



# BATCH CHARGERS

INNOVATION ENGINEERED IN GERMANY

**HORN**  
GLASS INDUSTRIES

# BATCH CHARGER MODEL HVR F

## General

The HVR batch charger is used for fuel fired furnaces with lateral or frontal, open doghouses

### Level control

If the batch is directly charged from the furnace hopper into the batch feeder, the feeder can be used as a connector between the batch hopper and the batch charger. In this design, the regulation of the fill level by the fill level detector takes place in the furnace hopper.

The batch can however also be transported via screw or a vibration chute etc and then fall into the batch feeder. In this design, a fill level detector is built into the batch feeder. The detector's signal is sent to an isolated contact. This contact can be used to control the screw, the vibration chute or similar equipment.

### Heat shield

The heat shield, in combination with a refractory doghouse hood, brings about the sealing of the doghouse whereby secondary air supply is eliminated. The heat shield also protects the batch charger from too much heat radiation.

### Charging system

The batch is evenly spread on the vibrating chute with the help of the feeder. The end piece of the vibrating chute is made of heat resistant steel and is exchangeable.

A water-cooled paddle is situated at the end of the oscillating charging chute. The paddle pushes the batch evenly from the vibrating chutes into the glass melting end and creates batch piles. The speed of the pusher is inverter-controlled. The stroke length and the submersion depth of the pushers can be adjusted manually.



## HVR 250 F / 300 F / 400 F / 500 F / 600 F

The batch charger is fixed to a moveable carriage with a rotary frame. The frame turns on ball bearings which are fixed between the frame and the carriage. The slewing motion of the rotating frame is caused by a controllable pneumatic cylinder. The movement of the paddle is carried out by a lever system to which a continuous controllable gearbox motor is connected.

For even distribution in the melting end, the batch chargers HVR 250 F, 300 F and 400 F slew from the middle position to the right or to the left using the swing gear, depending on which side of the furnace the batch charger is set up. The swing gear for the batch charger HVR 500 F and HVR 600 F always slews from the middle position to the right and to the left, regardless on which side of the furnace the batch charger is set up.



### Benefits:

- Reduction of the amount of dust by islanding
- Reduction of heat radiation due to thermal shield
- Durability due to stable construction, utilisation of high quality components and excellent workmanship
- Increased melting rate by means of melting of smaller portions of mixture and uniform distribution via swing gear

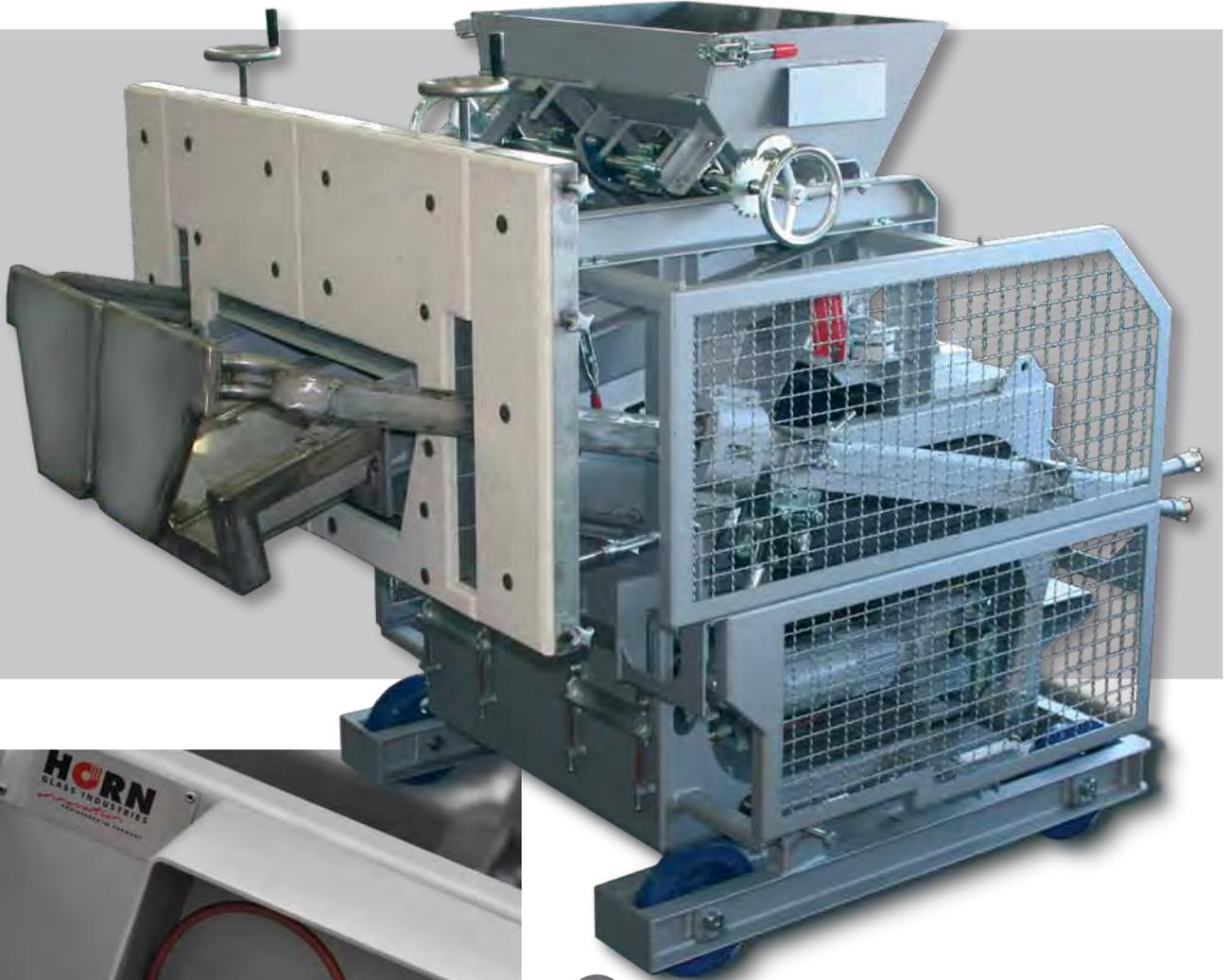
Types available	HVR 250 F	HVR 300 F	HVR 400 F	HVR 500 F	HVR 600 F	HVR 700 F – 2P
Feeder width (top/bottom) [mm]	250 / 150	300 / 200	400 / 300	500 / 400	600/500	2 x 300/200
Capacity [T/day]	up to 60	up to 120	up to 240	up to 420	up to 640	up to 450
Spool strokes [strokes/min]	2,2 - 16	2,2 - 16	2,2 - 16	2,9 - 16	2,9 - 16	2,9 - 16
Cooling water requirement [l/min-1]	10 - 14	12 - 16	16 - 20	20 - 26	26 - 32	50 - 60

## HVR 700 F - 2P

This type of HVR is also fixed to a movable carriage but in this case with non-rotating frame. This rigid construction allows better sealing of the doghouse which increase the temperature inside. This already causes pre-glazing of the batch inside the doghouse, which allows the use of preheated and non preheated batch.

The straight heat shield is designed with reinforced insulation. There is an inspection port in the doghouse hood.

The HVR 700 F - 2P has a single vibrating chute which is separated lengthwise in the middle through a bar and two separate pushers for each side of the chute. The end piece of the vibrating chute, which is made of heat resistant steel, is water cooled and is exchangeable. The two water-cooled pushers can be operated in three modes. The pushers can work absolute synchronised or synchronised but 180° shifted or independent. The speed of the pushers is inverter-controlled. By separating the vibrating chutes and the pushers it is possible to influence the batch distribution at the glass furnace.



### Benefits:

- The elimination of the rotary motion allows better sealing of the doghouse and thereby less excess air from outside into the furnace
  - Temperature rises in the doghouse enabling to use preheated and non preheated batch due to lower batch carry-over
  - NOx emission is reduced
  - Furnace energy consumption decreases
- Influencing the batch by way of the asynchronous adjustable pushers
- Reduced wear and tear due to fewer mechanical parts
- Fast paddle change within 20 minutes

# COLD TOP BATCH CHARGER HVFE

The cold top batch charger is used for electrically heated furnaces.

The batch charger can be moved in both the x-axis and y-axis by means of two carriages. In this way, the batch charger can apply directly into the glass bath, batch layers which are lying parallel to each other. There are 7 initiators on the y-axis to find the positions. One initiator for each track and one for the position "Filling Station". On the x-axis, there are 5 initiators for the start signal, the move signal, the front signal, the back signal and the filling signal. Each of these initiators has 3 sides so that the position can be approached precisely.

The batch charger has a batch container which is filled using the filling station. The filling station is located in the middle of the tracks for the batch layers. The batch charger has to approach the filling station to be filled. A fill level detector is built into the batch feeder of the batch charger. It informs the batch charger when the batch feeder has to be refilled.

The feeder distributes the batch evenly on the charging belt. This charging belt transports the batch evenly to the front where the outlet is situated. If a test run was carried out, the batch charger now moves to the indicator

of the first track. The charging belt starts vibrating in order to transport the batch to the outlet.

The batch charger then slowly moves forward over the glass bath. During this process, the batch slowly falls into the glass bath and forms a layer. When the batch charger reaches the stop position, it automatically moves back to the beginning of the glass bath. To protect against the great heat, the batch charger moves directly above the batch layer.

The lower carriage now moves to the next track and places another batch layer into the glass bath. The first three tracks are always placed into the glass bath, independently of the fill level detector's notification in the batch container. From the fourth batch layer onwards, the fill level detector is queried.

If the fill level detector detects too little contents in the batch container, the batch charger automatically moves to the filling station. It connects with the batch feeder of the machine and fills it. After completion of the filling process, the filling station undocks. The batch charger now continues where it left off before refilling in order to avoid a thick layer of batch.



## Benefits:

- Long life due to rugged construction, using high quality components and exceptional processing
- Uniform mixture distribution due to an accurate approximation of the mixed spinning records during the insertion process and the smooth insertion movement

	HVFE
Max. capacity	5 – 50 T/day
Charging area	1 - 6 batch layers á 560 mm
Reservoir capacity	200 - 300 dm <sup>3</sup>

## SMALL LOADING AMOUNT

### CLOSED DOGHOUSE

#### Piston Batch Charger

The batch charger consists of a fixed-mounted base and a movable upper structure with a feed hopper. If the hopper is filled by means vibrating chute an electrical level sensor in the hopper is used.

A hydraulically actuated piston presses the batch with shards through the water-cooled insert attachments into the furnace. The control of the piston is insert through the glass level control and can be fixed with a timing device.

By two non-contact, adjustable limit switches, the stroke of the piston can be set.

A broken glass size of 50 mm edge length must not be exceeded. Larger pieces of glass would be between the front edge of the piston and the front edge of the squeezed transition hopper and cause increased wear there.

The fine dust is sucked through a dust removal unit. The dusty air passes through after a coarse separator also several fine filter.



Types available	HK 250	HK 350	HK 500
Capacity [T/day]	1 - 15	1 - 20	1 - 30
Cooling water req. [l/min-1]	20 - 30	26 - 42	26 - 42



#### Benefits (Piston and Screw Batch Charger):

- Dust proof loading
- Low dust from expensive raw materials required in small quantities

## SMALL LOADING AMOUNTS

### CLOSED DOGHOUSE

#### Screw Batch Charger

The batch charger is mounted on a movable cart.

If the mixture is filled directly from the furnace day hopper in the charging hopper, the hopper may serve as a transitional piece between the batch bunker and charging machine. The mixture can also be transported via a screw conveyor or a vibrating feeder, etc. and fed into the charging hopper.

In a batch hopper level sensor is installed, the signal is fed to a dry contact. This contact can be used to control the screw conveyor, vibrating chute, or the like can be used. The funnel spread the mixture evenly over the screw. This screw conveyor transports the mixture evenly to the front to the furnace.

The batch charger infected with the water-cooled insert pipe directly in the doghouse, by this the mixture runs into the furnace. Thus the batch charger pipe does not slip out of the Doghouse, the fixing ring which is provided with insulating material are fixed by screws to the batch charger pipe.



Types available	HS 170	HS 200	HS 250
Capacity [T/day]	1 - 15	1 - 35	1 - 50
Cooling water req. [l/min-1]	20 - 27	24 - 30	30 - 36

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