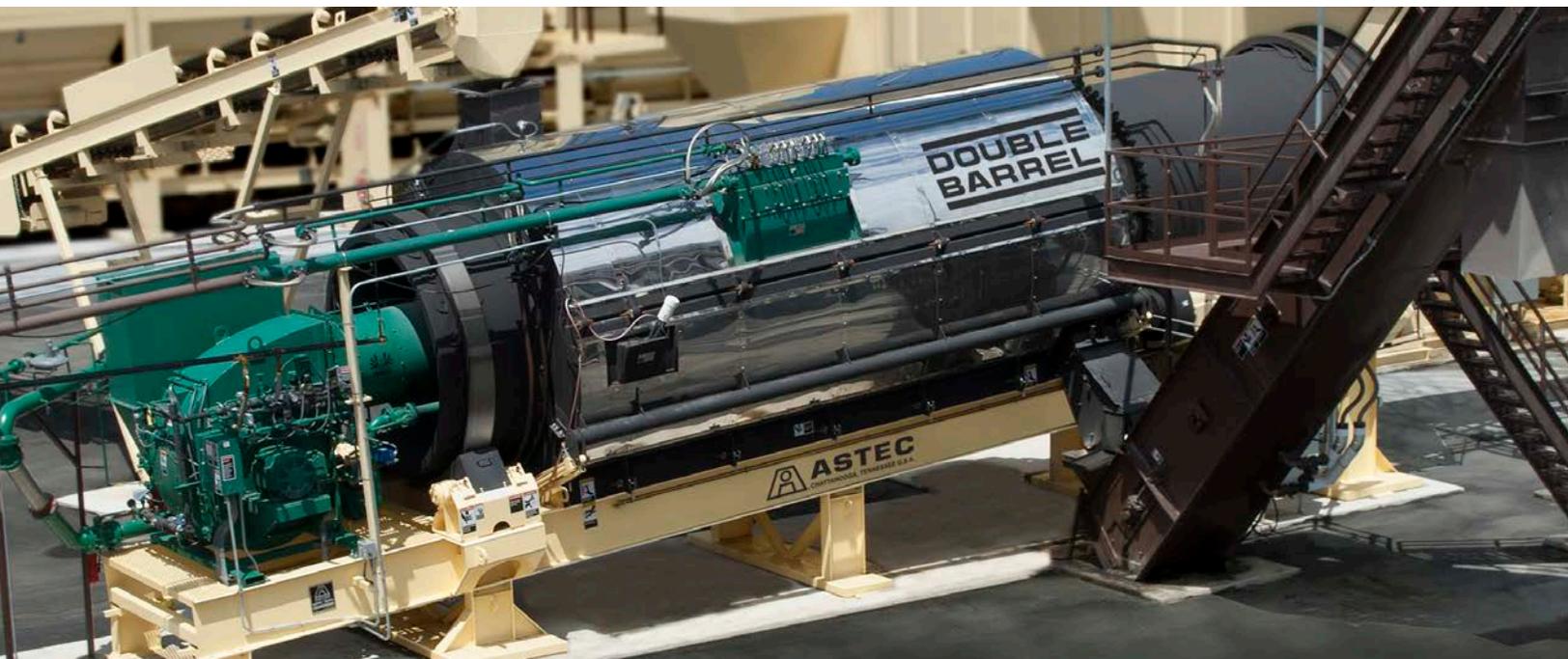


# ASTEC®



## **THE DOUBLE BARREL®**

*Combination Aggregate Dryer/Drum Mixer*



# THE DOUBLE BARREL

## Combination Aggregate Dryer and Mixer

ASTEC brings you the Double Barrel dryer/drum mixer, the mixer of choice over any other. The Double Barrel dryer/drum mixer combines the latest in hot and warm mix technology with other great ASTEC features. Get guaranteed productivity and top quality mixes while keeping operating costs per ton of mix low and meeting the most stringent environmental codes. Relocatable and portable versions all perform to the same high standards.

### Portable

### Up to 50% RAP\*



| Size (feet) | TPH** | Size (meters) | MTPH** |
|-------------|-------|---------------|--------|
| 6 x 33      | 200   | 1.82 x 10.05  | 181    |
| 7 x 36.9    | 300   | 2.13 x 10.97  | 272    |
| 8 x 38      | 400   | 2.43 x 11.58  | 363    |

### Relocatable

### Up to 50% RAP\*



| Size (feet) | TPH** | Size (meters) | MTPH** |
|-------------|-------|---------------|--------|
| 6 x 33      | 200   | 1.82 x 10.05  | 181    |
| 7 x 38      | 300   | 2.01 x 11.58  | 272    |
| 8 x 41      | 400   | 2.43 x 12.19  | 363    |
| 9 x 46.8    | 500   | 2.74 x 14.32  | 454    |
| 10 x 49.8   | 600   | 3.04 x 15.24  | 544    |

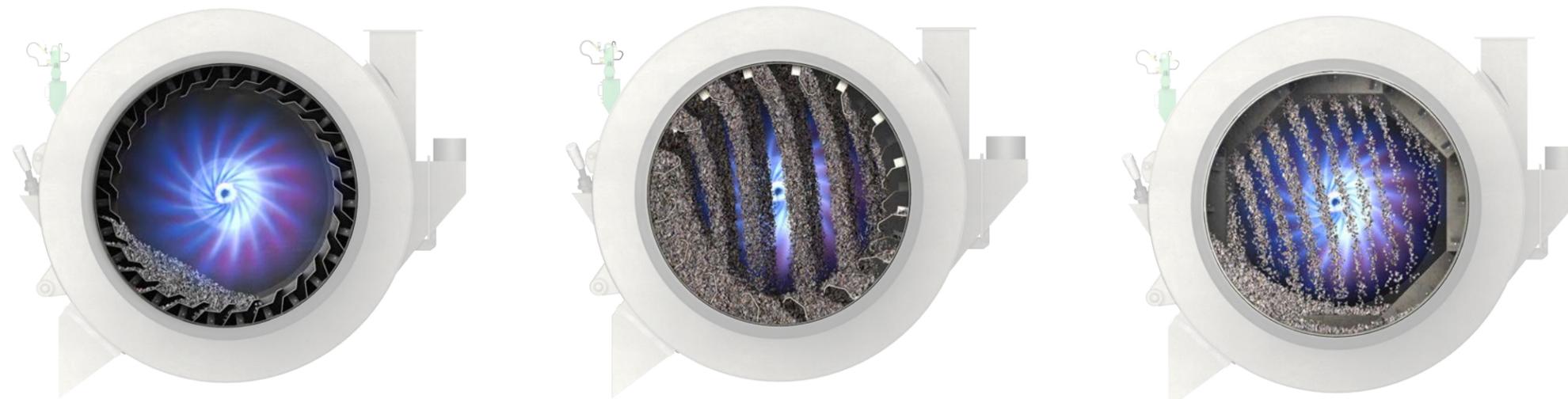
\* RAP percentages based on 5% moisture  
 \*\* TPH (MTPH) based on virgin mix at 5% moisture and standard operating conditions



# INNER DRUM

## Drying

The ASTEC Double Barrel® drum mixer is designed to move aggregate through the mix process with maximum efficiency. Drying of the virgin aggregate is the first step in the process and takes place in the inner drum. The drying process begins when the virgin aggregate enters the inner drum through a sealed gravity chute. The flop gate restricts air entry into the drum while allowing the aggregate to pass through. The angle of the ceramic-lined inlet chute keeps material flowing freely into the drum. State-of-the-art flights move the material through the drying zones. Once dried and heated, the aggregate leaves the drum through exit openings and enters the outer mixing chamber.



### Combustion Flights

Prevent aggregate from impinging on the flame while spreading the material to maximize radiant heat transfer

### V-Flights

Provide greater uniformity of the aggregate veil through the gas stream during the drying process, across a wide variety of mix designs and tonnage rates

### Conditioning Flights

Break up any clumps or sticky material when the aggregate first enters drum

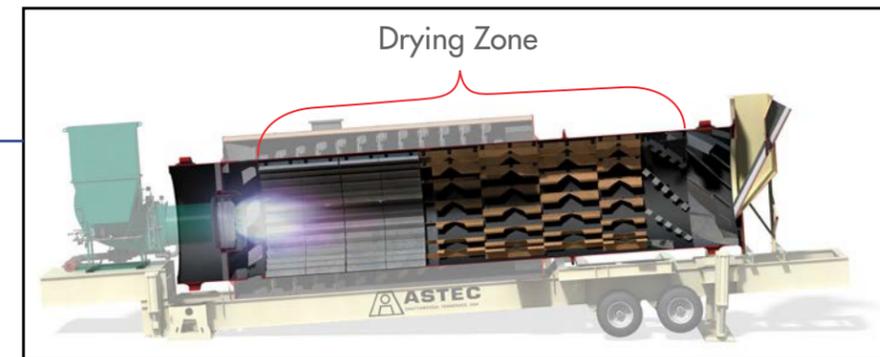


### Superior Design and Construction

ASTEC heavy-duty components are built to last. Wear-hardened steel frame securely supports the drum. Insulation surrounds the stainless steel shell to reduce heat loss. Astec's precise flight fixtures and design inhibit wear.

### Longer Drying Chamber

The Double Barrel uses the entire drum length for drying. Using the entire drum length for drying assures that the virgin aggregate has adequate time for thorough drying.



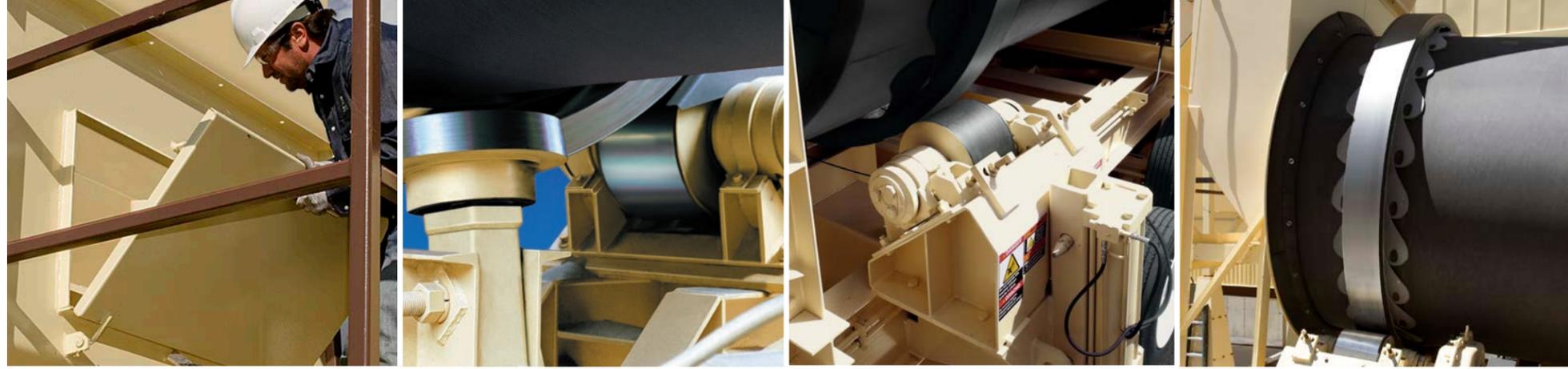
# INNER DRUM

## Components

After hundreds of millions of tons of mix production, the ASTEC Double Barrel® dryer/drum mixer proves itself to be the most reliable and lowest maintenance dryer/drum mixer available to producers. The saddle chain drive is outfitted with a heavy-duty roller chain, including offset sidebars and case-hardened bushings. These heavy-duty drive components are made to last.

Each trunnion base is angled to the frame so that a dowel pin in the base is in line with the exact center of the drum. The trunnion base pivots around the pin, making it easy to maintain face contact between the tire and trunnion while making adjustments. Good trunnion alignment means better performance and longer equipment service life.

Two solid-steel tires encompass the inner drum and support the Double Barrel dryer/drum mixer.



### Dryer Access

The interior of the dryer drum is reached through an access door at the inlet breeching

### Thrust Rollers

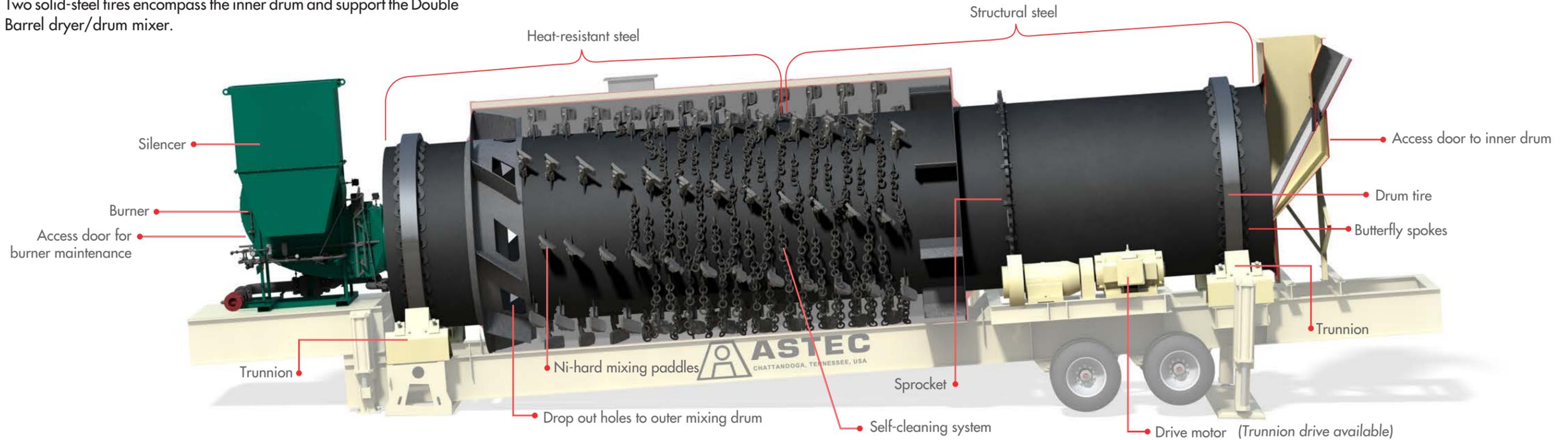
Thrust rollers on either side of the tire restrain the drum

### Trunnions

Adjustable steel trunnions with railroad duty bearings

### Drum Tires

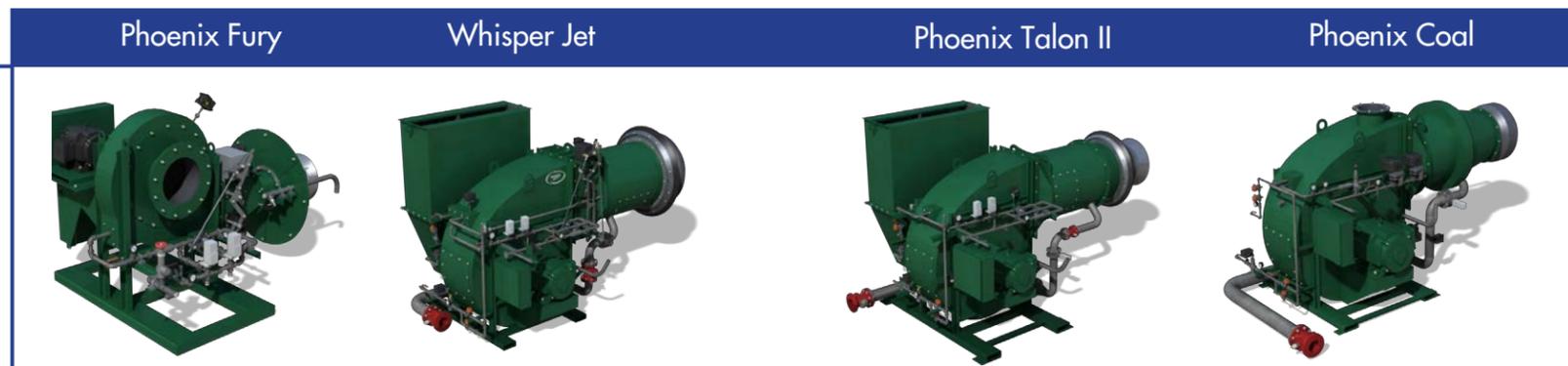
Hot-forged from solid billets of alloy steel. Precision machining provides ultra-smooth operation



## Four Burner Options

Astec burners offer the latest in reliable burner technology combined with complete one-source responsibility. The Astec burner group engineers the burners to customer specifications and manufactures each in a state-of-the-art facility. Prior to shipment, each burner is tested on one of Astec's tri-fuel (oil, gas and coal) test stands to ensure fast and easy start-up at installation.

\* Multiple fuel options available.



# OUTER DRUM

## Mixing

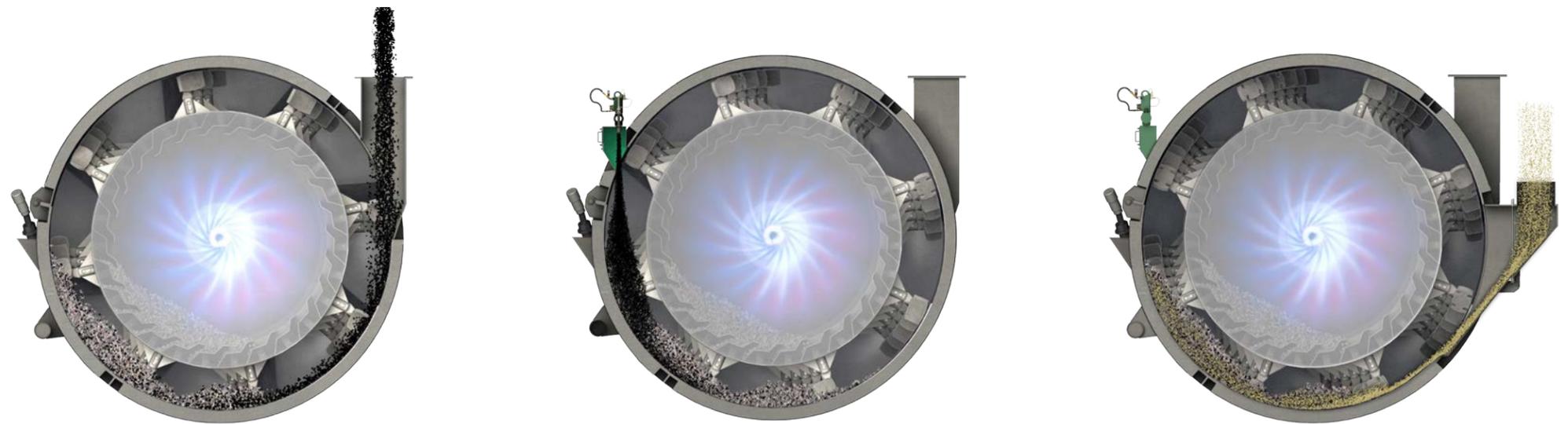
Adding materials in the right order and at the right time is the key to making good mix on a consistent basis. That's where the ASTEC Double Barrel® dryer/drum mixer's exclusive sequential mixing process excels. Ingredients are added to the hot mixture in an order that allows better temperature equalization and even distribution of all particles throughout the mix.

First in the mixing sequence, recycle enters into the mixing chamber through the recycle inlet. Recycle, which may be RAP, roofing shingles, crumb rubber, or a mixture thereof, is heated by contact with the hot virgin aggregate.

At the point where virgin and recycled materials are at the proper temperature and thoroughly mixed, liquid asphalt cement (AC) is injected into the mixing chamber. As the mix moves through the mixing chamber, it is continually stirred by mixing paddles.

Finally, baghouse fines and other additives enter the mixing chamber and become embedded in the thick layer of asphalt coating the rock. ASTEC's sequential mixing keeps fines from soaking up more than their share of AC because the AC has been well distributed before fines are added.

Warm mix system



### RAP (Recycled Asphalt Pavement)

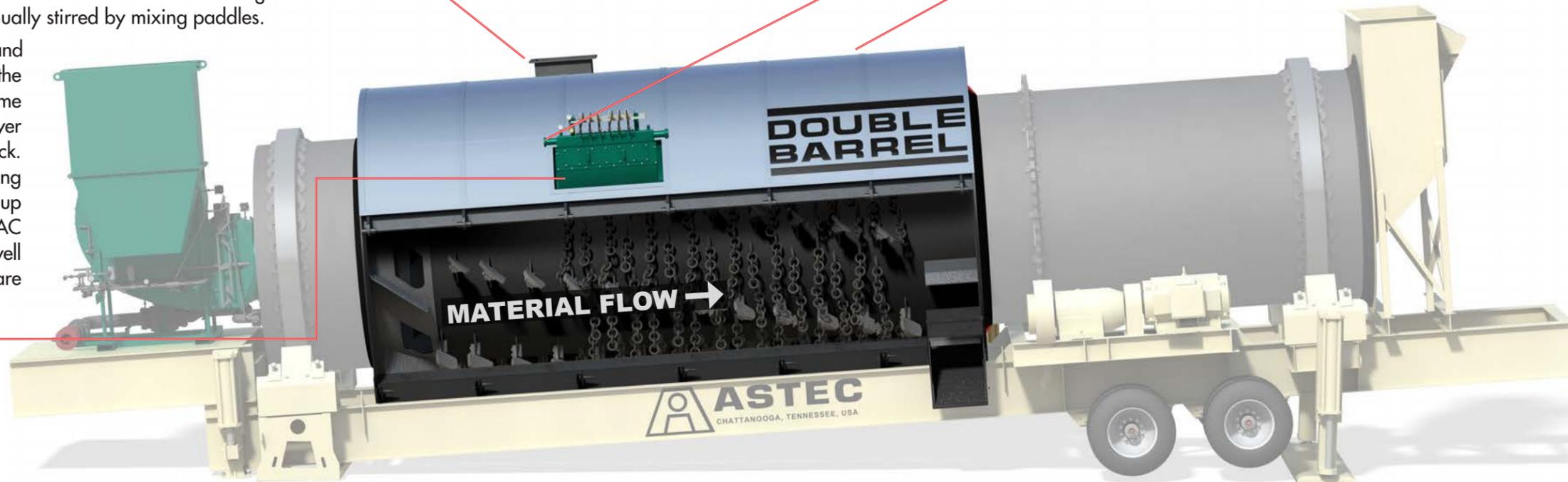
RAP material is added to the aggregate in the mixing chamber

### Liquid Asphalt

Liquid asphalt is injected into the mixing chamber through the AC inlet or optional Warm Mix System

### Fine Additives

Baghouse fines are added last so they do not absorb the liquid AC before it is distributed on the aggregate

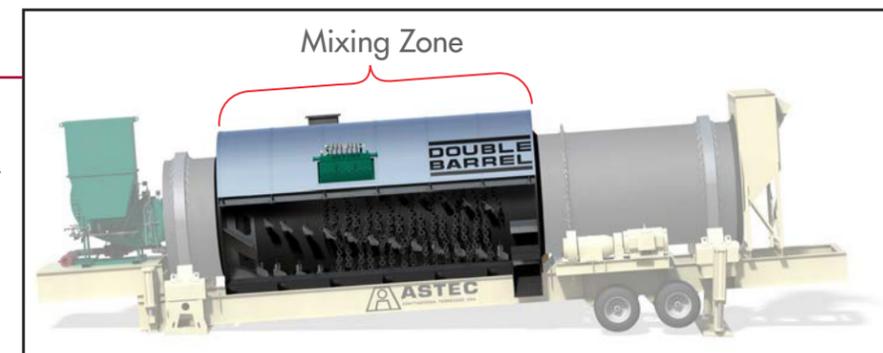


## Warm Mix Systems

- Foamed liquid asphalt has a lower viscosity for improved workability
- No smoke or smell from mix
- Run high percentages of recycle with standard grade asphalt
- Longer pavement life
- Reduces fuel and increases production

## Longer Mixing Chamber

ASTEC's extraordinarily long mixing chamber allows long mixing times. Long mixing times, together with ASTEC's sequential mixing, ensure uniform and consistent incorporation of all mix materials.



# OUTER DRUM

## Components

The cost of maintaining the Double Barrel dryer/drum mixer is comparatively low because ASTEC uses proven wear materials. Ni-hard mixer paddle tips and wear plates in the mixing zone stand up to ton after ton of abrasive material. The burner end of the drum is fabricated from a high-strength, low-alloy steel for superior heat resistance. The mixing chamber is made from structural-quality carbon steel and includes lined wear plates.



### Thick Insulation

Thick insulation installed underneath the stainless steel outer skin helps prevent heat loss



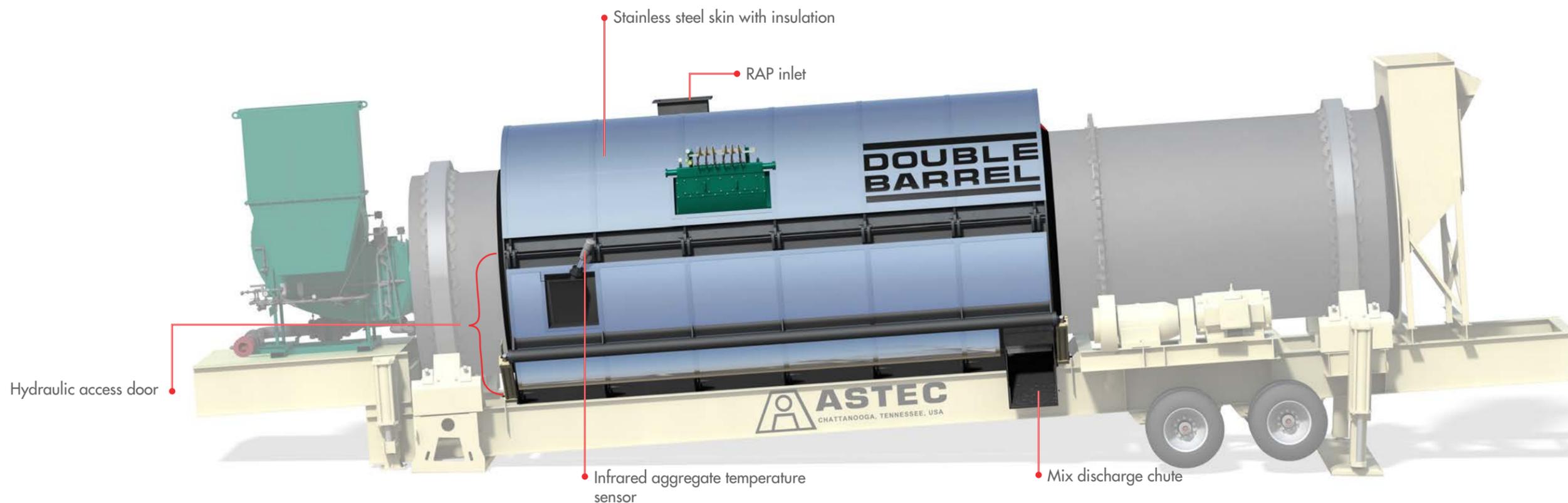
### Maintenance Door

Hydraulically operated access door allows easy service of mixing shanks and tips from the outside of the drying drum



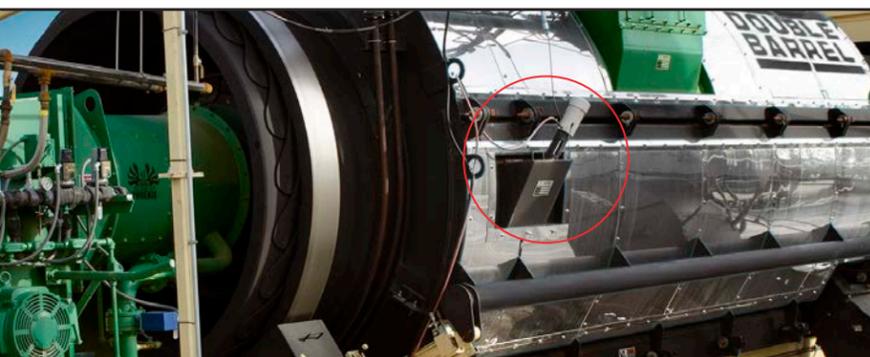
### Mixing Paddles

Heavy-duty bolt-on tips and shanks continually stir throughout the mixing process



### Temperature Sensor

Once heated and dried, the aggregate leaves the drying chamber and enters the mixing chamber. At this point, an infrared sensor measures the temperature of the hot aggregate and automatically adjusts burner output to keep aggregate at the required temperature. This unique ASTEC feature makes it easier for you to control mix temperatures and to turn out mixes that conform to specifications.



### RAP Inlet

RAP enters directly into the mixing chamber and does not contact the hot gas stream of the dryer. Because the RAP is heated by the hot aggregate, not the burner, the Double Barrel dryer/drum mixer runs clean, even at 50% RAP. The RAP by-pass chute is incorporated to easily divert RAP to a waiting loader or truck during plant shut-down, or calibration.



# GAS FLOW

## Hydrocarbons and Steam

There is a continuous release of steam as the RAP is introduced and heated. This is one of the keys to the success of the Double Barrel as a processor of RAP – steam blankets the superheated virgin aggregate and RAP displacing the oxygen. As a result there is less oxidation of the mix. As the RAP dries, blue smoke emissions can also be produced along with steam.

Steam and blue smoke are pulled into the burner flame by the baghouse fan. The hydrocarbons in the blue smoke are incinerated while the steam simply passes to the baghouse and out of the exhaust stack.

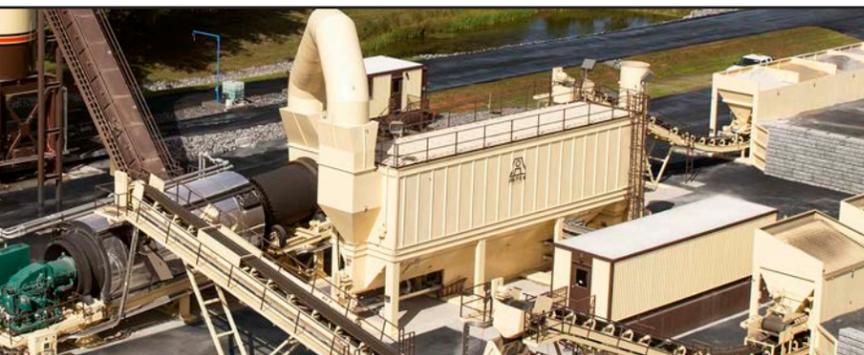
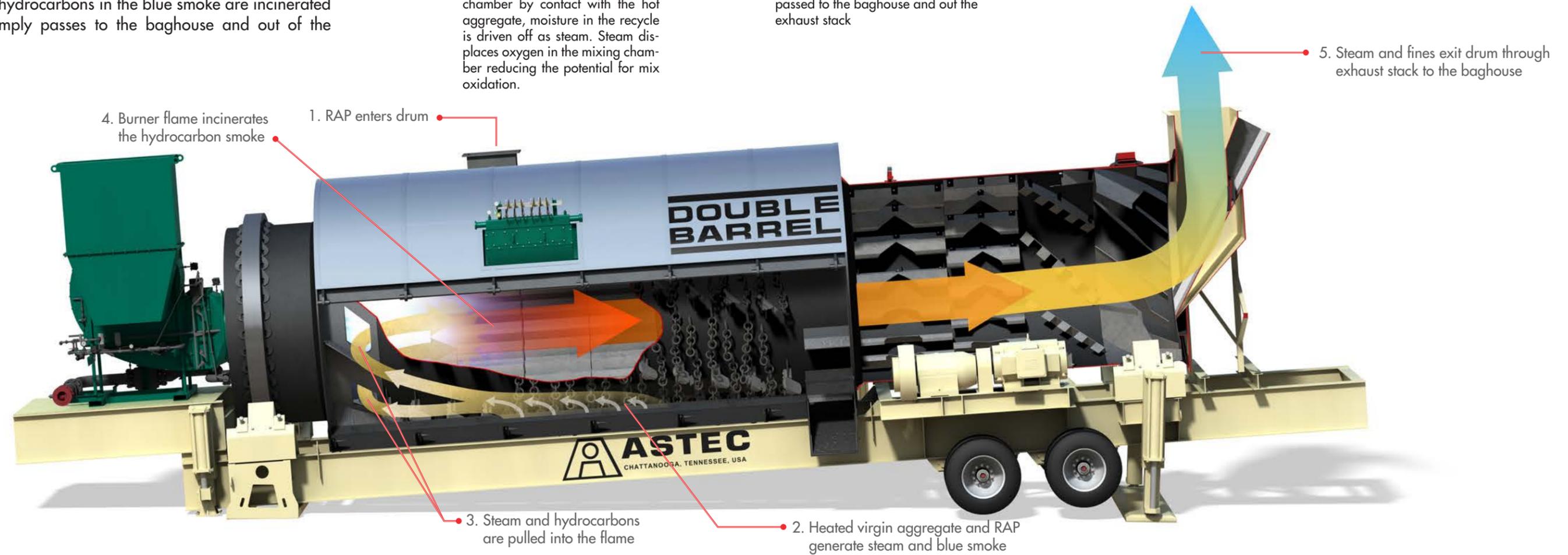


### Steam

As recycle heats in the mixing chamber by contact with the hot aggregate, moisture in the recycle is driven off as steam. Steam displaces oxygen in the mixing chamber reducing the potential for mix oxidation.

### Baghouse

Steam from the Double Barrel is passed to the baghouse and out the exhaust stack

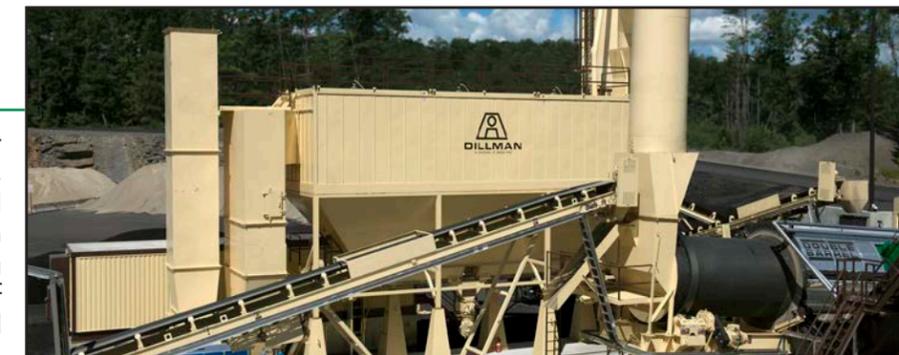


### Pulse Jet Baghouse

Pulse jet baghouses remove particulates from the exhaust stream to efficiencies greater than 99.5%, and lower emission to less than one quarter of EPA standards. During the cleaning mode, blowpipes direct bursts of compressed air into a few bags at a time. The shock and momentary back-flow produced by the compressed air pulse releases some of the dust from the bags, allowing it to drop into the hopper.

### Reverse Pulse Baghouse

Reverse pulse baghouses utilize a rotating, clean air damper assembly. This assembly is indexed by a simple, precision controlled direct drive to insure the sequential isolation and cleaning. The drive is PLC controlled from the operator's location. The bags are cleaned by isolating a single section of bags and then directing a pulse of reverse air that causes the bags in the section to expand and expel the collected dust cake from the surface.



## Stack Temperature Control

ASTECS patented V-Pack™ Stack Temperature Control System allows the operator to set an optimum stack temperature for a particular mix. This system maximizes the amount of energy that goes into the mix rather than being wasted out of the stack. The system's "v-flights," unique drum flights with a deep v-shape, and its use of variable frequency drives (VFDs), which provide control of the drum rotational speed, are keys to the control system managing an asphalt plant's exhaust gas temperature and increasing thermal efficiency.



### Astec V-Flights

V-flights provide greater uniformity of the aggregate veil during the drying process, which results in better heat transfer, a reduction of fuel use, increased productivity and longer bag life



Lowers Stack Temperature on:

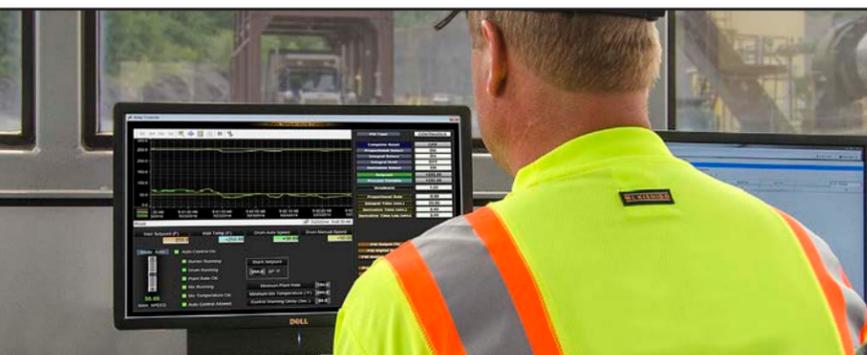
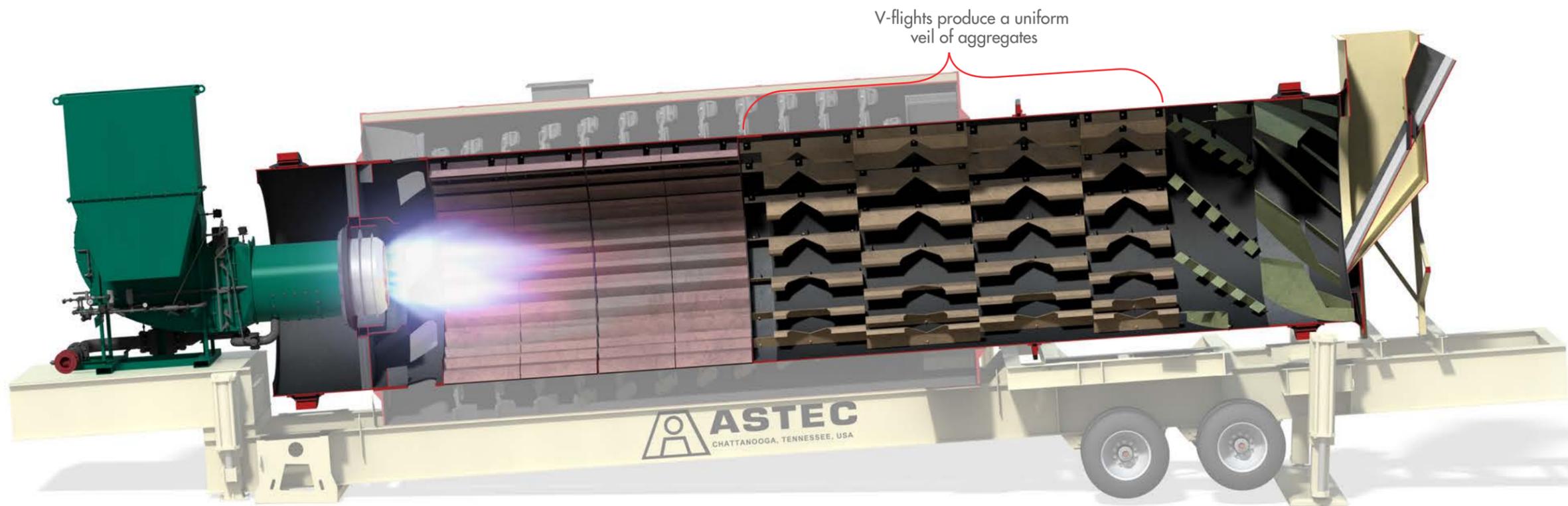
- High RAP Mixes
- Open Graded Mixes
- SMA

Raises Stack Temperature on:

- Virgin Mixes
- Low RAP Mixes

Allows running SMA and high RAP mixes back-to-back with virgin mixes without flight adjustments

\*U.S. Patent No. 8,863,404 B1



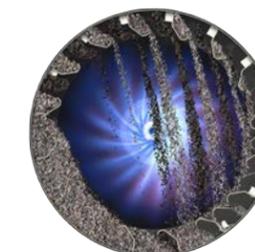
### Automatic Temperature Control

The V-Pack Stack Temperature Control System monitors exhaust gas temperatures at the bag-house inlet as the primary reference for control. As the exhaust gas temperature changes, the control system checks it against a set-point. If the temperature differs from the set-point, the control system automatically changes the speed of the drum, controlling temperature to the set-point.

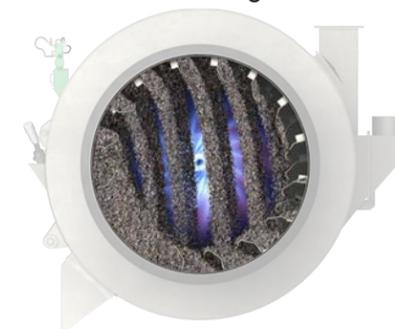
### Uniform Veiling of Aggregates

V-flights produce a uniform veil of virgin aggregate across the entire drum, regardless of the plant's production rate or the RAP percentage used. This enables drum speed changes to effectively control stack temperature. Since the v-flights shower uniformly without regard to material level, there is no "efficiency-robbing" hole in the veil.

Competitor's Flights

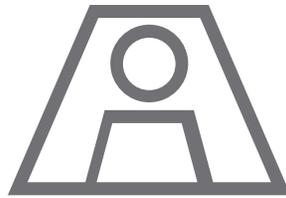


Astec V-Flights





®



**ASTEC, INC.** an Astec Industries Company

4101 JEROME AVENUE • CHATTANOOGA, TN 37407 USA • 423.867.4210 • FAX 423.867.4636 • [astecinc.com](http://astecinc.com)



02/2015