

BlueLine - Follow-up: New Screening Family

Bled, 2014-11-20





Voith screens Integra succeed the Multi Family





Basic information Naming of Integra family

The new name for the screens are

for stockprep and broke: IntegraScreen ISxx/yyy for approach flow system:

IntegraGuard IGxx/yyy



IntegraGuard IG



IntegraGuard IG Market requirements

Customer requirement	Effect
Must have	
clean suspension	protection of the headbox
Needed	
low pressure pulsation	high quality product
no deposits / stringings	high runability of the paper machine
Nice to have	
low total costs of ownership	short ROI

The main customer requirements are: no stringings, no deposits, no pulsations.

IntegraGuard IG The new generation



The IG kept the advantages of the MSA and improved its qualities where possible.

IntegraGuard IG Function principle: Accept flow in the IG



- 1 Feed from the top
- 2 Mostly vertical flow
- Off-centered, high efficiency rotor (MultiFoil) and screen basket (C-Bar)
- Conical housing for homogeneous screen passing velocities
- 5 Accept fibers guided downwards along the housing after passing the screen
- 6 Low pressure drop due to straight flow principle
- 7 Accept outlet
- (8) Reject outlet

IntegraGuard IG Function principle: Reject flow in the IG



- 1 Feed from the top
- 2 Mostly vertical flow
- Off-centered, high efficiency rotor (MultiFoil) and screen basket (C-Bar)
- Conical housing for homogeneous screen passing velocities
- Reject cannot pass the screen and is guided downwards along the basket into the reject chamber
- 6 Low pressure drop due to straight flow principle
- 7 Accept outlet
- 8 Reject outlet



IntegraGuard IG Main problems of screening in the WEP

1. Stringings

2. Deposits











IntegraGuard IG Main problems of screening in the WEP

1. Stringings



2. Deposits



S. Pulsaions





IntegraGuard IG Prevention of spinnings



Source

 Very high screen passing velocities in the screen basket.

Appearance

 In cylindrical housings preferred in the region of the accept fitting.

Reason

• The suspension faces the lowest counterpressure in this region.

housing	screen passing velocity			
	min.	middle	max.	
cylindrical	0 m/s	1.5 m/s	4 m/s	

Cylindrical housings have a high risk of causing spinnings.

IntegraGuard IG Prevention of spinnings



IG-Solution

Conical shaped housing

Effect

• Homogeneous counter-pressure of the housing over the hole screen basket.

Result

• Homogeneous screen passing velocity over the hole screen basket.

housing	screen passing velocity			
	min.	middle	max.	
conical	1.4 m/s	1.5 m/s	1.6 m/s	

Conical housings prevent spinnings.



IntegraGuard IG Main Problems of Screening in the WEP

1. Stringings



2. Deposits



3. Pulsations



IntegraGuard IG Prevention of Deposits



Soores

- centrical housing
- low flow velocity zones in accept chamber

Critical places

- at rough surfaces (particles can adhere)
- on top of screen basket reinforcement rings
- preferred on non-outlet side of the housing
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Reasons

- in centrical housings, the tangential flow velocity depends on the position in zdirection
- it is minimal on the non-outlet-side

Centrical housings can cause deposits.

IntegraGuard IG Prevention of Deposits



IG-Solution

• excentrical housing

Effect

- less space on non-outlet side
- more space on outlet side

Result

- homogeneous counter pressure in radial direction
- uniform, low flow velocity in tangential direction (along the housing on accept side)

Excentrical housings help to prevent deposits.

IntegraGuard IG Prevention of deposits



Additional features

- In our standard-IG, the accept chamber is electropolished
- This helps to prevent deposits (no rough surfaces, where particles can adhere)
- Electropolished head piece and reject chamber are available

The electropolished IG-surface offers no working point for deposits.



IntegraGuard IG Main problems of screening in the WEP



2. Deposits



3. Pulsations



IntegraGuard IG Prevention of pulsations



Source

- Pressure pulses caused by the rotor
- aggressive rotor & higher rotor speed
 high pulsation level

Appearance

• at the headbox in form of MDvariations in the paper or sheet breaks

Reason

 pulsations are a by-product of the rotor elements which are needed to keep the screen basket clean

Normal WEP screens have a high pulsation level, cause by the rotor.

IntegraGuard IG Prevention of pulsations



IG-Solution

- MultiFoil H
- new head piece design

Effect

- very low pulsation level
- low required rotor rpm

Result

- high quality paper
 (no deviations in MD profile)
- no pulsation damping device needed before the headbox

The IG pulsations are so low, that no pulsation damping is needed at the headbox.

IntegraGuard IG Prevention of pulsations



Situation in the new IG

- vertical flow direction
- smaller tangential flow velocity of the pulp
- Iow required rotor rpm to get sufficient differential speed between pulp and rotor
- straight downwards flow
- \blacktriangleright no turbulences = no energy loss
- Iow pressure drop = energy savings

The IG has a very low rotation speed of the rotor and a low pressure drop.



IntegraGuard IG Available models



delivery time 8 months available materials: 304 (max. 8 bar) or 316 (standard, max. 10 bar)

IntegraGuard IG Fiberloop: Advantages



The fiberloop reduces the reject to ~50% by dividing the reject flow into a partial flow onwards and a partial reflow into the inlet.

This leads to

- a lower reject rate
- \rightarrow less fiber circling = energy savings
- 2nd stage can be designed smaller
- \rightarrow lower investment costs

The FiberLoop reduces the total costs of ownership.



IntegraGuard IG Fiberloop: Function



- 1) standard flow distribution in the feeder
- 2) with the Fiberloop, the pipe diameter decreases, thus the flow velocity increases
- 3) the increased flow velocity creates an underpressure, pulling the flow out of the Fiberloop
- 4) turbulences mix up the flows and create a homogeneous suspension

IntegraGuard IG Benefits



With the IntegraGuard we offer

- no deposits or stringing due to the conical, off-centered housing
- high screening efficiency due to MultiFoil rotor and C-bar baskets
- low pulsation level due to reduced rotation speed of the rotor
- minimum of spare parts due to high degree of standardization
- operational reliability due to flow optimization
- reduced energy consumption due to low pressure drop

IntegraScreen IS



IntegraScreen Application portfolio



IntegraScreen Product features



- \bigcirc Suspension inlet
- Accept discharge
- ③ Reject discharge
- 4 Rotor
- 5 Light reject guide
- Cone for guided flow of the accept
- ⑦ Reject dilution (optional)



IntegraScreen Flow condition feed





- ① Feed from the bottom
- 2 Feed underneath the barrier

IntegraScreen Flow condition around basket



- 1 Feed from the bottom
- ② Feed underneath the barrier
- ③ Accept discharge
- A Rotor
- Cone for guided flow on accept side
- Homogeneous flow and pressure drop for improving screening efficiency
- ⑦ Guided flow to accept pipe



IntegraScreen Flow condition reject



- 1 Reject discharge
- 2 Reduced reject room
- ③ Displacer
- Light reject is guided along the displacer to the reject

pipe



IntegraScreen Reduction of Losses due to Reject Dilution and Recirculation



IntegraScreen Maintenance



- Basket assembly from the top of the machine
- Rotor assembly from the top of the machine
- Only five bearing units for all sizes of IntegraScreen and IntegraGuard
- Baskets between IntegraGuard and IntegraScreen exchangeable



IntegraScreen - Features

- High Quality:
 - High separation efficiency with C-bar family and MultiFoil rotors
- High Runnability:
 - reliable and maintenance friendly design
- Low TCO:
 - Reduced fiber losses with reject dilution and internal recirculation
 - Energy efficient with Voith rotors and baskets
 - Simple system integration without dearation pipe.
 - Low maintenance cost due to standardized machine parts.



IntegraScreen Simple Integration into screening systems

Common system

New system with IntegraScreen



With light rejects:

- additional piping required
- additional valves required
- → approx. +4000.- €/machine
- higher load for tail screen to operate the light rejects



Without light rejects:

- one reject pipe, which includes the light rejects
- less valves required → less maintenance
- reject dilution direct in the machine

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