

By-pass equipment



Z 4362

1. Complex By-pass Equipment Offer

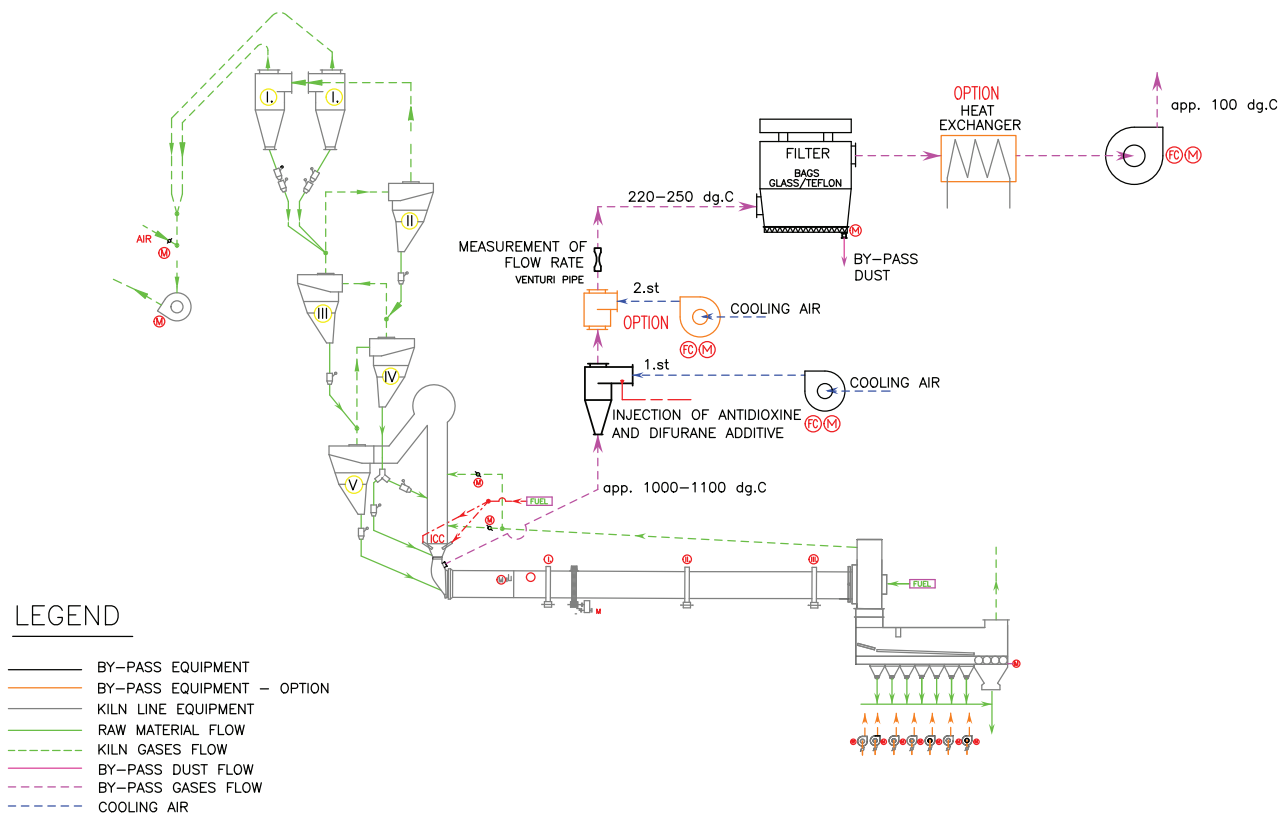
DSD-Dostál, a.s. offers a complex supply of in-house manufactured and engineered by-pass equipment in technology size of 3 to 20%.

The offer cover technology measurement, bypass size design optimalization, delivery of machine equipment in the contracted extent, including project of machinery and electric equipment, supervision of installation, commissioning, operators' training, guarantee and post-guarantee service including spare parts supply.

2. Purpose of by-pass equipment

By-pass is equipment used for extraction of excess pollutants in the form of alkaline chlorides and sulphates from a furnace line. It designates the evacuation of a part of furnace gases from the transition section of the exchanger rotary cement kiln, its rapid cooling and ducting to a separate filter. The purpose of by-pass introduction is the effort to minimize or prevent deposit in the exchanger by ducting alkalis (especially in the form of chlorides and sulphates) out of the kiln circuit, eventually an effort to reduce alkali contents in the clinker especially in the relation to introduction of alternative fuels combustion in the kiln line. The need for installation of a by-pass starts when exceeding the value of 0.35g Cl/1kg of clinker of the chlorine input from all sources (raw material powder, fuels) into the kiln line system.

TECHNOLOGICAL DIAGRAM OF CONNECTION OF BY-PASS WITH CLINKER FIRING LINE

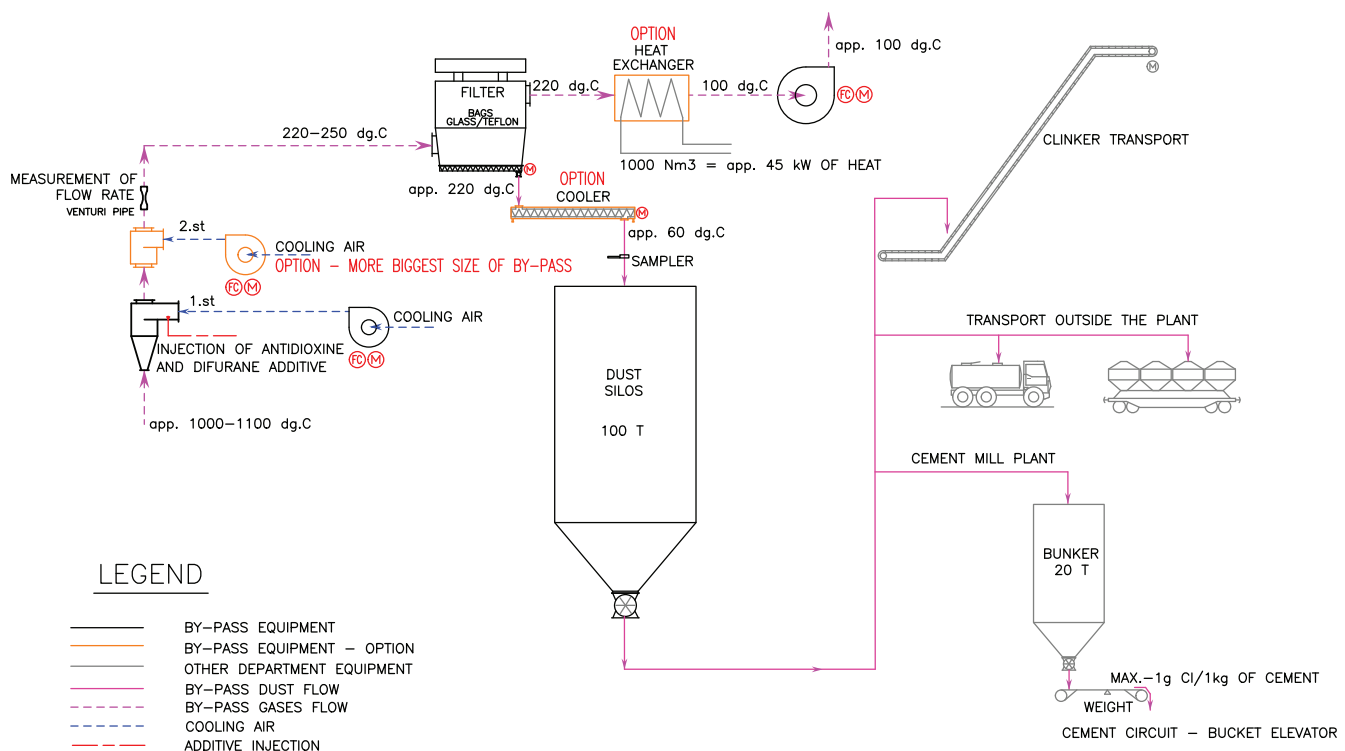




By-pass gases are evacuated from the transition section into a cooling chamber, where, due to rapid cooling of hot by-pass gases, alkali (especially in the form of chlorides and sulphides) condense on dust particles, contained in by-pass gases. The dust particles form condensation nuclei. The temperature in the transition section reaches app. 900-1,000°C, the evacuated by-pass gases have to be shock cooled to app 200-220°C, to achieve condensation of all alkali compounds and also to prevent formation of dioxins and difurans, by so called De novo synthesis.

Injection of additive, eliminating eventual formation of dioxins and difurans, can be installed within the technological system an option and a heat exchanger for utilization of excess heat for production of hot water, to be used for heating of operational buildings, warehouses or for hot service water production, is also possible.

TECHNOLOGICAL DIAGRAM OF REMOVED BY-PASS DUST MANAGEMENT WITH ADDITIVE INJECTION



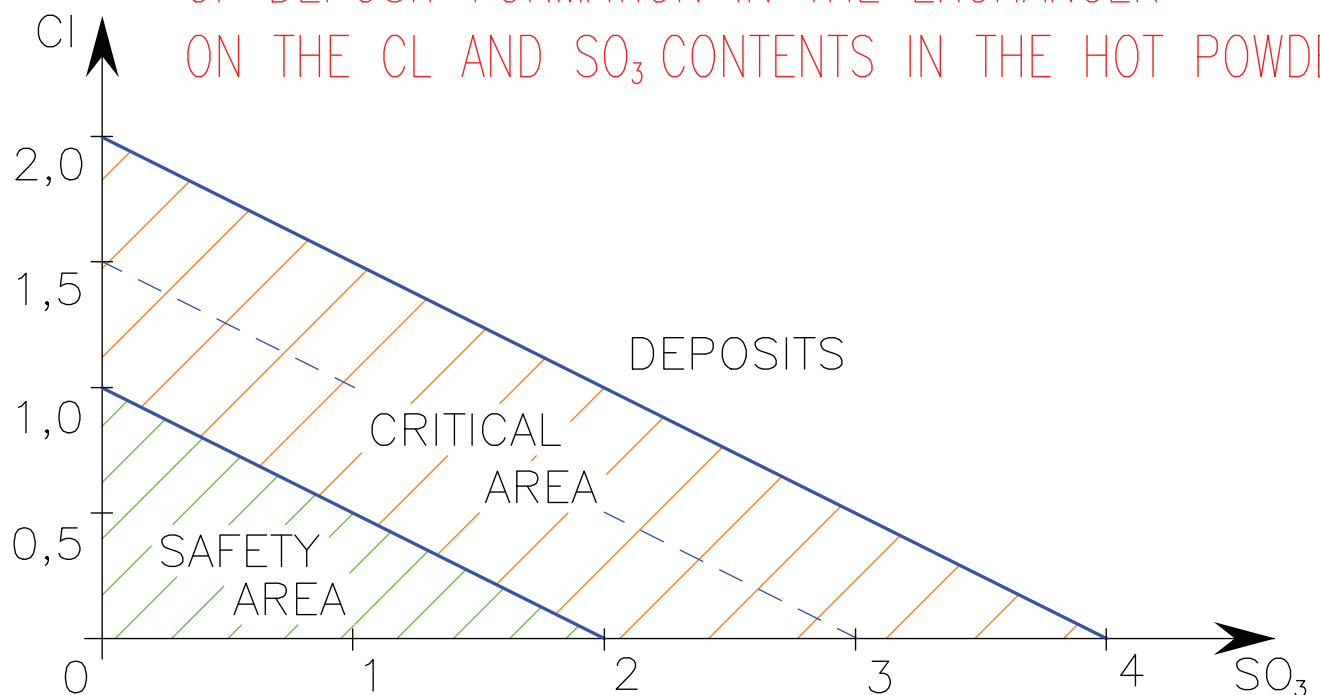
3. Technical solution of by-pass equipment

The standard by-pass equipment on offer comprises of the following parts:

- by-pass chamber with single-stage or two-stage cooling
- cooling fan with power control through frequency converter
- tubular filter with hoses on the basis of fibre glass fabric with PTFE coat.
- evacuation fan with power control through frequency converter
- connecting gas piping
- transport of by-pass dust to a silo for removed by-pass dust
- transport and dosing of removed bypass dust from a silo to clinker cooler output *
- transport and dosing of removed by-pass dust to a tank truck *
- transport and dosing of removed by-pass dust to a cement mill room circuit *
- sampling of by-pass dust behind the removed by-pass dust filter
- sampling of removed by-pass dust dosed to the cement mill room circuit
- control system with visualisation
- measurement of flow-rate, temperature and pressure of gases in the by-pass equipment
- project and operational documentation

* - the method of utilization of removed by-pass dust is optional in any combination

CHART OF DEPENDANCY
OF DEPOSIT FORMATION IN THE EXCHANGER
ON THE CL AND SO_3 CONTENTS IN THE HOT POWDER





4. Technological services offered in relation with the installation of by-pass equipment

- *technological measurements and calculation of optimal rating of by-pass*
- *proposal of utilization of removed by-pass dust (to cement or removal to a dump)*
- *utilization proposal for by-pass gases with dust removed (into the atmosphere or back into process)*
- *commissioning of by-pass and operators' training*
- *warranty and post-warranty technological service*

5. Technical services offered in the context of by-pass installation

- *engineering and preparation of machinery and electrical project*
- *preparation of documentation for building project*
- *supervision of installation of machinery and electrical parts of by-pass equipment*
- *commissioning of by-pass and operators' training*
- *warranty and post-warranty technical service*