

8. Appendices

Appendix 1: Bin parameters

- *Picking Area* groups of storage bins together from the standpoint of picking strategies and is a symmetrical counterpart to the storage section, which groups bins from the standpoint of putaway strategies. The picking area is therefore parallel in nature to the storage section and is situated hierarchically between the storage type and storage bin.
- *Fire-containment section*: based on this indicator, the storage bin is assigned to a particular fire-containment section in the warehouse. This field appears in reports (for example, the inventory list for the fire department) that list the different hazardous materials per fire-containment section.
- *Used capacity in storage bin*: if the capacity check is activated for a storage type via the capacity usage in the material master record and/or the capacity usage from the storage unit type, the actual capacity used is stored in this field. In conjunction with the *Total capacity* data field, the system checks to see whether a stock placement into this storage bin is possible when you attempt to make a stock placement. The capacity is processed "neutrally", that is, without a unit of measure.
- *Sort field for storage bin* (cross-line storage): this field is used by the system for sorting empty bins in the Index of Empty Storage Bins. By automatically setting an entry in the field when the storage bins are created, the system ensures that materials are placed into stock in the warehouse in a different manner. Example: the warehouse is not filled aisle by aisle, but evenly from front to back (SAP documentation, 2001).
- *Total capacity of storage bin*: indicates the total capacity for the storage bin. This value must correspond to the capacity usage values that can be defined in the material master or for the storage unit type.

Appendix 2: Storage type view

Display View "Storage type definition": Details

Whse number SU mgmt active
 Storage type Stor.type is ID pnt
 Stor.type is pck pnt

Stock placement control

Putaway strategy
 Stock plcmt requires confirmation
 Capacity check method Act.capac.
 SUT check active
 Dst bin ch. during confirm Storage sec. check active
 Mixed storage
 Addn to stock
 Retain overdeliveries
 Mail control

Stock removal control

Stck removal strategy
 Stock rmvl requires confirmation
 Allow negative stock
 Full stk rmvl reqmt act.
 Return stock to same storage bin

Blo
 Ass
 U
 P
 Blo
 Ass
 Ret

Put.strat	Short text
	Manual stock placement
B	Bulk storage
C	Open storage
F	Fixed bins
I	Addition to existing stock
K	Near picking bin
L	Next empty bin
P	Storage unit type
Q	Dynamic coordinate quant number

Appendix 3: Print screen of a transfer order

Transfer Order Edit Goto Extras System Help

Display Transfer Order: Single Item

Other Data... Confirmation...

TO Number **1** 2311493 2 SLT-5431 SLNT ACET EXT 10GRAY-M,195KG-DR

Material 4028032

Plant/Stor.loc. 0041 SENF

Batch 0006948680

Confirmation

Stor. Unit Type

Certificate No.

Item to subsys.

Stock Category

Special Stock

Delivery 8609046783 900002 Weight 649.350 KG

Volume 0.000

Plnd time TOitm 0.000

2-step picking

Movement data

Typ	Stor. Bin	Target quantity	AUn
From			
C01	11203	3.000	DR
Quant	3945142	585.000	KG
Destinat.			
916	8609046783	3.000	DR
Quant	3959097	585.000	KG
Back			

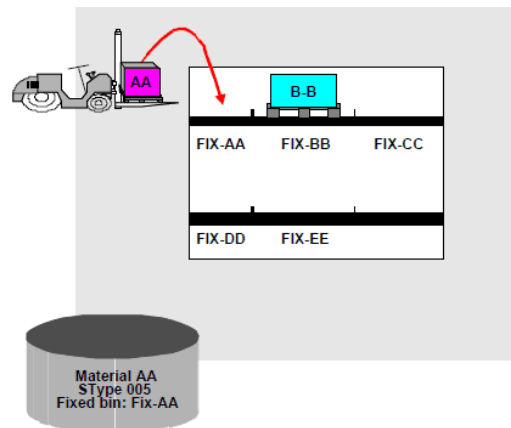
SAP | DCE (2) 010 | sappdce07 | OVR

This document indicates a movement of material 4028032 from S-type C01/ bin 11203 to Stype 916/ bin 860904783.

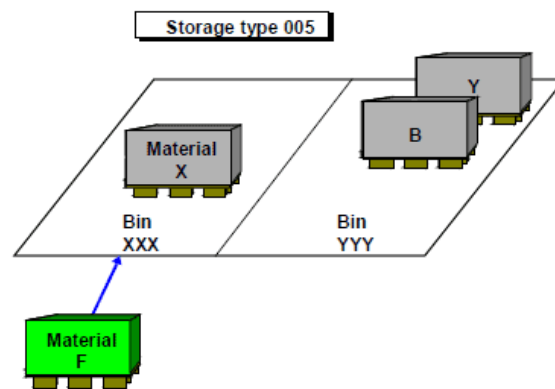
Movement data			
Typ	Stor. Bin	Target quantity	AUn
From			
C01	11203	3.000	DR
Quant	3945142	585.000	KG
Destinat.			
916	8609046783	3.000	DR
Quant	3959097	585.000	KG
Back			

Appendix 4: Illustration of some putaway strategies (E-university, 2012)

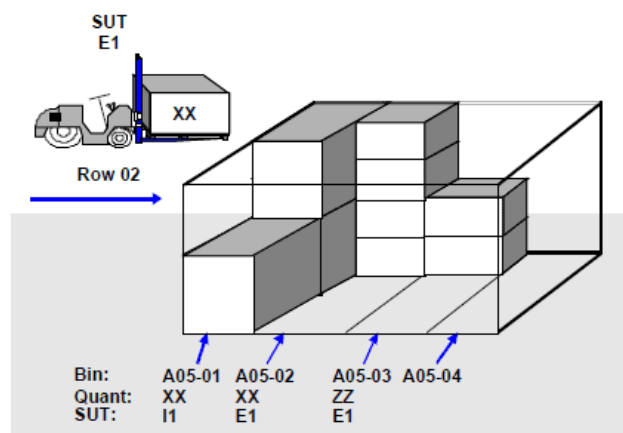
- Fixed bins storage



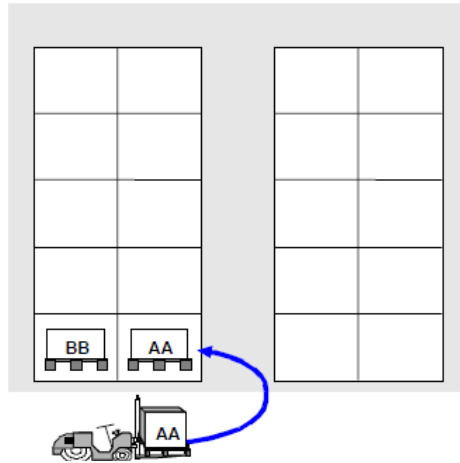
- Open storage



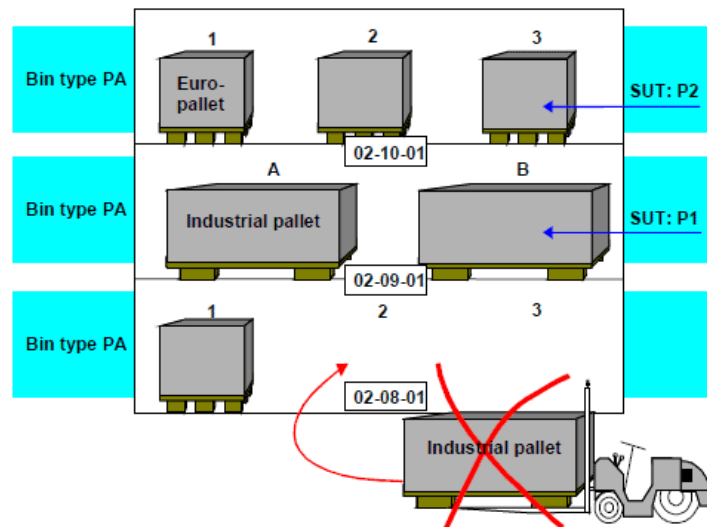
- Bulk storage



- Addition to existing stock



- Storage unit type



Appendix 5: S-type picking strategy (SAP documentation, 2001; E-university, 2012)

Storage Type Search

Similar to putaway strategy, storage type search is recorded in the material master. The system must now determine from which storage type the material should be picked. You define this information in the storage type search table. To make entries in this table, see the section on defining the storage type search sequence under *Strategies* in the *Warehouse Management IMG* documentation.

In the storage type search table, you can define a search sequence with up to ten storage types. (Be sure to enter an A for stock removal in the *Act.* column.) The list of storage types is hierarchical, that is, the system searches for the material in the first storage type, then in the second storage type, and so on. An entry of *** for the storage type means that the system searches throughout the entire warehouse for the oldest stock. The table entry that the system uses for this search depends on the material being removed from storage.

Storage Bin Search

Once the storage type has been determined, the system then searches within the storage type to find an appropriate storage bin from which the material can be removed. To find a storage bin, the system uses a search strategy that has been defined for the storage type. For each storage type you can define one picking strategy.

Strategy code	Strategy name
F	FIFO (First in, first out)
L	LIFO (Last in, first out)
A	Partial quantity management
M	Large/small quantities included
H	Shelf life expiration date
P	Fixed bin from material master
User Exit	customer-defined strategy
(Blank)	

Table 8.1 Putaway strategy (SAP documentation, 2001)

No strategy: The system searches using stringent FIFO. However, in most of the cases, it is necessary to exclude some storage types, such as the interim storage area for differences, from the stringent FIFO strategy.

F/FIFO: this strategy searches for the oldest quant (derived from the batch) using FIFO. For this strategy, the system must compute the “age” of a quant on the basis of the goods receipt date.

L/LIFO: this strategy searches for the most recent quant using LIFO rule. The system searches for the last quant that has been placed into the warehouse.

A/Partial quantities first: With this picking strategy the FIFO principle is overridden in order to optimize the management of stock in the warehouse. The number of storage units with partial

quantities in the storage type is reduced to as few as possible. This strategy is appropriate only when standard storage unit types are used for stock placement (the same quantity of a material for a specific storage unit type) partial storage unit quantities are less than the standard storage unit quantities. Within a storage type there are two different types of quants:

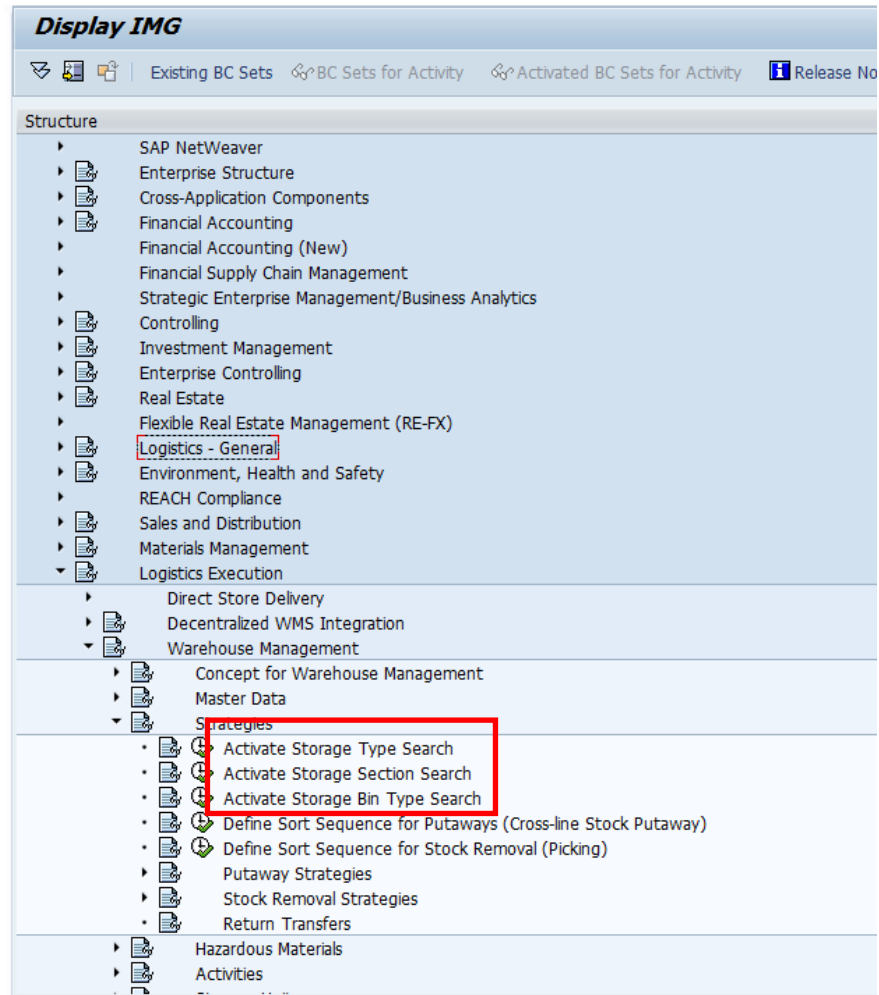
- quant in an amount that is normally contained on the standard storage unit, according to the storage unit type defined in the material master record
- quant in an amount that is smaller than the standard storage unit. This is known as a partial storage unit quantity. A quant that is larger than a standard storage unit should not occur.

M/according to quantity: This picking strategy is based on whether the quantity required in the transfer order is large or small. You can have a storage type in which small quantities of material are stored (generally a storage type with a fixed storage bin organization). There can also be a reserve storage in which larger quantities are stored. The system decides whether it is dealing with a "small quantity" or a "large quantity", depending on the quantity required in the transfer order. The storage bin that the system proposes for the pick is either from the small quantity storage type or large quantity storage type. As the criteria for this quantity check, the system uses the control quantity defined in the *Control quantity* field in the material master record.

H/Shelf life expiration date: With this picking strategy, the system ensures that materials with the oldest expiration date will be removed from stock first.

(Blank)/Stringent FIFO for all Storage Types: In WM, it is possible to remove stock according to the FIFO principle by taking into account all quants within a warehouse. In this case, the system does not scan individual storage types in sequence but it proposes the oldest quant in the entire warehouse as the quant to be removed from the warehouse. The system does not take into account the picking strategies specified for the individual storage types. This would lead to inconsistencies. Some storage types should be excluded from the stringent FIFO strategy, otherwise incorrect picks would result. For example, the interim storage area for differences should be excluded from the stringent FIFO strategy. The stringent FIFO strategy is set or switched off in the table Exclusion of storage types from Stringent FIFO.

Appendix 6: SAP configuration, view putaway strategy levels

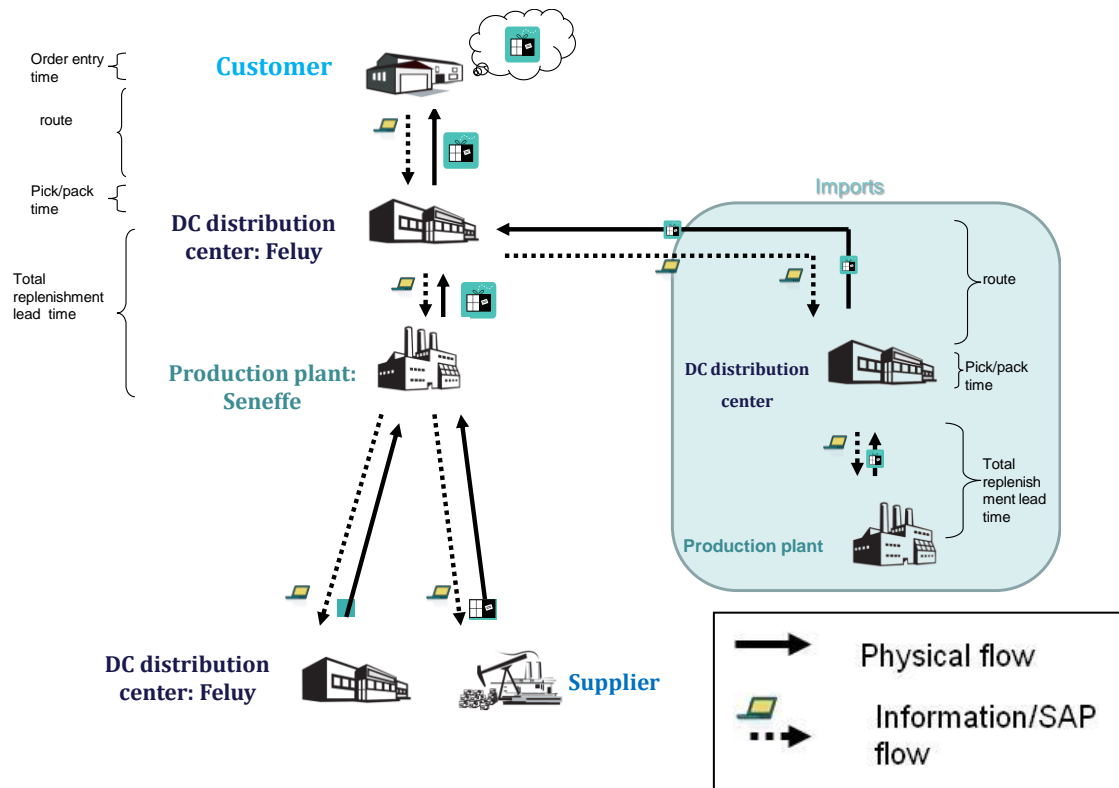


Appendix 7: List of transactions and reports used

A transaction in SAP is like a program in normal computer languages, and is identified by a four-character transaction code. A transaction can be initiated directly from the command field on the presentation interface or from the corresponding menu option.





Transaction	Code	Description
1	LS03N	Display warehouse mast record (storage bin)
2	LT22	Display transfer orders per storage type
3	LT24	Display transfer orders per material
4	LX02	Stock list
5	LX04	Capacity load utilization
6	MB03	Material document
7	MB51	Material document list
8	MB52	List of Warehouse Stocks per storage location
9	MM03	Display material
10	SE16	Display table
11	VD53	CMIR information
Report		
	ZSD00189	Delivery list
	ZMM00016	Material master report
	ZMM00343	Display customer material info record

Appendix 8: Physical and information flow



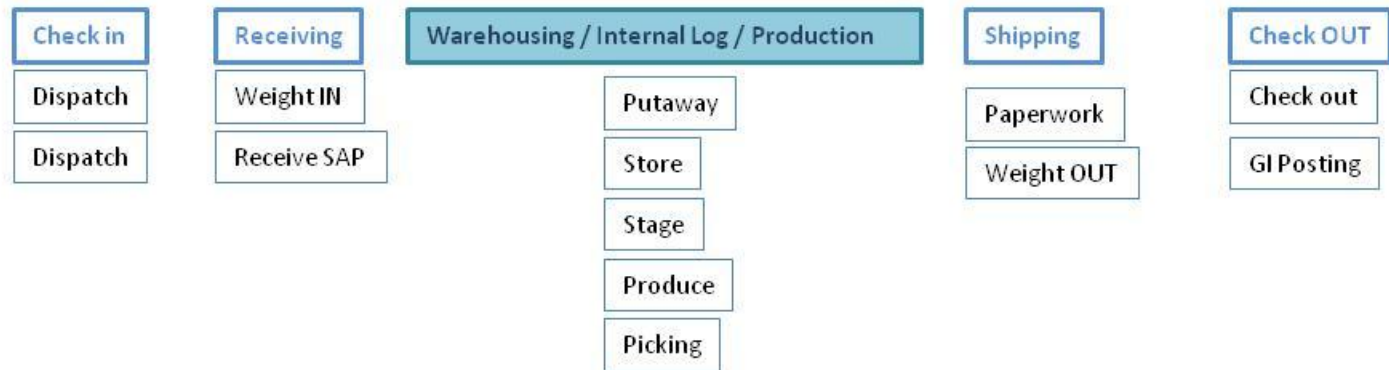
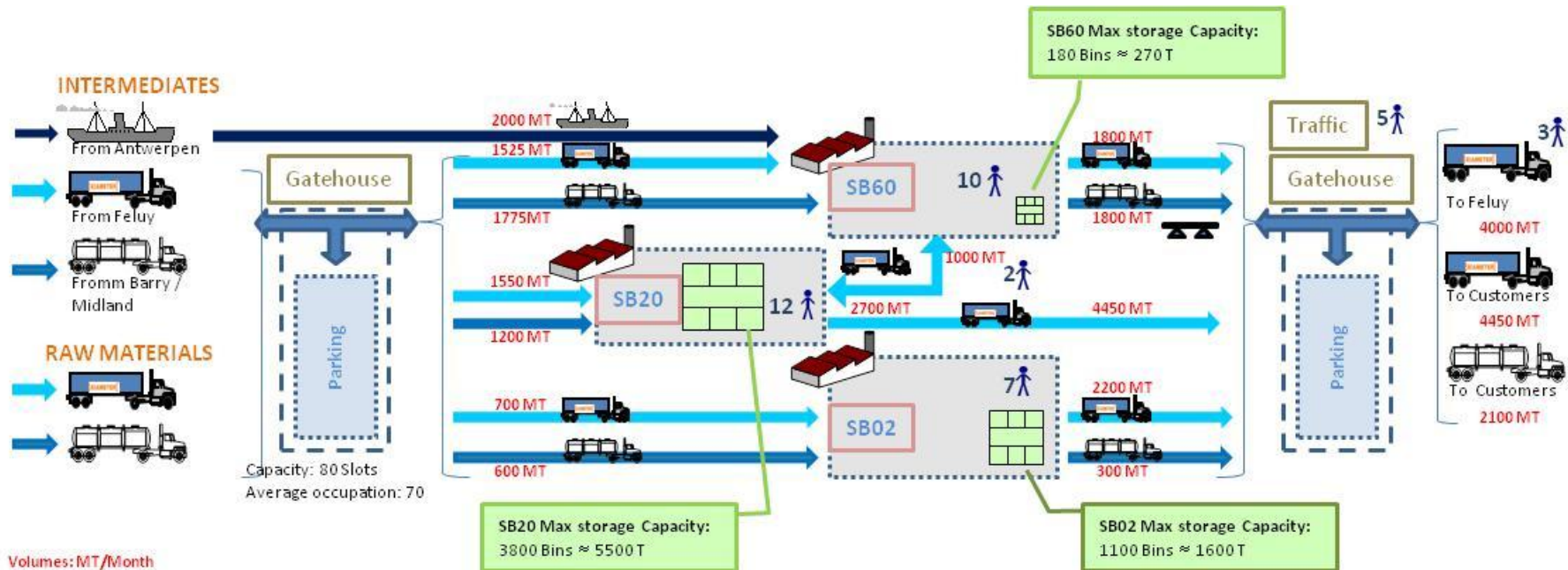
Appendix 9: Logistics value stream map of Seneffe

Key

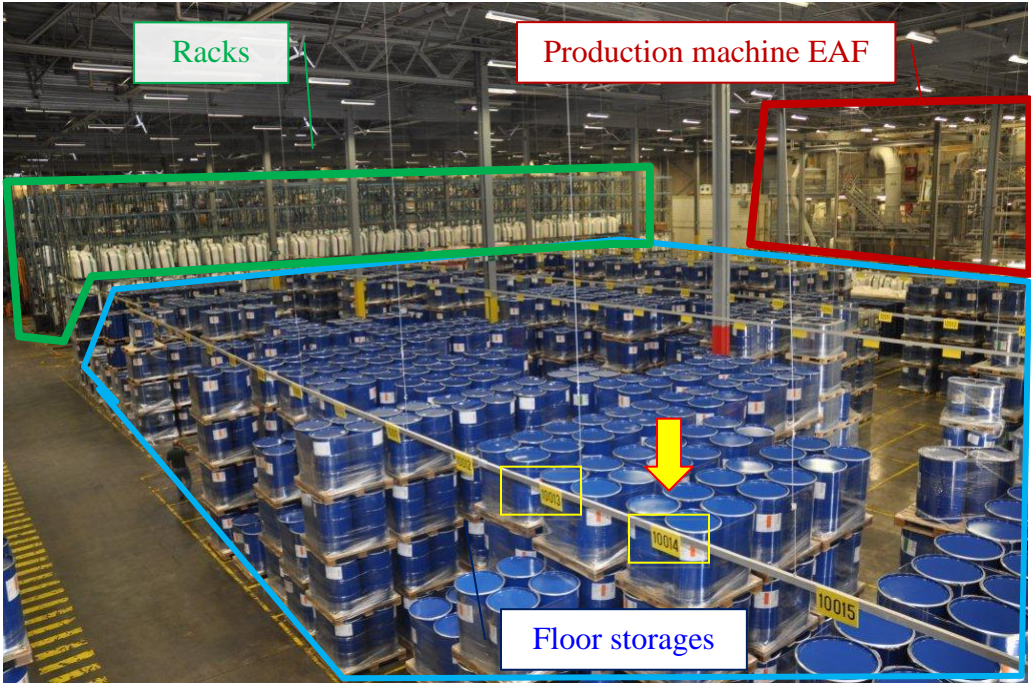
-  : Flow of material in bulk tank
-  : Flow of material in pallet
-  : Flow of material by sea
- Red numbers above/under the arrows: quantities expressed in thousands of tons per month (Source: Dow Corning internal information)
-  : number of persons working at this step

The activities performed at each stage are described above the image:

- When a trailer arrives at the parking, they check in and are dispatched among the different buildings of the site.
- The receiving function consists of three stages: weighing of the trailers for bulk materials (tankers), making the goods receive in SAP system that increases the inventory level.
- Warehousing, internal logistic and production function represent the most important part of Seneffe site's activities.
 - After receiving, products are put away in the most appropriate storage location.
 - They are stored in the warehouse for a variable period of time.
 - Staging activity denotes the preparation of ingredient for production. Before a process is start, logistic operator place raw materials required near the production.
 - The three buildings of Seneffe manufacture various sorts of silicon based materials.
 - Order preparation implies consist in collecting pallets from their storage location to deliver them to customers or to ship them to Feluy distribution center.
- Shipping activity implies the creation of the transport papers and the weight out for tankers.



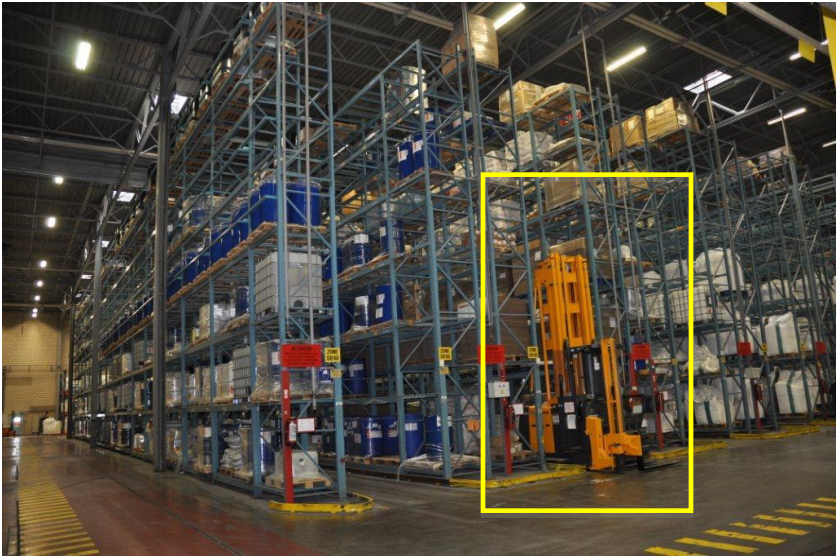
Appendix 10: Interior view of SB20



Appendix 11: Basic trolley in warehouse SB20



Appendix 12: High rack warehouse SB20



Appendix 13: Storage locations list

Storage Location	Complete name	Description
CN01 CN02 CN03 CN04 CN05 CN06 CN07 CN08 CN09 CN10 CN11 CN12	Container 1 Container 2 Container 3 Container 4 Container 5 Container 6 Container 7 Container 8 Container 9 Container 10 Container 11 Container 12	All these Storage location are physical containers in the site of dow corning. This containers are used for the shipment of full truck
CONT	Control Area	No more used
DC02	SB02 Trailer	Represent trailer.
DC60	SB60 Trailer	
DCEA	EAF Trailer	
DS61 DS62 DS63 DS64 DS65	Dir Cust source1 Dir Cust source2 Dir Cust source3 Dir Cust source4 Dir Cust source5	These storage locations are used for direct shipment from SB60 building to customers.
F2N F3 F4 FP1 FPN	SB60 - Unit F2N SB60 - Unit F3 SB60 - Unit F4 SB60 - Unit FP1 SB60 - Unit FPN	
HD02 HD21 HD22 HD23 HD24 HD60 HD61 HD62 HD63 HD64 HD65 HD66 HD67 HD68 HD69	SB02 HDG Trailer SB02 HDG Trailer SB02 HDG Trailer SB02 HDG Trailer SB02 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer SB60 HDG Trailer	These storage locations represent a trailer that can be directly attached. In that way, each of this storage location represents a physical location.
HOLD	on-hold in 041	This Storage location is used when a mistake is discover in the inventory. Instead of blocking the item, it is transferred in this storage location for a short time. The advantage is to undo the action. Indeed, if 4drums missed in the warehouse and that we find them few days after, it is simple because we can just transfer them from HOLD to SENF storage location. If the

		item was blocked, the QA must unblock it.
MCPL	Matl.conv. progrm	No more used
RPK	Repack	No more used
RTPL	RET. CONT. I/C	No more used
RWK RWK2 RWK6 RWKE	Rework Rework SB02 Rework SB60 Rework EAF	It is physical locations where items that must be reworked are stoed.
SB02 SB20 SB60 SB62	SB02 MROS SB20 MROS SB60 MROS SB62 MROS	Maintenance
SCRP	Scrap	This storage location is warehouse managed because each item in the inventory could be transferred in SCRAP and it is important to know the exact location. This S-LOC was initially used to manage scrap products.
SENF	Seneffe Site	This is the main storage location which represent the basic inventory. It is warehouse managed.
TANK	Bulk Storage	This storage location is important because all the inventory of the bulk are recorded on this storage location
TK20 TK60 TNK2	SB20 Bulk Opertn SB60 Bulk Opertn SB02 Bulk Opertn	
WAVR	Wavered Material	This storage location is used by planners to block “special product” for specific client. For instance, a client accept to buy expired product, planners must reserve the batch for this client in the WAVR storage location.

Appendix 14: Storage types list






Storage type code + name		Storage type
901	GR area for production	C10 SB20 Powders

902	GR Area External	C21 SB20 FG drums Racks
904	Rcpts Returns	C60 SB60 CPBG Production
910	GI Area General	C61 SB60 Warehouse area
911	GI Area for Cost Center	C62 SB60 Warehouse area new
912	GI Area Customer Order	CA1 SB20 Rack ARM/Scrap
913	GI Area - Fixed Assets	CAR SB20 Rework
914	GI Area Production Orders	CAS SCRAP
915	Fixed Bin Picking Area	CBU SB20 FG Floor
916	Shipping Area Deliveries	CDR SB20 Drum trailers
917	Quality assurance	CF1 SB60 - Unit FP1
920	Stock transfers (plant)	CF2 SB60 - Unit F2N
921	Stock transfers (StLoc)	CF3 SB60 - Unit F3
922	Posting change area	CF4 SB60 - Unit F4
998	Init. entry of inv. Data	CFN SB60 - Unit FPN
999	Differences	CFP SB20 Racks Futs Pigments
A01	SB02 Racks	CFX SB60 Fixed bin productio
A02	SB02 Red Label	CSP SB20 Pigments rack
A0D	SB02 Rack double	CT1 SB60 - Unit TA1
A2P	SB02 AMIG production	CT2 SB60 - Unit TA2
A60	SB02 CPBG production	DP2 Duty Paid 2
AEN	SB02 Enzymes	DUM SB20 dummy s-type GR bulk
AFX	SB02 fixed bins	E01 SB20 EAF racks [High]
ARP	SB02 Small Pack	E02 SB20 EAF racks [Smaller]
ASP	SB02 AMIG production smpk	E10 SB20 EAF floor
ASQ	SB02 small quantities	E20 SB20 EAF production
C00	SB20 Floor	INV Inventory adjustment sty
C01	SB20 Racks	LVS LOW VALUE SILICONE
C02	SB20 Red Label	OUT Outsight storage
C03	SB20 Rack Boxes	REC SB20 Reception area

Appendix 15: Storage sections list

Typ	Sec	S-section Name	Typ	Sec	S-section name	Typ	Sec	S-section name
901	001	Total section	C00	001	total section	DP2	001	Total section
902	001	Total section	C01	001	fast moving	DUM	001	total section
904	001	Total section	C01	002	normal moving	E01	001	Fast Moving
910	001	Total section	C01	003	slow moving	E01	002	Normal Moving
911	001	Total section	C02	001	fast moving	E01	003	Slow Moving
912	001	Total section	C02	002	normal moving	E02	001	Fast Moving
913	001	Total section	C02	003	slow moving	E02	002	Normal Moving
914	001	Total section	C03	001	fast moving	E02	003	Slow Moving
915	001	Total section	C03	002	normal moving	E10	001	total section
916	001	Total section	C03	003	slow moving	E20	001	total section
917	001	Total section	C10	001	Total section	INV	001	Total section
920	001	Total section	C21	001	fast moving	LVS	001	total section
921	001	Total section	C21	002	normal moving	OUT	001	Total section
922	001	Total section	C21	003	slow moving	REC	001	Total section
998	001	Total section	C60	001	total section	Y00	001	Total area
999	001	Total section	C61	001	total section			
A01	001	fast moving	C62	001	total section			
A01	002	normal moving	CA1	001	total section			
A01	003	slow moving	CA2	001	total section			
A01	COR	corrosive	CAR	001	total section			
A02	001	total section	CAS	001	total section			
A02	002	normal moving	CBU	001	Total Section			
A02	003	slow moving	CDR	001	total section			
A02	COR	corrosive	CF1	001	Total section			
A02	TOX	toxic	CF2	001	total section			
A0D	001	fast moving	CF3	001	total section			
A0D	002	normal moving	CF4	001	Total section			
A0D	003	slow moving	CFN	001	Total section			
A2P	001	total section	CFP	001	fast moving			
A60	001	total section	CFP	002	normal moving			
AEN	001	total section	CFP	003	slow moving			
AFX	001	total section	CFX	001	Total section			
ARP	001	total section	CSP	001	Total Section			
ASP	001	total section	CT1	001	Total section			
ASQ	001	total section	CT2	001	Total section			

Appendix 16: Warehouse capacity used per storage type

Warehouse Capacity Used: Overview					
   Storage Type Details		 List of storage bins		 Detailed Analysis	
Capacity used: Overview					
Whse number 041 DCE Seneffe warehouse					
Date 2013/03/08					
Typ	Storage type name	Occupied	Empty	Usage in %	Load %
C01	SB20 Racks	161	534	23.17	0.00
C02	SB20 Red Label	88	393	18.30	0.00
C10	SB20 Powders	8	2	80.00	0.00
CA1	SB20 Rack ARM/Scrap	38	273	12.22	0.00
CA2	SB20 ARM/Scarp red label	17	444	3.69	0.00
CAS	SCRAP	9	29	23.68	0.00
CBU	SB20 FG Floor	94	64	59.49	0.00
CFP	SB20 Racks Futs Pigments	67	178	27.35	0.00
CSP	SB20 Pigments rack	64	41	60.95	0.00
DUM	SB20 dummy stype GR bulk	0	1	0.00	0.00
E01	SB20 EAF racks [High]	459	906	33.63	30.47
E10	SB20 EAF floor	1	15	6.25	0.00
E20	SB20 EAF production	2	3	40.00	0.00
REC	SB20 Reception area	0	1	0.00	0.00

Appendix 17: Average travel time to put pallet into bin XY (X= row and Y=level)

Row/ level	1	2	3	4	5	6
1	3,547	5,2	7,6	11,3	14,2	17,3
2	4,264	5,9	8,3	12,1	14,9	18,1
3	4,981	6,6	9,0	12,8	15,6	18,8
4	5,698	7,4	9,7	13,5	16,4	19,5
5	6,415	8,1	10,4	14,2	17,1	20,2
6	7,132	8,8	11,2	14,9	17,8	20,9
7	7,849	9,5	11,9	15,6	18,5	21,6
8	8,566	10,2	12,6	16,4	19,2	22,4
9	9,283	10,9	13,3	17,1	19,9	23,1
10	10	11,7	14,0	17,8	20,7	23,8
11	10,717	12,4	14,8	18,5	21,4	24,5
12	11,434	13,1	15,5	19,2	22,1	25,2
13	12,151	13,8	16,2	20,0	22,8	26,0
14	12,868	14,5	16,9	20,7	23,5	26,7
15	13,585	15,3	17,6	21,4	24,3	27,4
16	14,302	16,0	18,3	22,1	25,0	28,1
17	15,019	16,7	19,1	22,8	25,7	28,8
18	15,736	17,4	19,8	23,5	26,4	29,5
19	16,453	18,1	20,5	24,3	27,1	30,3
20	17,17	18,8	21,2	25,0	27,8	31,0
21	17,887	19,6	21,9	25,7	28,6	31,7
22	18,604	20,3	22,6	26,4	29,3	32,4
23	19,321	21,0	23,4	27,1	30,0	33,1
24	20,038	21,7	24,1	27,8	30,7	33,8
25	20,755	22,4	24,8	28,6	31,4	34,6
26	21,472	23,1	25,5	29,3	32,1	35,3
27	22,189	23,9	26,2	30,0	32,9	36,0
28	22,906	24,6	26,9	30,7	33,6	36,7
29	23,623	25,3	27,7	31,4	34,3	37,4
30	24,34	26,0	28,4	32,1	35,0	38,1
31	25,057	26,7	29,1	32,9	35,7	38,9
32	25,774	27,4	29,8	33,6	36,4	39,6
33	26,491	28,2	30,5	34,3	37,2	40,3
34	27,208	28,9	31,2	35,0	37,9	41,0
35	27,925	29,6	32,0	35,7	38,6	41,7

Appendix 18: Seneffe-Feluy InterPlant Purchase Order (IPPO) list

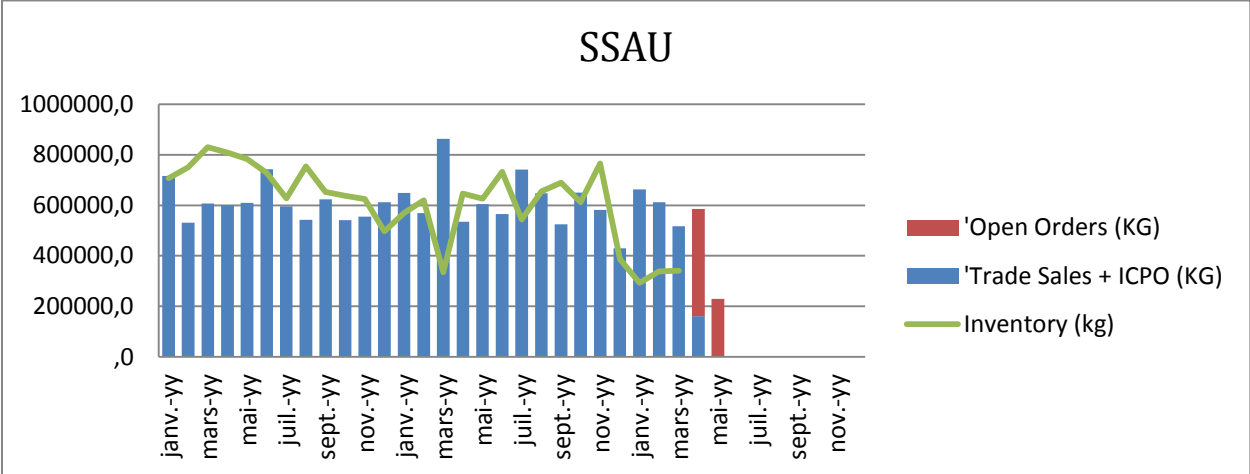
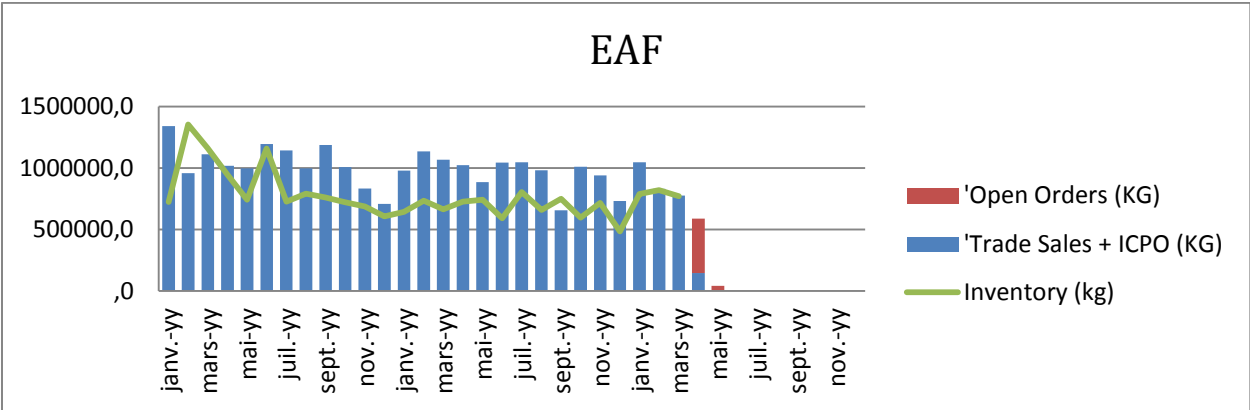
List Edit Goto Settings System Help

Activities Due for Shipp Purchase orders, fast display"

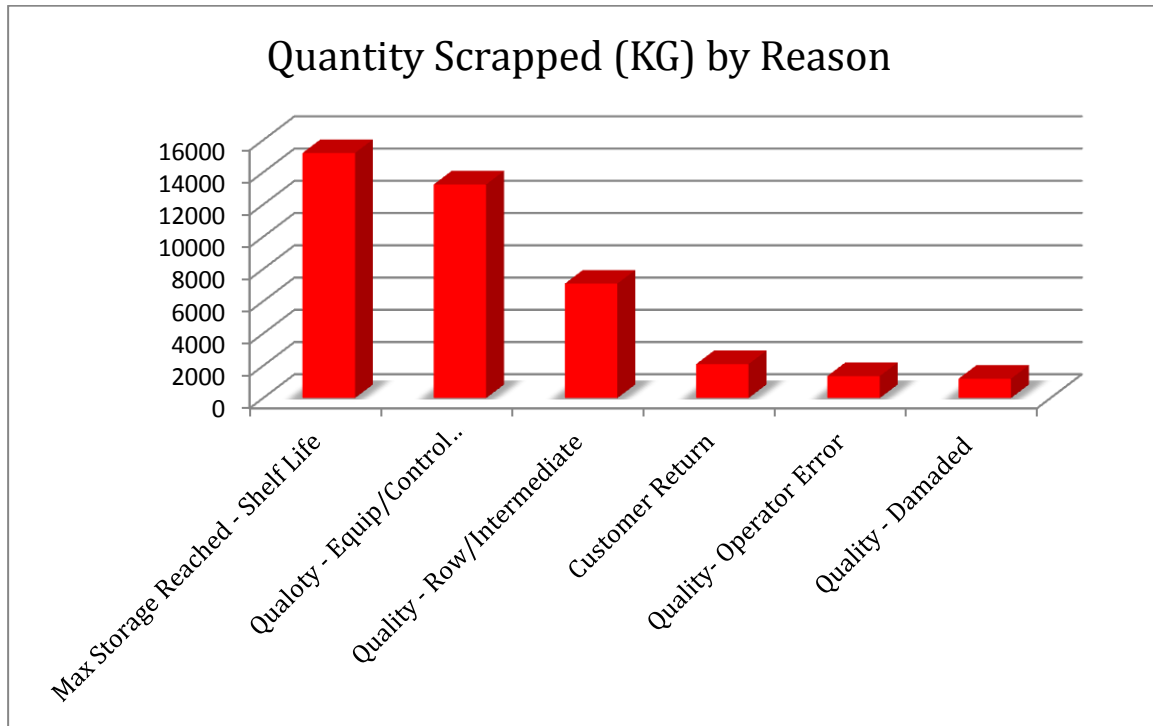
Background

Light	ShPt	CD	IncoT	Created by	Inco. 2	Pro.	HazInd	SC	Storage conditions	TGroup	Temp	Unloading Point	S\$Loc	Plant
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	DOC	N	03	Avoid freezing	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	DOC	N	03	Avoid freezing	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	LCANTELL	SCHEDULER	SHIPPOINT	DOC	N	03	Avoid freezing	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	MFOTIA	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	99	5 Day Goods Recpt Mon-Fri	SMPK	0041
☉☉	116A	EXW	SROYER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	15	5 Day Goods Recpt Mon-Fri	RWK6	0041
☉☉	116A	EXW	SROYER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	15	5 Day Goods Recpt Mon-Fri	RWK6	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	05	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	05	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	05	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	MFOTIA	SCHEDULER	SHIPPOINT	NDG	N	03	Avoid freezing	0001	17	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	MFOTIA	SCHEDULER	SHIPPOINT	NDG	N	03	Avoid freezing	0001	17	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	MFOTIA	SCHEDULER	SHIPPOINT	NDG	N	03	Avoid freezing	0001	17	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	PJOURQUI	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	17	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	SCHEDULER	SCHEDULER	SHIPPOINT	NDG	N	99	No special condition	0001	99	5 Day Goods Recpt Mon-Fri	SENF	0041
☉☉	116A	EXW	LCANTELL	SCHEDULER	SHIPPOINT	DOC	N	03	Avoid freezing	0001	99	5 Day Goods Recpt Mon-Fri	SMPK	0041
☉☉	116A	EXW	STERRANA	SCHEDULER	SHIPPOINT	NDG	N	03	Avoid freezing	0001	17	5 Day Goods Recpt Mon-Fri	SENF	0041

Appendix 19: EAF and SSAU total sales and inventory evolution



Appendix 20: Quantity Scrapped (KG) by Reason between 12/01/2012 and 04/01/2013



Source: Dow Corning Internal Information, Scrap Tracking application, 04/01/2013

Appendix 21: AIDC technology



Source: internal Dow Corning information

