

# Logistical complexity on fully integrated production of socks and tights in perspective by enterprise - software

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Socks and tights are under control of fashion and fast moving trends. This means in matters of sourcing socks and tights always shorter manufacturing time slot by higher style-diversity and drooping lot-size with high quality-claim. On the other hand the production of socks needs a high in-house production depth.

Our software-house is engaged since more then 20 years on developing and distributing enterprise-software to plan and control textile-production. Based on my experience I want to deliver inside of the logistic complexity on fully integrated production of socks and tights in perspective by enterprise-software.

# The lecture will show

- the changing of quantity-units during the production-process starting from customer-order until shipment.
- the concept of "style", "set", "bag", "box" and "assortment"
- the term of "customer-order", "production-order", "manufacturing-order", "tracking-order", "boarding-order" and "shipment-order"
- planning and sourcing of raw-material
  - needs
  - date of availability
  - raw-planning of capacity
    - each manufacturing-stage by continuous process
    - reservation of capacity
    - calculation date of process-start
    - efficiency
  - fine-planning and production-control
    - manufacturing-order
    - material-reservation
    - rout-card-ticket; mobile-registration-system
    - progress-control
- tracking-order
  - synchronization of manufacturing-order in order of set
- boarding-order
  - pack in order of box
- shipment-order
  - pack in order of assortment

<b>style</b> (pair socks)	conce	ept				
Definition <ul> <li>style-number</li> <li>colorway-number</li> <li>size-grid</li> </ul> Instruction	Style-r	no colorway 4711 5012	Size 1 100 39/42 200 39/42 100 39/42 200 39/42	Size 2 43/46 43/46 43/46 43/46	Size 3 47/50 47/50 47/50 47/50	
<ul> <li>construction-plan (knitting, to seaming)</li> <li>part-list (yarn)</li> </ul>	9-					

Set (se	lling	g unit)	со	ncept							
Definitio	n		Style-	typ		Set A	Set B	Set C	Set D	Set E	Set F
•	as	sembly of styles		4711	100 39/42 43/46 47/50	Х		X		Y	
	<ul> <li>same style-no and colorway</li> </ul>				200 39/42 43/46	X	X	X	x	^	
	and same size-no				47/50	v	Y			Х	Х
	0	same style-no different	:	5012	100 39/42 43/46	X	X	Х	Х		
		colorway and same size-no			47/50 200 39/42		X			X	X
	0	different style-no and collorway	,		43/46 47/50				X		x
		but same size-no									~
Instruct	ion										
•	COI	nstruction-plan (boarding)									
•	pa	rt-list (stickers, banderol)									

polybag (packing unit)	concept			
Definition <ul> <li>amount of sets</li> </ul>	Set-Typ Set-A	Polaybag A 5	Polaybag B	Polybag C
<ul> <li>same set-no</li> </ul>	Set-B Set-C Set-D	5	5	
<ul> <li>different set-no (assortment)</li> <li>Instruction</li> </ul>	Set-E Set-F			5 5
<ul> <li>partlist (polybag, stickers)</li> </ul>				

box (transportunit)	concept			
Definitioin <ul> <li>amount of polybag-no</li> <li>same polybag.no</li> <li>different polybag-no</li> </ul>	Polybag Polybag A Polybag B Polybag C	Box A 5	Box B 5	Box C
(assortment) Instruction • partlist (carton, stickers, pallet)				

customer-order (set oriented)	term						
Definition • guantity by set-no	Set-typ quantity	Set A 1200	Set B 1200	Set C 900	Set D 900	Set E 600	Set F 600
deliverydate	1)						

# production-order (style oriented) term

Definition

- resulting quantity-unit for production-process oriented by style-no / colorway-no / size-no
- using from stage knitting until to forming/pairing
- brutto quantity (netto plus 3% expected 2.quality)

	PO-No	Style-typ Style-no colo	orway	Size 1 39/42	Size 2 43/46	Size 3 47/50	Tota	al
		1 4711 2 3 5012 4	100 200 100 200	123( 247) 247) 123(	6 2 2 6	927 1854 1854 927 Total pairs	618 1236 1236 618 gross	2781 5562 5562 2781 16686
<ul><li>res pro</li><li>usi</li></ul>	ulting quantity oduction-proce ng for boardir	y-unit for ess oriented by set ng and packaging	Polybag-T Polybag A Polybag B Polybab 0 Tota	Typ Quantity A 3 C bag	80 60 40 180	Box-Typ Box A Box B Box C Total Carton	Quantity	16 12 8 36

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• ne	eds of qua	Intity									
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o	consider	produ	ced qu	antities							
。 • ra • ra	consider w-material w-material	by nee orderii confirr	eds by ng mation	manufact	turing-	∙stage (j	ust in time)				
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-						color		1.0.000			
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production	Detail-pl	anning an	d produ	ction-c	ontrol			
production Creating of manufacturing order based on production-order • raw-material • yarn-reservation by lot • supply quantities by daily production • machines / workstations • availability by calender • reservation • attendance paper • instruction-paper • measurement • setup of machine	MO-N₀ 1 1 2 2 2 3 3 3 4 4 4 4 4	Style-typ Style-no 4711 4711 4 4 4 4 4 4012	colorway 200 100 200	Size 1 39/42	Size 2 43/46 600 636 600 600 600 600 600 600 600 60	Size 3 47/50 500 427 600 654 500 427 600 654 427 600 654 427 427 600 654	Tickets 618 600 636 600 636 ickets	17 10 18 12 6 17 10 18 18 18 18 12 6 162
<ul> <li>rout-card-ticket</li> </ul>								

Detail-planning and production-control

#### rout-card-ticket

### Preperperation

- each knitting-machine gets on begin of daily-production a empty carton with a rout-card-ticket
- all produced socks are putting inside of box
- machine-number-barcode-sticker
- stuf-barcode-sticker (by shift)
   taking note of total produced
- taking note of total produced quantity by hand

mobile-registraton

- manufacturing-stage knitting
  - after the daily-production collection on each machine the cartons with rout-card-ticket by using of mobile reader rigstration of
    - machine-no
    - stuff-no by shift
    - quanity of socks (piece)
    - address of next followingup manufacturing-stage
- following-up manufacturing-stage
  - carton get moved from stage to stage controled by order of root-card
  - using of mobile reader registraton of
    - stuff-no by shift
    - quantity of missing socks and 2.quality

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Tracking-order (synchronization)

Detail-planning and production-control

In front of washing in order by set-no the knitting-manufacturing-order are getting collectet (synchronization) to tracking-order

- rules
  - lotsize of washing
  - lotsize of dyeing
  - · capacity of boarding in one shift
  - advantage of synchronization
  - to avoid dyelot mix during boarding
  - · to control in time to have all style-no of needs of set-no
  - · to optimize the production-flow for washing, dyeing and boarding



Boarding-	and Ship	ment-order	Detail-planning a	nd production-control	
Depending using by to	on of instr chscreen a	uction of polybag-no a and barcoderegistration	ind box-no to pack ns	box by box	
			P		
dyeing	depo	forming/pairingdepo	boarding	Warehouse	shipment
				packaging by nile of polybag-typ box-typ	

# Conclusion

socks- and tights-production are integrated in supply-chain-management. Facts like supplier's reliability, data integrity, realtime communicaton and quality-claim force the enterprises to establish information-services.

ERP(enterprise resource planning)-systems setting therefor the rudiment.

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