

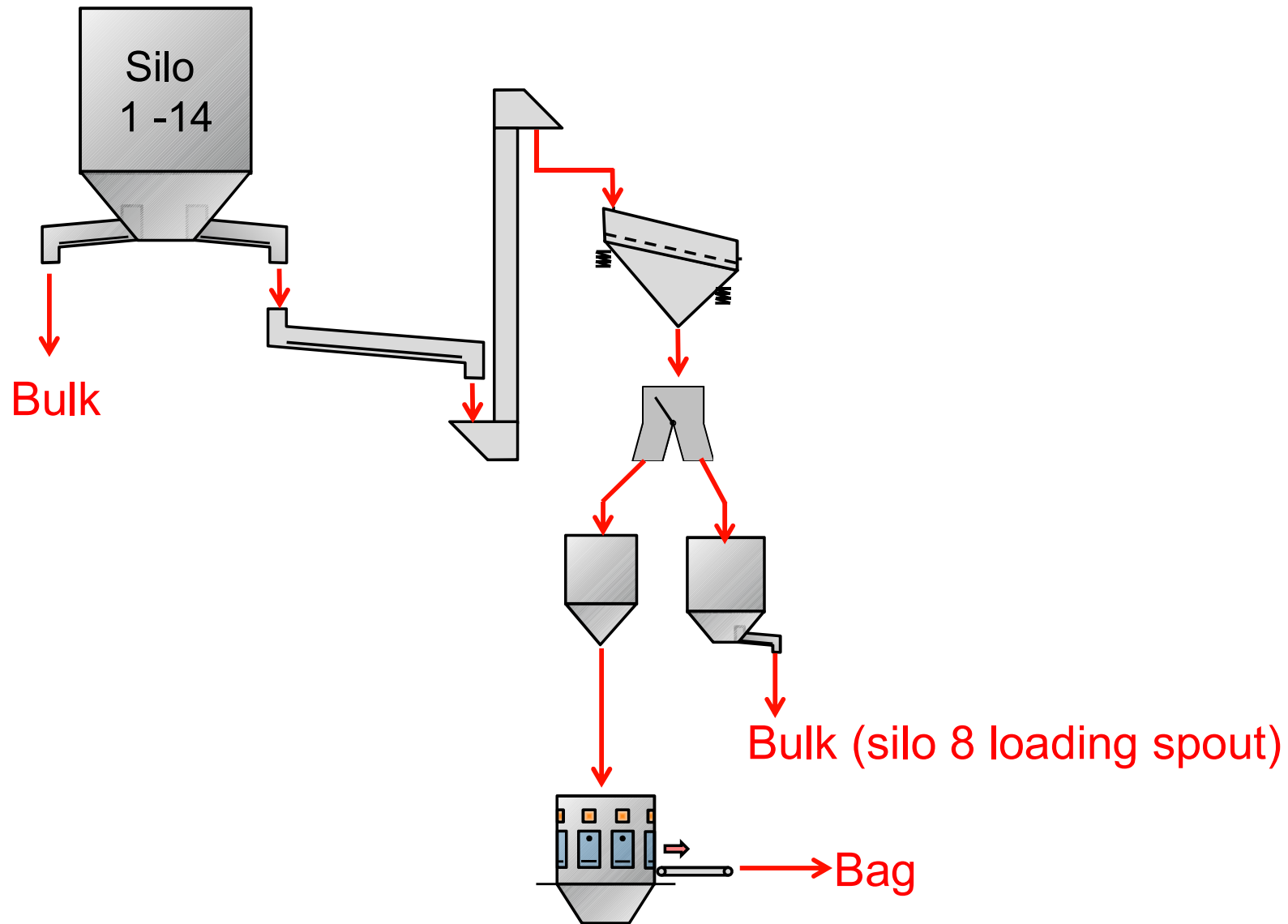
# **Concept proposal:** New blending facility project

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# As installed (simplified)

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# Project specification

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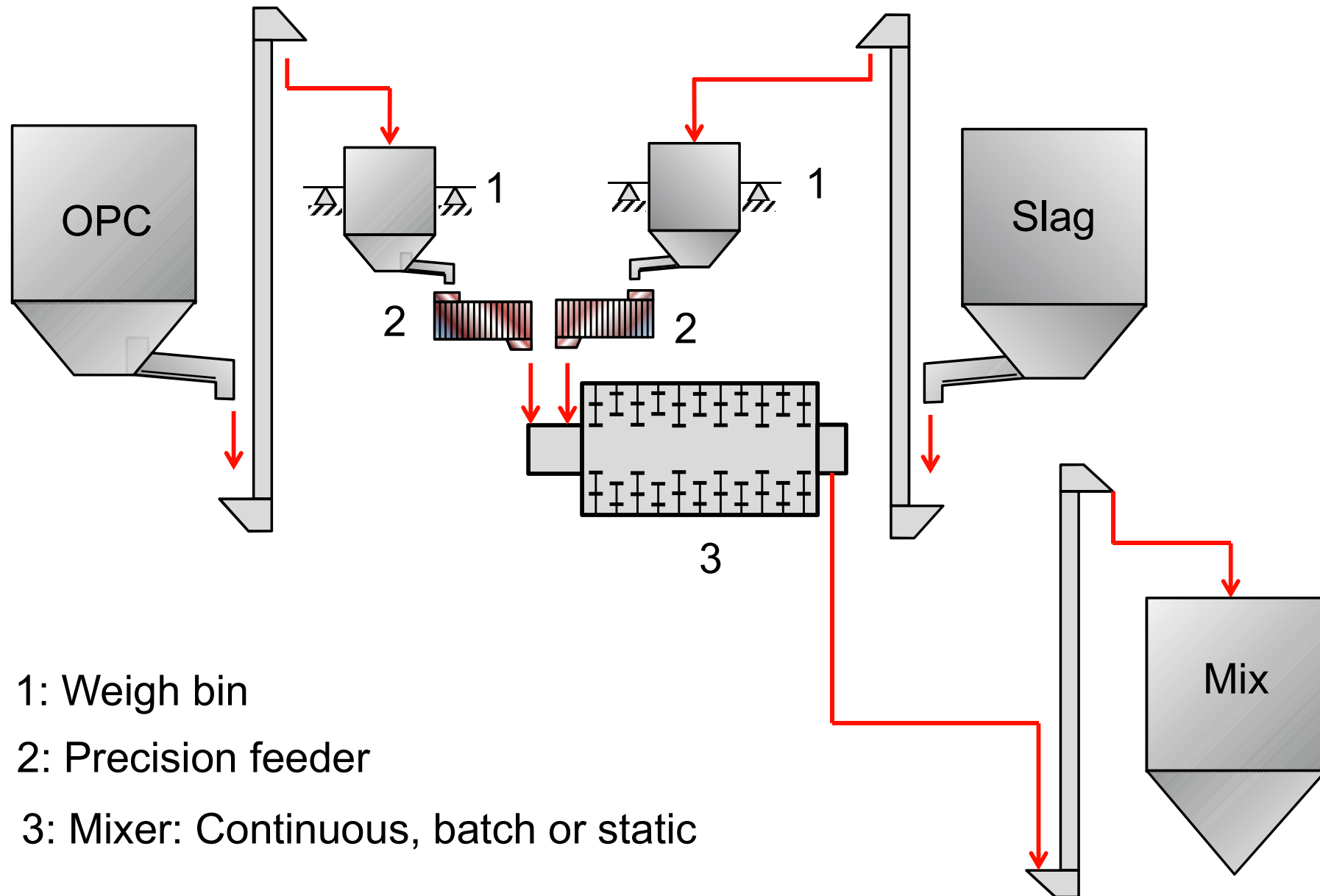
- Maximum annual dispatch rate (OPC, and or slag/fly ash cement): 0.8 Mio T Cement.
  
- Material density:
  - ▶ OPC: 1.1 Kg/m<sup>3</sup>.
  - ▶ Slag: 1.3 Kg/m<sup>3</sup>
  - ▶ Fly ash: 1.6 kg/m<sup>3</sup>.
  
- Product fines:
  - ▶ OPC: 3400 – 3600 cm<sup>2</sup>/g
  - ▶ Slag: 3800 cm<sup>2</sup>/g +-100 cm<sup>2</sup>/g
  - ▶ Fly ash: 4'200 +-100cm<sup>2</sup>/g

# Project specification

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- Mixing ratio:
  - ▶ Slag: Minimal operation 5%, maximum operation 80%, normal operation 10%.
  - ▶ Fly ash: Minimal operation 5%, maximum operation 40%, normal operation 25%.
  
- Variation between product mixing ratio:
  - ▶ Seldom (approximately every 10 to 14 days)

# Slag blending: Basic principle

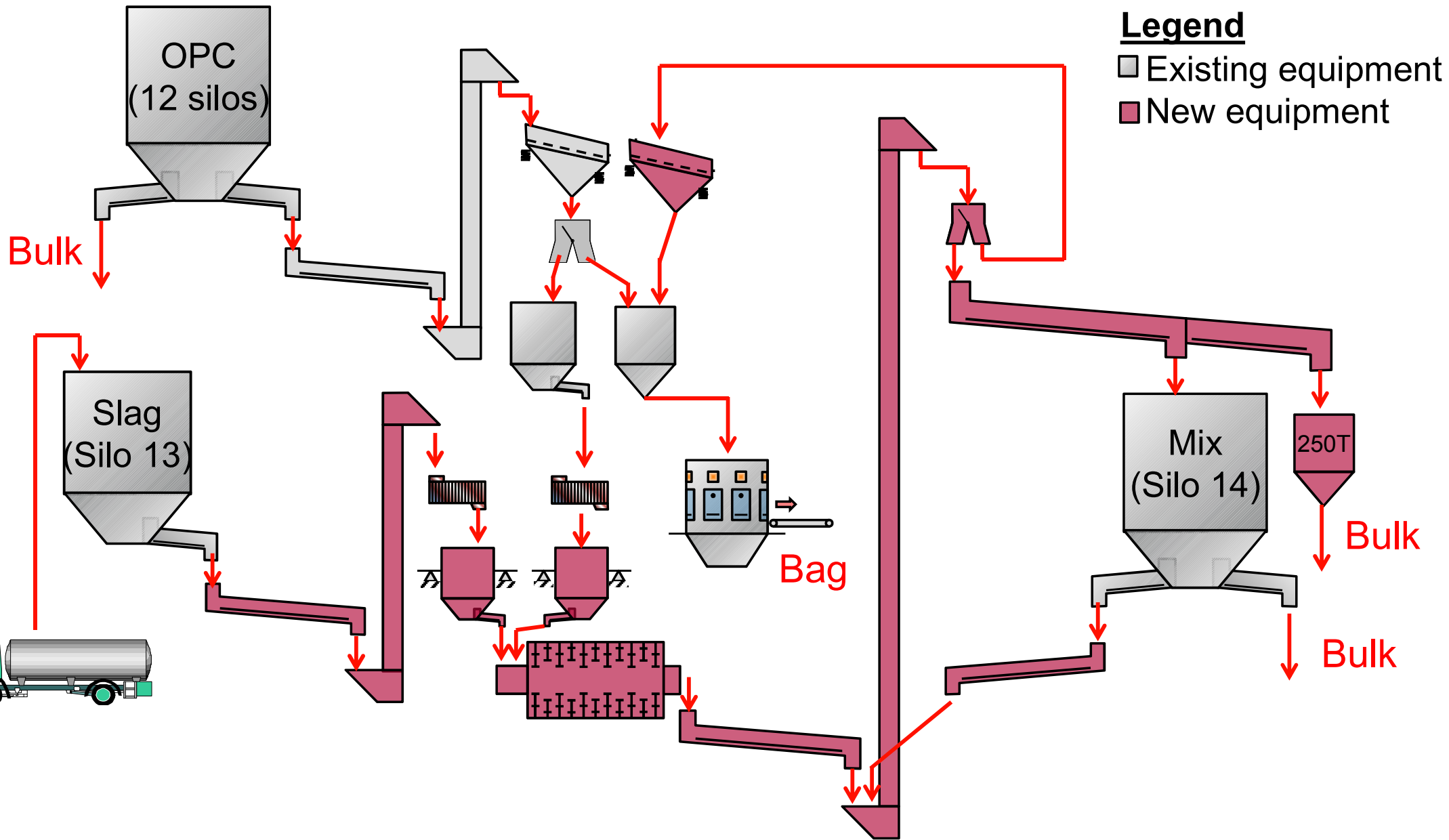


1: Weigh bin

2: Precision feeder

3: Mixer: Continuous, batch or static

# Option 1: Highest OPC supply flexibility



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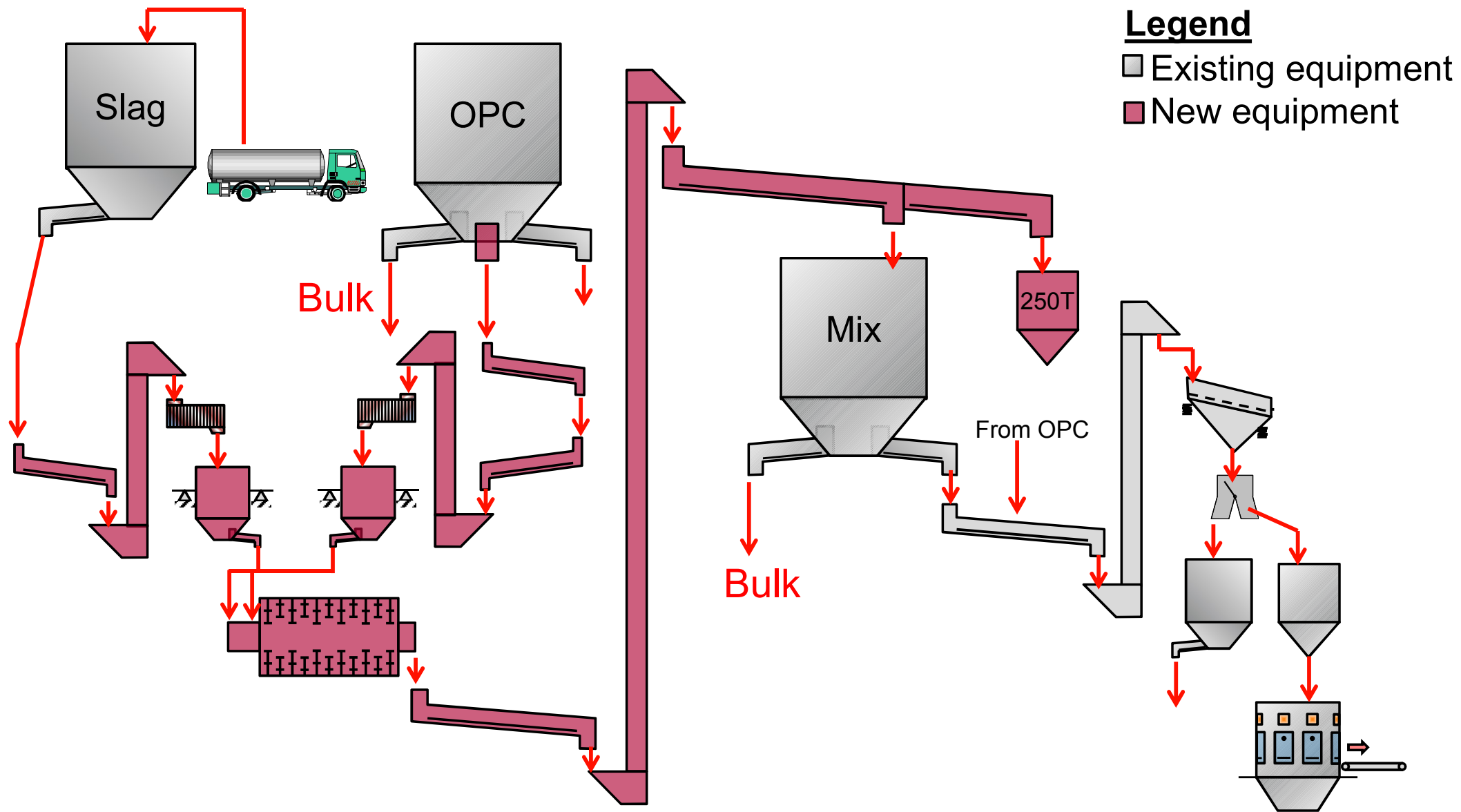
## ■ Pros

- ▶ All OPC silo's (except 8 and 13) can supply material for blending and packing.
- ▶ Fastest switching time between OPC and blended products (only packer and bin need to be cleaned).

## ■ Cons

- ▶ Packing OPC and blending simultaneously possible at reduced capacity rate (each at 50% capacity only).
- ▶ Maximum OPC throughput for blending limited to 160m<sup>3</sup>/h.
- ▶ Either direct packing of blended cement or silo feeding (simultaneous packing and silo feeding not possible).

# Option 2: Highest throughput





## Option 2: Highest throughput

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### ■ Pros

- ▶ Packing OPC and blending simultaneously possible at full production rate (each at 100% capacity).
- ▶ Higher blending rates possible than existing installation throughput (e.g. 300 – 400 TPH blending capacity) [In case of high bulk requirement].

### ■ Cons

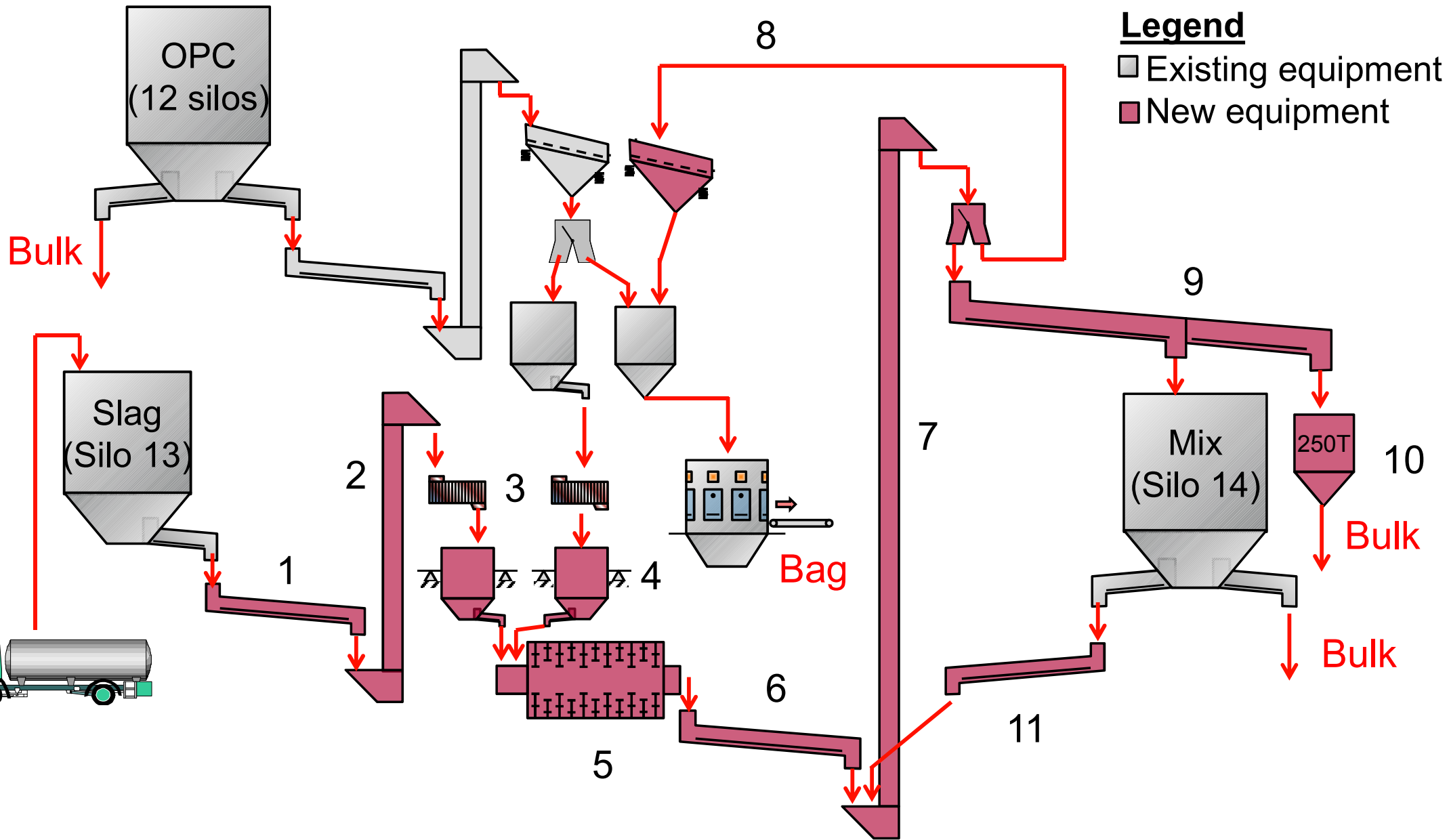
- ▶ Only few OPC silos can be used to supply material for blending (new extraction system required).
- ▶ Slowest switching between OPC and other products.

# Recommendation

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- Option 1 is preferred installation:
  - ▶ High flexibility of material supply for blending & packing.
  - ▶ Lower investment costs.
  - ▶ Higher throughput is not a requirement (due to other limitations e.g. utilization of port).
  - ▶ Mix silo extraction system can be designed for fly ash/slag (higher air slide inclination required than OPC).

# Proposed design: Option 1



# Basic equipment specification

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- Air slide transport (1):
  - ▶ Capacity: 200 TPH
  
- Bucket elevator (2)
  - ▶ Capacity: 160m<sup>3</sup>/h (200 TPH max)
  - ▶ Height: Depending on Mixer dimensions
  
- 2 Rotor Weigh Feeder (3)
  - ▶ Make : Type Pfister
  - ▶ Capacity : 160m<sup>3</sup>/h (200 TPH max)
  - ▶ Control Range : 10-180 TPH
  - ▶ Precision: 0.5%

# Basic equipment specification

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- One slag and one OPC bin (4)
  - ▶ Type : Load cell bin (Flat bottom)
  - ▶ Capacity : 40 m<sup>3</sup> each bin
  
- Mixer (5):
  - ▶ Capacity: 160m<sup>3</sup>/h (200 TPH max)
  - ▶ Type: Continuous blending
  
- Air slide transport (6):
  - ▶ Capacity: 200 TPH
  
- Bucket elevator (7)
  - ▶ Capacity: 160m<sup>3</sup>/h (200 TPH max)
  - ▶ Height: Approximately 60m

# Basic equipment specification

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- Vibrating screen (8)
  - ▶ Capacity: 160m<sup>3</sup>/h (200 TPH max).
- Air slide transport (9):
  - ▶ Capacity: 200 TPH
- Special product bin (10)
  - ▶ Capacity : Maximum 250 T
- Air slide transport (11):
  - ▶ Capacity: 200 TPH