Volund Grates Upgrades

Table of Contents

Table of Contents **2**

Contacts **2**

Volund Grate Upgrades to state of the art design **3**

Reducing the Rate of Riddlings **5**

Avoiding Sole Plate Cracks **6**

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Volund Grate Upgrades to state of the art design

A Volund grate can be upgraded to provide a better combustion of the waste.

Dublix Engineering offers a range of services to upgrade your Volund grate to State of the Art design.

Manufacturing and erection drawings of new mechanical feature:

- New and improved design of grate adjustment mechanism,
- New and improved design of upper supports for stationary grate girders,
- New and improved design of lower supports for stationary grate girders,
- New arrangement of grate girder assembly,
- New grate drive with position sensor integrated in the hydraulic drive cylinder,
- The grate girder design of today adapted to earlier grate designs.

Double action feeding grates:

- Modification to work as the more efficient single action feeding grate,
- Transformation into the more efficient single action feeding grate.

Upgrading of Volund grate mechanics and castings to the design of today:

- An identifying feature of state of the art design is an ø25 mm grate block stringer connecting bar instead of the earlier ø20 mm bar,
- Improved sealing around the whole grate surface perimeter,
- Improved lateral grate adjustment,

- Absolute locking of grate bars in grate blocks (= a row of grate blocks can only be opened from the top down; not in intermediate areas by the passing waste),
- Possibility of different pressure drops in different areas across the grate surface in question (a completely closed surface along the furnace side walls and gradually it opens up to maximum porosity in the central lane; or maximum porosity in the upper third of a post combustion grate, tailor-made porosity in the middle third according to your own experience and totally closed surface in the last portion).

Reducing the Rate of Riddlings

Riddlings is the fraction of waste passing across a grate bed that drops through the openings in the grate, moves against the primary air stream through the aperture and drops down into the collecting hopper placed under the grate surface.

What is the problem?

The riddlings will accumulate in the hopper and eventually block the primary air. Usually, plants deal with that issue by frequently cleaning the hopper; however it is a very tedious, dirty and manpower-consuming job.

The Dublix Solution:

Dublix knows how to revamp your grate mechanics and we can bring further improvement over the design level of the original constructor.

There are 3 focal points for bringing your rate of riddling down to the possible minimum:

- The porosity can be adjusted in various locations of the grate surface to obtain perfect combustion all over the grate;
- The air gap along the grate perimeter can be narrowed down to gaps between 3 and 6 mm;
- The air gap between the grate girders contact flanks can be reduced to somewhere between 2 mm or very close to 0 according to the level of maintenance to be performed.

Achievable results:

- The rate of riddling will become minimized;
- The level of uncontrolled ingress of primary air will become minimized along the grate perimeter;
- The risk of under grate fires will become minimized;
- The frequency of hopper cleanings will become minimized;
- Your need of manpower will become minimized;
- The strain on the riddling system will become minimized;
- The mechanical and thermal wear of the grate block contact flanks will be minimized, the grate blocks will get a much longer life;
- Uncontrolled ingress of primary combustion air through big contact line holes brought about by way of thermal wear will become eliminated (blow torch effect);
- You can decide how to distribute the primary air flow across the grate surface;
- Increased waste incinerating capacity due to optimized primary air flow distribution across the grate surface;
- You will be free to change the primary air flow distribution according to significant future changes in the composition of the waste brought to your plant.

Avoiding Sole Plate Cracks

The crack will eventually rupture the sole plate and continue to weaken the side plate to a point where the ensuing deformation of the grate box will cause the grate girders to drop down from their supports. The cracks will also create a leak, where ash particles will be blown out with the escaping primary combustion air.

Those cracks are the **results of** a more rigid design of the Volund grate after 1990 and especially after 1995. No thermal dilatation is possible at either end, so each elevated change in temperature will potentially create new cracks.

Dublix Engineering's **solution** is to make adjustments, based on extensive experience, in the sole plates and the vertical side plates.

As a **result**, future formation of cracks is avoided, and money is saved on repairs.