

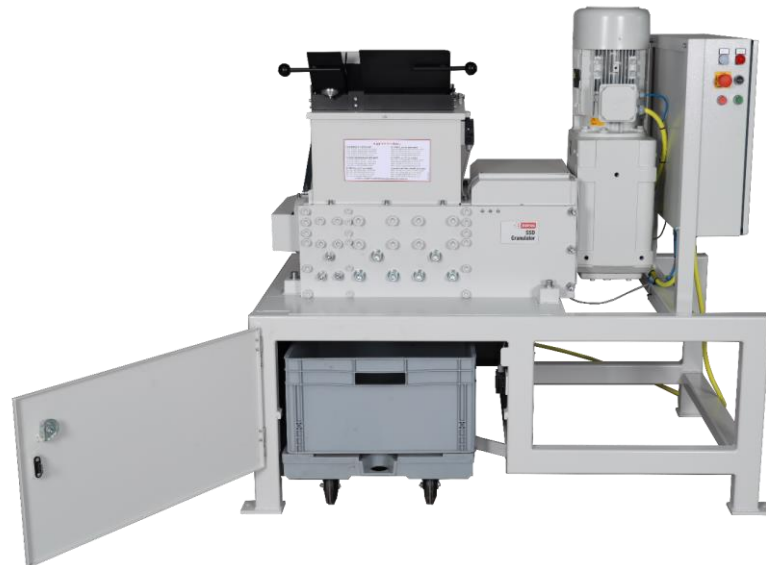


intimus International

Industrial Solutions for paper and storage media

Agenda

- **1. Introduction**
- **2. Customer Group Recycler**
- **3. Customer Group Industrial waste management service providers (Workshops...)**
- **4. Customer Group Governmental (Military, National Banks...)**





Document
shredder

IT
security

Industrial
shredder

Packaging
shredder

1. Machine overview

- 1.1 Standard paper Shredder
- 1.2 Multimedia Shredder
- 1.3 Disintegrators
- 1.4 Special Machinery (Projects)

INFORMATION
SECURITY



Industrial
shredder



1.1. Standard Paper Shredder:

- H200
- Intimus 14 Range
- Intimus 16 Range
- VZ 14.00
- XL/XLM Range
- VZ/VZM Range



INFORMATION
SECURITY



Industrial
shredder



1.2. Multimedia Shredder:

- HDD Gladiator
- HDD Granulator
- SSD Granulator
- HDD-SSD Granulator
- VZ Multimedia
- VZ Special



INFORMATION
SECURITY



Industrial
shredder



1.3. Disintegrators:

- **DIS 150/230 – DIS 600/1000**
- **Suction systems**



INFORMATION
SECURITY



Industrial
shredder



1.4. Special Machinery (Projects):

- **Military**
- **Ship installations**
- **Nickel plates**
- **Banknote destruction**
- **Complete systems**



2. DIN 66399 – ISO/IEC 21964-1



INFORMATION
SECURITY

DIN 66399

Includes:

- **Basics for the destruction of sensitive data**
- **Requirements for the destruction of sensitive data**
- **Processes for the destruction of sensitive data**

PROTECTION CATEGORIES | SECURITY LEVEL

- Security class 1 - normal need for internal data
- Security class 2 - high demand for confidential data
- Security class 3 - very high demand for particularly secret data

PROTECTION CATEGORIES	SECURITY LEVEL P I F I O I T I H I E						
	1	2	3	4	5	6	7
1	•	•	•				
2			•	•	•		
3					•	•	•








DIN 66399

2.1 CLASSIFICATION OF PRODUCT RANGE BY CLASS AND LEVEL

- P** – Information in original size – **Paper, Film, Printing Forms, etc.**
- F** – Information in reduced size – **Film, Foil, etc.**
- O** – Information on optical Data Carriers – **CDs/DVDs, etc.**
- T** – Information on magnetic Data Carriers – **Floppy Disks, ID Cards, etc.**
- H** – Information on Hard Disks with magnetic Data Carriers – **HDD's**
- E** – Information on electronic Data Carriers – **SSD's, Smartphones, Tablets, Memory Sticks, Chip Cards, etc.**

2.2 DIN 66399 – CLASS P (Paper)



P-1	<p>General data Old advertising material, such as brochures, catalogs, vouchers or coupons. This security level is not applicable for personal data.</p>	max 2.000mm ² / 12mm stripes	
P-2	<p>Internal data Internal communications, such as instructions, forms, or expired notices. This security level is not applicable for personal data.</p>	max. 800mm ² / 6mm stripes	
P-3	<p>Sensitive data Offers, orders, order confirmations or delivery bills with address data.</p>	max. 320 mm ² / 2mm stripes	
P-4	<p>Particularly sensitive data Work records, customer data, invoices, private tax and financial records.</p>	max. 160mm ²	
P-5	<p>Data to be kept secret Balance sheets and P&L, strategy papers, design documents, personal data.</p>	max. 30mm ²	
P-6	<p>Secret high-security data Patents, research and development documents, existentially important information.</p>	max. 10mm ²	
P-7	<p>Top Secret High security data for military, embassies, intelligence service.</p>	max. 5mm ²	

Special: upgrade Security level

If more than 100 kg are destroyed, mixed and pressed, then it is possible to increase the security level 1-3 by one category

P-1 => P-2

P-2 => P-3

P-3 => P-4



Focus on Security level



- **General facts for classic two shaft shredders**

Higher security level






- lower throughput/h
- smaller stacks of paper
- higher maintenance costs
- higher risk of damage
- more dust

Service provider prices (07/2021 for Germany)

Price for destruction of paper in	P-3	20-24 €/100 kg
	P-4	27-32 €/100 kg
	P-6	100 €/100 kg




Paper destroyed in P-3 can be sold to paper firms, P-4 depends on the paper firm, P-5 normally is waste. Lose paper gets higher prices than plastic-wrapped paper.

2.3 DIN 66399 – CLASS H (Hard drives)

H-1	HDD mechanically/electronically inoperative	
H-2	Data carrier damaged	
H-3	Data carrier deformed	
H-4	data carrier divided several times and material particle area less than 2.000mm ²	
H-5	data carrier divided several times and material particle area less than 320mm ²	




2.4 DIN 66399 – CLASS E (electronic media: USB Sticks, SSD's, Smartphones, Chipcards)



E-1	Medium mechanically electronically inoperative		
E-2	Medium divided		
E-3	Medium divided several times and material particle area less than 160mm ²		
E-4	Medium divided several times and material particle area less than 30mm ²		
E-5	Medium divided several times and material particle area less than 10mm ²		

3. Why not all paper is equal

Differences in paper destruction

<p>DIN A4 – 80g/m²</p>		<p>Usually used for testing</p>
<p>Endless IT-paper</p>		<p>Infrequent requests</p>
<p>Loose paper</p>		<p>Main customer demand</p>
<p>Complete folders</p>		<p>Frequent customer demand</p>

4. What to consider in the destruction of SSD's / HDD's



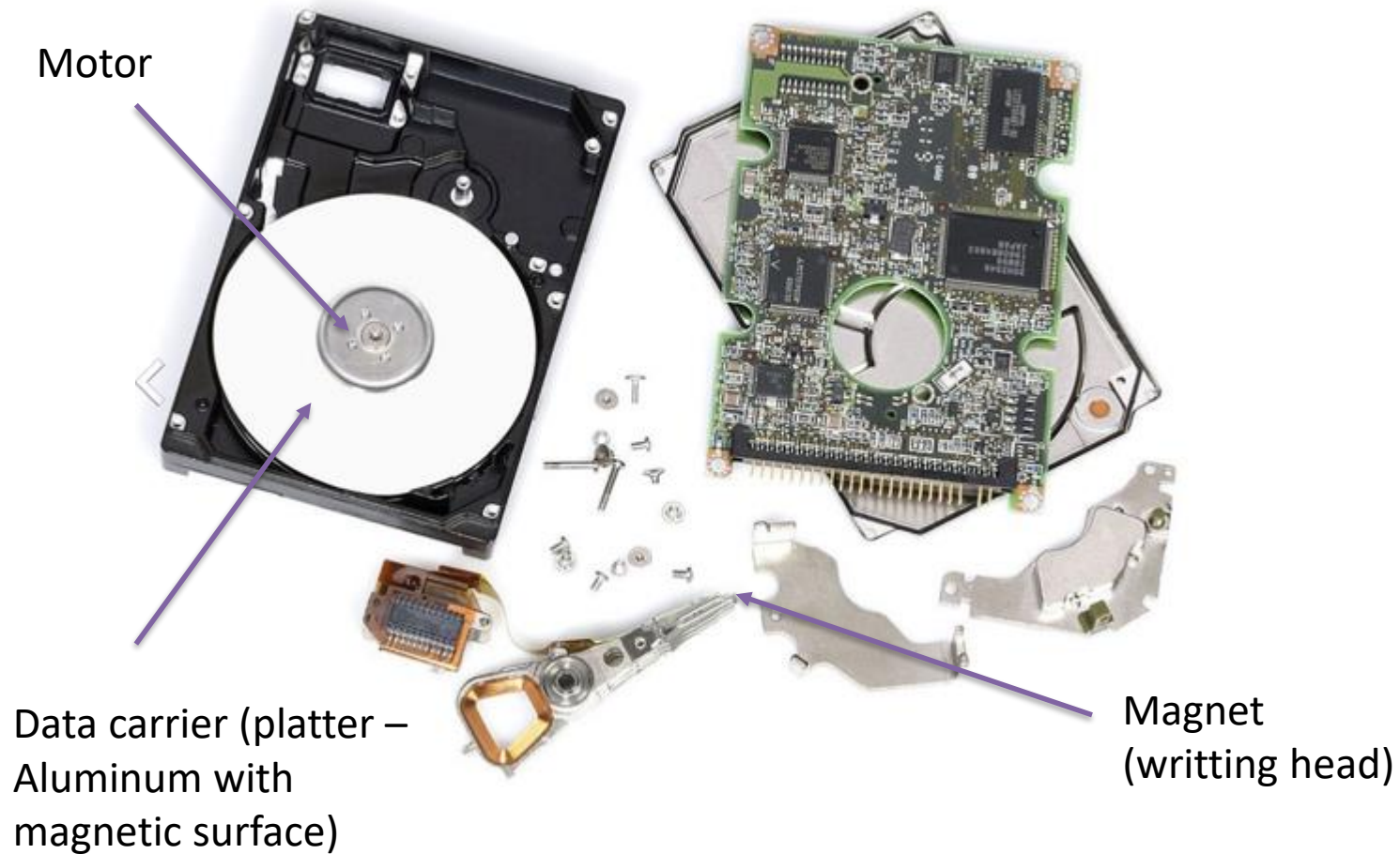
- Safety level refers only to the disc (not to housing)
- Heavier hard disks over 750g (enterprise) can cause problems



- Safety level refers only to chip (not to housing)
- Throughput with SSD's usually much higher than with HDD's

4.1 internal Design HDD's

HDD:



4.2 internal Design SSD's

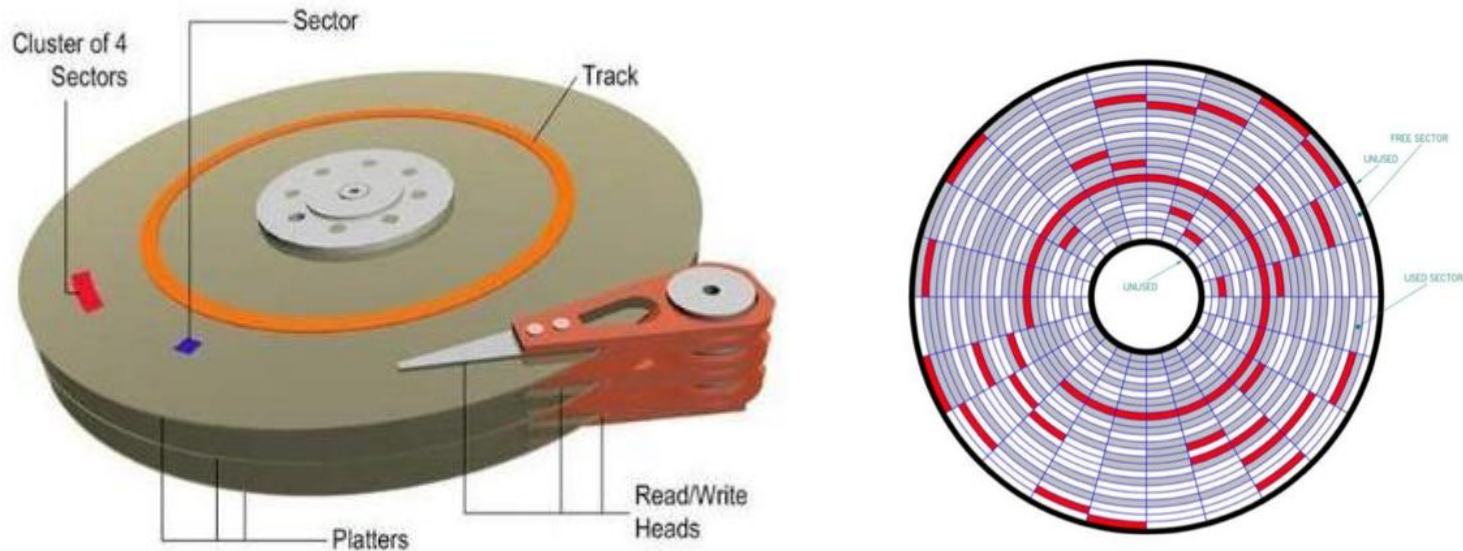
SSD:



Data carrier (chip)

4.3 Data organisation HDD

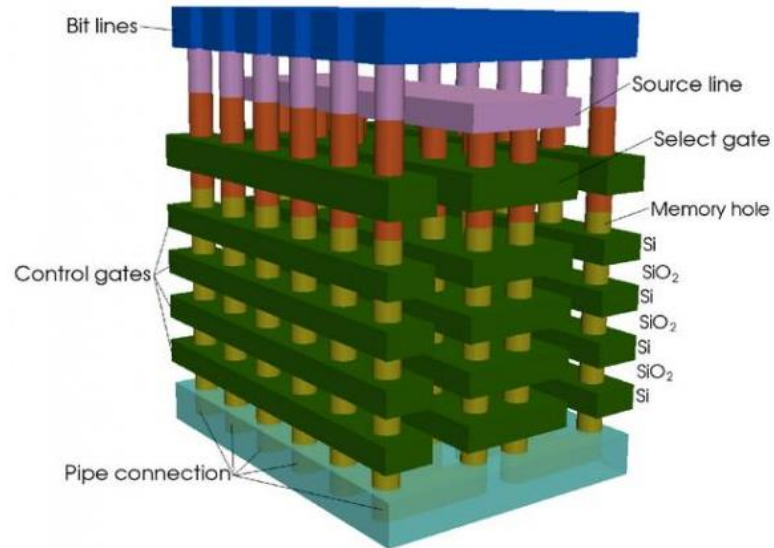
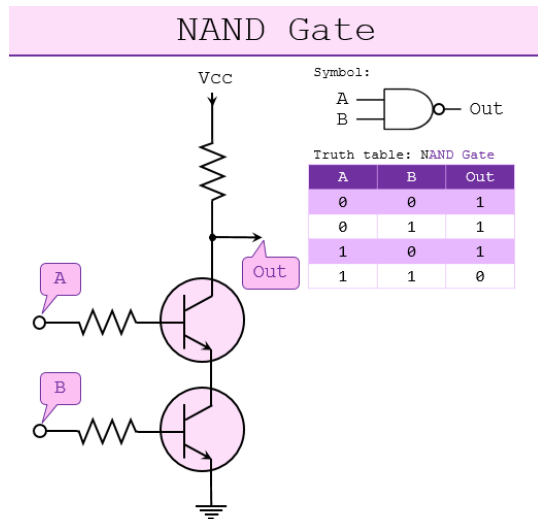
HDD:



Data is stored in sectors. If the sector is destroyed the data on it is non-recoverable. Each platter has maximum 1024 tracks, 63 sectors and a head on top and bottom. Maximum 256 heads can be controlled and with each sector containing 512 Byte, the max capacity of a HDD is 8 TB

4.4 Data organisation SSD's

SSD:



Data is stored in cells with transistor logic (1/0 switch). New designs in 25 nm (0,000025 mm) technology host up to 4 bits = 4 switches in 1 cell and 96 layers in each chip. 1024 cells are connected in line.

Every writing process reduces the lifetime of a cell. A controller determines least used cells and dedicates these for next writing turn. Only the controller knows where the data is stored.

4.5 Problem with throughput values

- No standards in testing
- **HDD and HDD are not the same – weight and design can differ significantly**



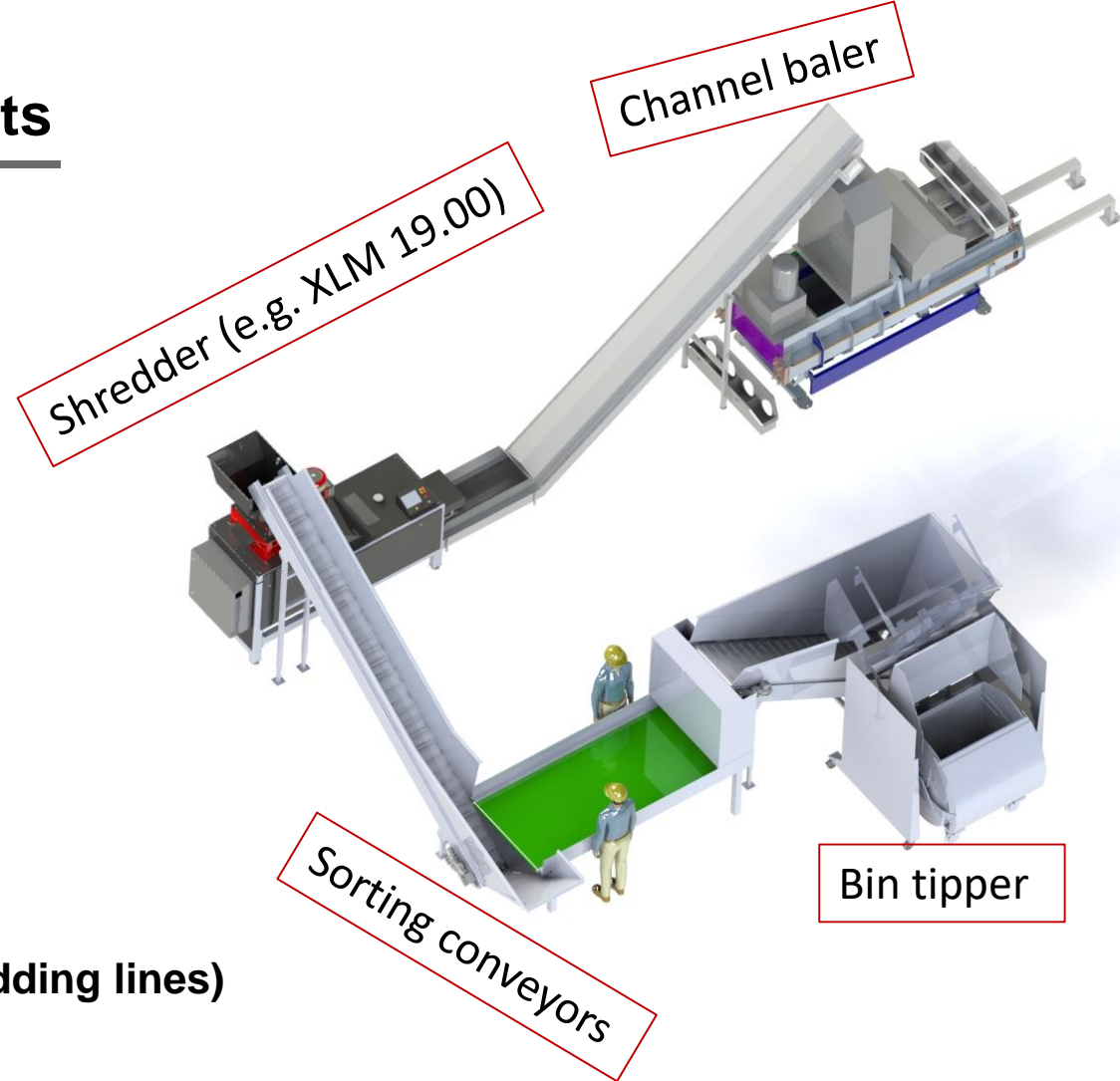
- **Data is given usually in HDD/h, but when a machine manages to shred 1 HDD in 30 seconds, the motor can overheat after 20 HDD's**
- **Is the capacity really 120 HDD/h**

6. Customer Group: Recycler



6.1 customer requirements

- High throughput
 - Low security level (P2 – P3)
 - Fast service in case of problems
 - Low operating costs
-
- High automation (complete shredding lines)
 - Earn money
 - durability



6.2 suitable machines for this customer group

Intimus XL/XLM 17.00

Cutting size: 6 x 15-50mm

Security level: P-3 | O-2 | T-3 | E-2

Throughput: up to 600 kg/h (real 450-500)

Motor power: 15 kW

Fuse: 63A

- SPS-Control with touchscreen
- XLM version with metal separator
- Periphery recommended
- Cutting unit
out of hardened steel



Intimus XL/XLM 19.00

Cutting size: 11,8 x 55 mm

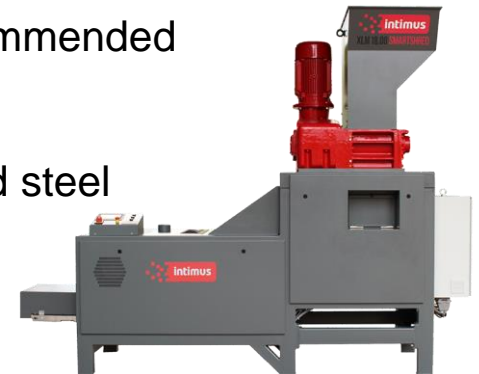
Security level: P-2 | O-2 | T-2 | E-2

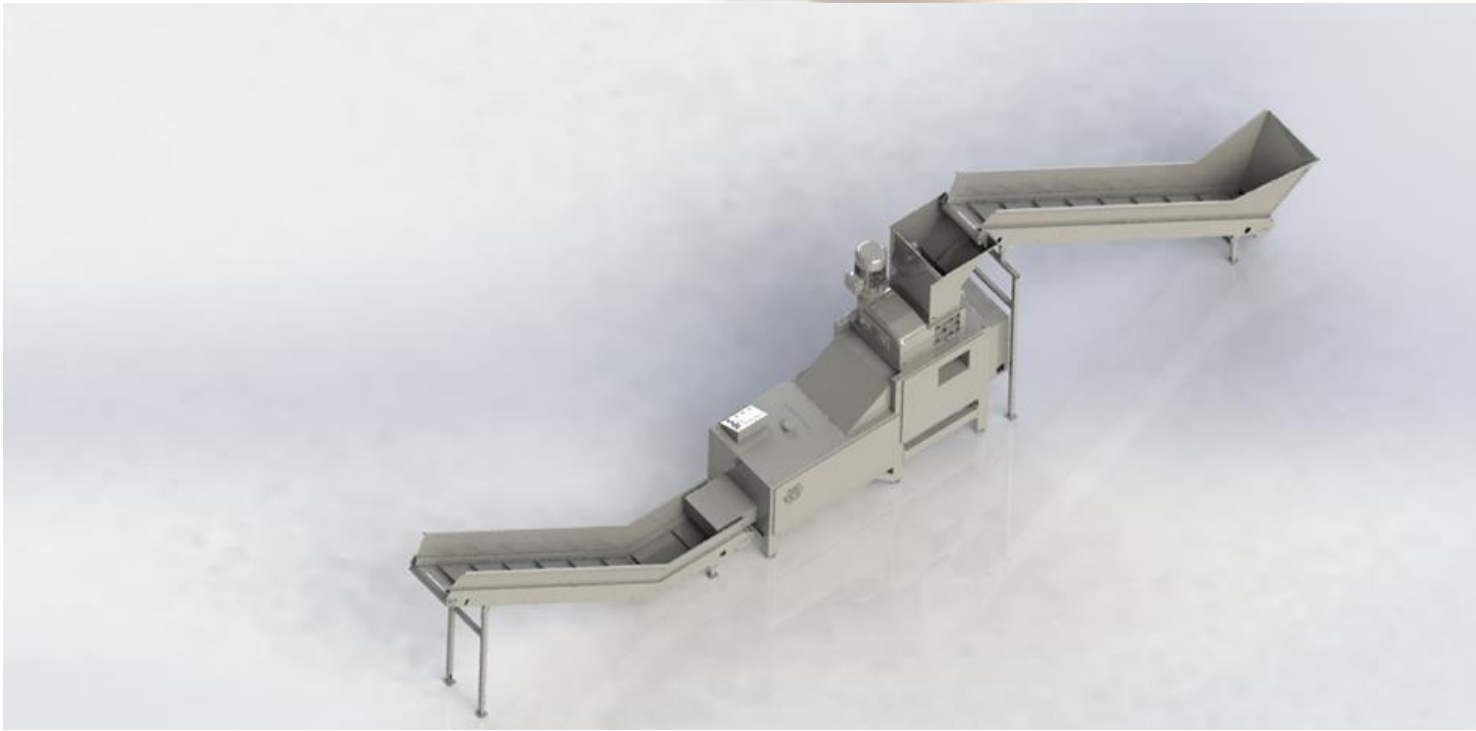
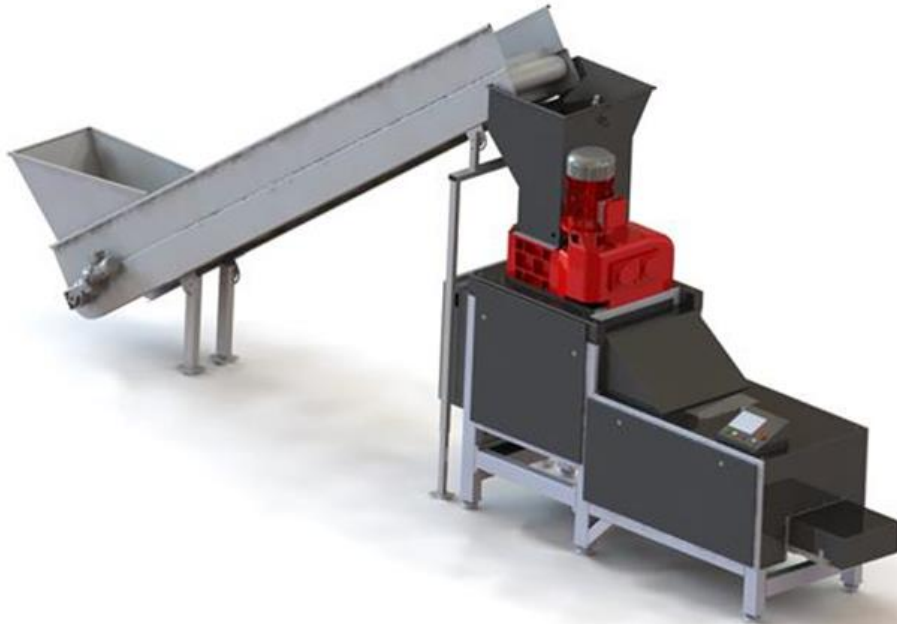
Throughput: up to 1000 kg/h (real 800-900)

Motor power: 22,5 kW

Fuse: 100A

- SPS-Control with touchscreen
- XLM version with metal separator
- Periphery recommended
- Cutting unit
out of hardened steel





6.2 suitable machines for this customer group

Intimus VZM 20.00

Cutting size: 11,8 x 55 mm

Security level: **P-3 | O-2 | T-3 | E-2**

Throughput: up to 2000 kg/h

Motor power: 24,2 kW



Intimus VZM 21.00

Cutting size: 11,8 x 55 mm

Security level: **P-2 | O-2 | T-2 | E-2**

Throughput: up to 3.1000 kg/h

Motor power: 36,8 kW



Peripheral options XL/XLM + VZM



A. Conveyor belt to press container



B. Conveyor belt to channel baler



C. Special outfeed Version (e.g. big boxes, special bales, conveyors....)



6.2 suitable machines for this customer group

Intimus VZ Special S-XL (universal shredder)

Shreds (depending on the machine): HDD's, video cassettes, carbontapes, electronic circuit boards, PCB-boards, CDs, DDS tapes, DLT tapes and special stuff with data (e.g. military material)

Cutting size: 30 mm

Security level: **H-3 | O-1 | T-2 | E-2**

Throughput: depending of material

Motor power: up to 24,2 kW

Collecting bin: 1.100l, steel or
120l, plastic

with additional feeding-
conveyor



7. Customer Group: Industrial waste management service providers (Workshops...)



7.1 customer requirements

- Flexible, low cost and low maintenance machines
- Durability
- High throughput
- Low procurement costs
- Service
- Safety
- (easy manual work)
- (earn money)



7.2 suitable machines for this customer group

Throughput: 2-5t / week

Shreds: Paper (lose, clipped, stapled), additionally CDs/DVDs, Credit Cards, Floppy Disks in low amounts

intimus 14.95

(Solo machine)

Security class P-1 to P-4

Throughput approx. 230-280 kg/h

Motor power: 4 kW

Bin volume: 200l

+ metering shaft

+ cheap



Rework 2022

intimus 14.87

(with baler)

Security class: P-1 to P-4

Throughput approx.: 230-280 kg/h

Motor power: 4 kW

+ metering shaft

+ cheap



Rework 2022

7.2 suitable machines for this customer group

Throughput: 5-12t / week

Shreds: Paper (lose, clipped, stapled), additionally CDs/DVDs, Credit Cards, Floppy Disks in low amounts. Ringbinders (opened, low amounts) in P-2 version

intimus 16.50

(Solo machine)

Security class P-2 and P-3 (Preview P-4)

Throughput approx. 380-480 kg/h

Motor power: 7,5 kW

With bin (not included in machine price!)

Current SmartShred machines smaller than old versions (old bins will not fit)

Automatic oiler

PLC Control

(touch-display)



intimus 16.86

(with baler)

Security class: P-2 and P3 (Preview P-4)

Throughput approx.: 380-480 kg/h

Motor power: 7,5 kW

Customized versions available

For all peripheral solutions due to additional plug connection

Automatic oiler

PLC Control

(touch-display)



intimus 16.99

(lateral feeding conveyor machine)

Security class P-2 and P-3

Throughput approx. 380-500 kg/h

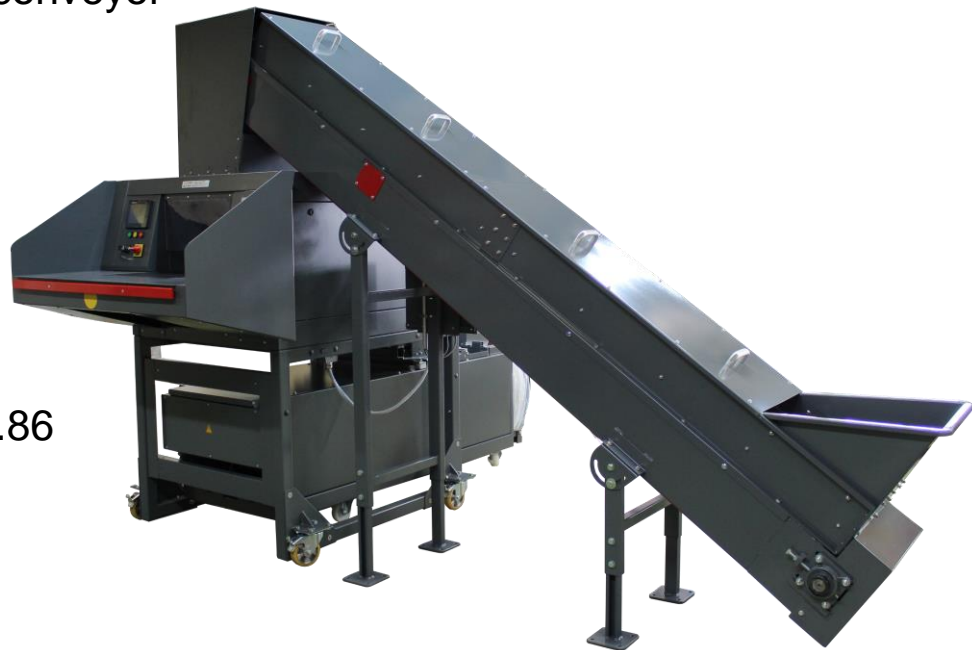
Motor power: 7,5 kW

More automation due to feeding conveyor

Light barrier to avoid overfilling

Same outfeed options as with 16.86

Possibilities for connection to
Sorting table



16.86/99 different outfeed options

Baler:



Horizontal outfeed conveyor version



Coming soon: Integrated inclined conveyor version



7.3 suitable machines for this customer group

Multimedia destruction

intimus HDD Gladiator

up to 500 kg/h

Security level: H-3 | O-2 | T-2 | E-2

Motor power: 3,5 kW

2 feeding shafts

Sturdy machine

Dual feeding hopper

120l standard bin

Cheap solution

Made in Italy



intimus VZ MultiMedia 180

up to 300 HDD's/h

Security level: H-4 | O-2 | T-2 | E-2

Motor power: 4,0 kW

Slim design

Sturdy machine

On castors

120l standard bin

Made in Germany



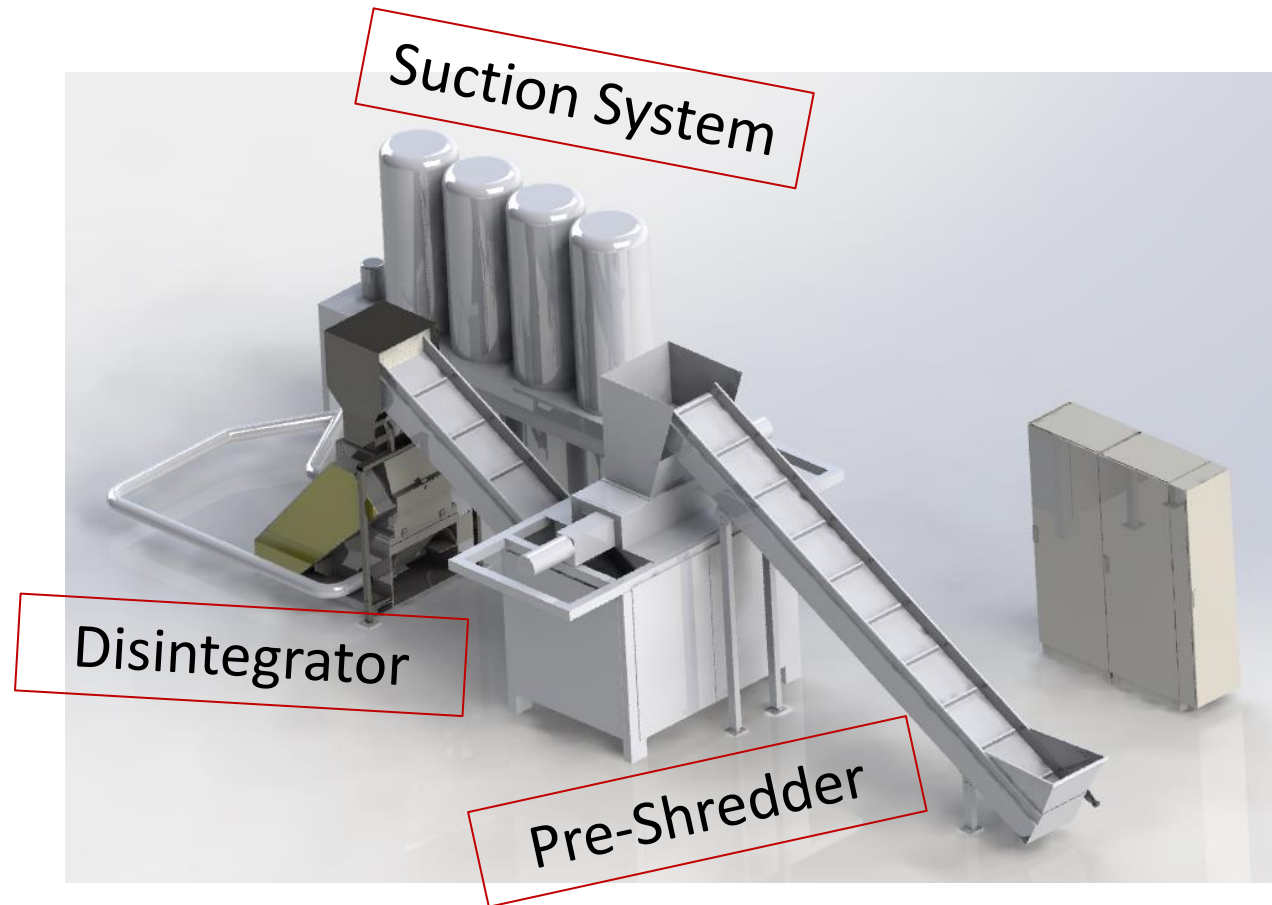
8. Customer Group: High-Security



8.1 customer requirements

Banks, Hospitals, Assurances, Military, Police, National Printing, Embassies, Administration

- High security level
- Tender
- Low Procurement costs
- Service
- Cleanliness
- Easy operation



8.2 suitable machines for this customer group

intimus VZ 14.00

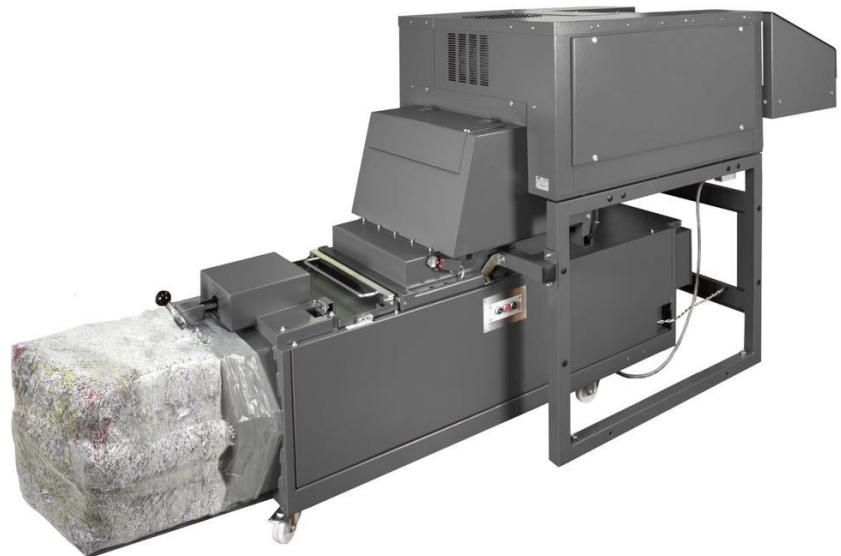
Security class P-5 | O-4 | T-5 | E-4 | F-2

Up to 245 kg/h

Motor power 11,3 kW

Pre-/Securityshredder

SmartShred Touch-Display



8.2 suitable machines for this customer group

intimus Disintegrators

Disintegration = destruction, smashing, splitting

describes the process of destroying large parts into small particles

and as the end result of the process

in our machine are small particles

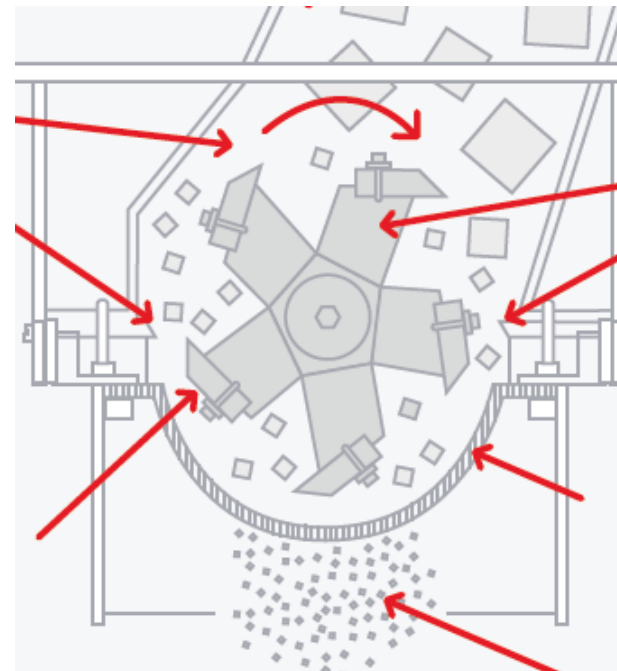
it fits somehow

Origin of the machines is in
recycling of plastic components
to produce plastic pellets

Access
from
funnel

Stator-
knife

rotor-
knife



rotor
Stator-
knife

screen

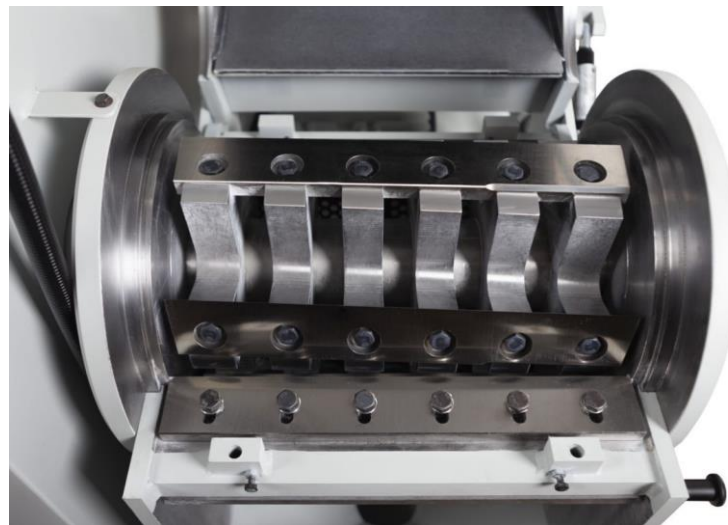
particles

8.2 suitable machines for this customer group

intimus Disintegrators – working principle

basic principle:

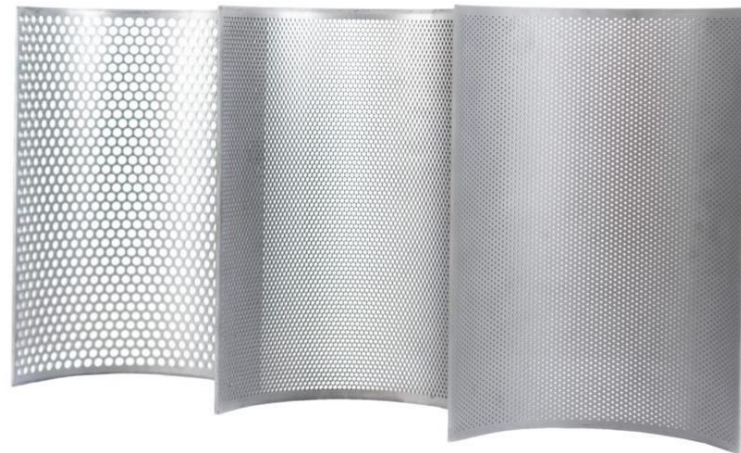
- cut like in a scissor, only that you have fixed knives and moving knives
- the moving knives are mounted on a quickly rotating rotor, the fixed knives are mounted in the frame (and they are adjustable)
- as the knives are all hardened they don't like metal objects or harder materials.



8.2 suitable machines for this customer group

intimus Disintegrators – working principle

- As there is a rotating component the entire cutting room is shaped like a barrel
- Material feeding happens from top and the material is then cut and moved around by the rotor
- On the bottom side is the extraction happening via air flow (suction unit necessary)
- To be able to get small particles within a certain specification, a screen with holes can be mounted in the bottom half of the cutting room.



8.2 suitable machines for this customer group

intimus Disintegrators – working principle

- cutting happens when a sheet of paper or particles are moved between the fixed knife and the rotating knife. Every cut takes some power to be carried out, the thicker the paper or the stack the more power is needed (similar to a scissor).
- The rotor is powered by a motor, but more important for cutting is the inertia of the rotor system. If the stacks get too thick or the counterforce from cutting gets too high in sum over several cuts, the rotor will slow down and finally will come to a standstill.
- Problem: the machine can't restart then, the cutting room needs to be emptied manually.

Influences on throughput:

- Size of cutting room
- Size of screen (particle size)
- Suction unit (air flow)
- Size of raw material
- Feeding

8.2 suitable machines for this customer group

screen size = particle size ?

- The idea that the screen hole is identical to the particle size is only partially correct

YES

- A particle can maximal be as large as the screen hole, as larger particles are held back

BUT

- In fact most of the particles are a lot smaller
- A screen with large holes can produce small particles (for example on a DIS 300/450 a screen with 9 mm holes is producing P-5 particles => 9 mm hole = 63 mm² surface but P-5 < 30 mm²)

WHY???

8.2 suitable machines for this customer group

intimus Disintegrators – ballroom dilemma



You are in a room with a lot of people. They are moving around and you are more or less forced to move with the flow (like dancers in a ballroom waltzing around). Suddenly you spot a door and you see people leaving there. You want to go there and you try to move there in a straight line. But as you are in the middle of a moving mass they carry you with you and you get moved away from the door more and more. Finally you give up and wait for the next turn to try again.

The larger the room, the more people will fit inside there and the more difficult it is to reach the door. You will need more turns while you move more and more to the outside and finally you will slip out.

8.2 suitable machines for this customer group

intimus Disintegrators – ballroom dilemma

Compared to the situation inside the Disintegrator:

The rotor forces all particles into a rotation. From the bottom through the screen there is a sucking force trying to evacuate the particles through the holes in the screen. But a particle is not moving in a straight line to a hole, it gets hit by other particles and even if it is small enough to fit through the hole, it will take another turn...

...and gets cut again. Now it is even smaller, but still it is not guaranteed that it will reach the holes. It may be cut again. That is the reason why most particles are a lot smaller than the hole size. And as the DIN regulation allows that 10% of the particles are larger you achieve the limit easily, because even if one particle is as large as the hole surface, there are hundreds of smaller particles at the same time.

8.2 suitable machines for this customer group

intimus DIS 150/210

- not specially modified for paper (same design as for plastic miling)
- shreds: paper, Smartcards, CD's, DVD's
- maximum: 14 sheets of paper or 10 CD's
- necessary suction unit: VAC 125D (303301)
- on castors
- 4 kW motor
- Up to 85 kg/h

perfect for small archives or hospitals with little accruing paper and high required safety level



8.2 suitable machines for this customer group

DIS 200/410

- modified for paper
- shreds: paper, smartcards, Floppy Disks, CD's, DVD's
- Suction unit: VAC 160 (303302)
- on castors
- 7.5 kW motor
- Up to 240 kg/h

perfect for
archives or
hospitals with
high required
safety level



DIS 260/410

- modified for paper
- shreds: paper, smartcards, Passports, banknotes, small foil rolls, Floppy Disks, CD's, DVD's
- Suction unit: VAC 160 (303302)
- on castors
- 11 kW motor
- Up to 440 kg/h

perfect for
governmental
applications



8.2 suitable machines for this customer group

DIS 300/450

- modified for paper
- shreds: paper, smartcards, Passports, banknotes, foil rolls, Floppy Disks, CD's, DVD's
- Suction unit: VAC 250 (303841)
- Stationary machine
- 11 kW motor
- Up to 575 kg/h
- Feeding conveyor available

perfect for
governmental
applications



DIS 300/600

- modified for paper
- shreds: paper, smartcards, Passports, banknotes, foil rolls, Floppy Disks, CD's, DVD's
- Suction unit: VAC 250 (303841)
- Stationary machine
- 22 kW motor
- Up to 800 kg/h
- Feeding conveyor available

perfect for
governmental
applications



8.2 suitable machines for this customer group

intimus DIS 600/1000

- modified for paper
- shreds: paper, smartcards, Passports, banknotes, foil rolls, Floppy Disks, CD's, DVD's
- necessary suction unit: APU 250 ZRS (303351) and additional particle separator
- 75 kW motor
- Monster (9-11t weight) / 110 kW connected power
- Automation with conveyors is necessary
- Additional equipment:
 - Second flywheel
 - Sound enclosure
 - Spare set of knives
 - Tool kit



8.2 suitable machines for this customer group

Intimus Disintegrators – to consider

- **Every Disintegrator needs a suction unit to evacuate the particles**
- **The amount of particles requires a suction unit that can deal with large particles (VAC line)**
- **These suction units are only dust class L ($< 1 \text{ mg/m}^3$), for example VAC 160: $1.500 \text{ m}^3/\text{h} = \text{up to } 1,5 \text{ g dust/h}$**
- **A room ventilation is required or we need to work in two stages**



8.2 suitable machines for this customer group

Intimus Disintegrators – to consider



- **A Disintegrator and the suction system are loud (85-95 db(A))**
- **For smaller DIS and positioning in a closed room it may be enough if the operator uses personal noise protection**
- **If the DIS is positioned inside an open room with other workers or if the DIS is larger a noise enclosure around the DIS AND the suction system makes sense**
- **Such a noise enclosure would offer the additional benefit that we could place a small APU 100 (class M < 0,1 mg/m³) outside and have a constant air flow through the noise enclosure filtering more dust from the air (reduction of room ventilation requirements)**

8.2 suitable machines for this customer group

Intimus Disintegrators – additional equipment

Feeding conveyors:

keeping balance

between high throughput
and avoiding of jams

- machine is equipped with speed monitoring
- Available for DIS 260/410 but only with manual loading (operator monitors the load)
- Available for DIS 300/450 | 300/600 | 600/1000



8.2 suitable machines for this customer group

Intimus Disintegrators – additional equipment

Suction systems:

advantages

- simple
- cheap

disadvantages

- Remaining dust
- Bag changing
- pollution



8.2 suitable machines for this customer group

Intimus Disintegrators – additional equipment

Suction systems:



8.2 suitable machines for this customer group

SSD Granulator

- Multimedia Shredder
- shreds: USB's, SSD's, Chipcards, CD's, Floppy Disks, Smartphones....
- Flexible machine on castors
- Screen system
- E-3, E-4, E-5
- Up to 35 kg/h
- Fast change of security level



HDD Granulator

- Multimedia and HDD Shredder
- shreds: paper, smartcards, Passports, banknotes, foil rolls, Floppy Disks, CD's, DVD's and HDD's
- Stationary machine
- Strong 4 kW motor
- Up to 300 HDD/h
- Feeding conveyor available
- Fast change of security level
- H-3, H-4, H-5
- E-2, E-3, E-4



8.2 suitable machines for this customer group

SSD-HDD Granulator

Duo Machine – 2 screens/cutting shafts

Perfect for IT-companies

E-3, E-4, E-5

H-3, H-4, H-5

