

CHANGEOVER PROCEDURE

MACHINE E: Reicoil Spun Bonded Beams		PROCESS E: Reicoil Spun Bonded Beams		MACHINE E: Reicoil Spun Bonded Beams		PROCESS E: Reicoil Spun Bonded Beams									
CHANGE FROM: Bico A, B & E Die Pack (Exchange)		CHANGE TO: Bico A, B & E Pack (Exchange)		CHANGE FROM: Bico A, B & E Die Pack (Exchange)		CHANGE TO: Bico A, B & E Pack (Exchange)									
CHANGE OVER TIME: 3 Hours 20 minutes		CHANGE OVER TIME: 3 Hours 20 minutes		CHANGE OVER TIME: 3 Hours 20 minutes		CHANGE OVER TIME: 3 Hours 20 minutes									
! ▲ ONLY PERSONS TRAINED HOW TO DO THESE TASKS ARE TO CARRY OUT TASKS & CRANE OPERATION ▲ !				! ▲ ONLY PERSONS TRAINED HOW TO DO THESE TASKS ARE TO CARRY OUT TASKS & CRANE OPERATION ▲ !											
▲ = SAFETY POINT ● = QUALITY POINT ⚡ = PPEs REQUIRED ⚙ = TOOLS REQUIRED Ⓢ = CRITICAL NOTE				▲ = SAFETY POINT ● = QUALITY POINT ⚡ = PPEs REQUIRED ⚙ = TOOLS REQUIRED Ⓢ = CRITICAL NOTE											
♦ MATERIALS/TOOLS/PPEs REQUIRED FOR TASK ♦		♦ MATERIALS/TOOLS/PPEs REQUIRED FOR TASK ♦		♦ MATERIALS/TOOLS/PPEs REQUIRED FOR TASK ♦		♦ MATERIALS/TOOLS/PPEs REQUIRED FOR TASK ♦									
REFERENCES: Preparation Checklist (S-SM-PR-75065) Spun Spinpack Change (S-SM-PR-7118) (Binder # 5) MATERIALS: Refer to references above TOOLS: Refer to references above PPEs: Refer to references above		REFERENCES: Preparation Checklist (S-SM-PR-75065) Spun Spinpack Change (S-SM-PR-7118) (Binder # 5) MATERIALS: Refer to references above TOOLS: Refer to references above PPEs: Refer to references above		REFERENCES: Preparation Checklist (S-SM-PR-75065) Spun Spinpack Change (S-SM-PR-7118) (Binder # 5) MATERIALS: Refer to references above TOOLS: Refer to references above PPEs: Refer to references above		REFERENCES: Preparation Checklist (S-SM-PR-75065) Spun Spinpack Change (S-SM-PR-7118) (Binder # 5) MATERIALS: Refer to references above TOOLS: Refer to references above PPEs: Refer to references above									
№		1 st PERSON/S		№		2 nd PERSON/S		№		3 rd PERSON/S		№		4 th PERSON/S	
First Pack Removal "A" or "E"															
-	(OPERATIONS)The color additives needs to be turned off and purged out			-	(OPERATIONS)The color additives needs to be turned off and purged out			-	(OPERATIONS)The color additives needs to be turned off and purged out			-	(OPERATIONS)The color additives needs to be turned off and purged out		
1	Turn extruders off			1				1				1			
2	Scrape pack and Remove spin waste			2				2				2			
3	Cover the honey combs with the quench chamber covers			3	Cover the honey combs with the quench chamber covers			3				3			
4	Cover the intermediate channel with the 3' X 7' lengths of pressboards			4	Cover the intermediate channel with the 3' X 7' lengths of pressboards			4				4			
5	Assigned persons to begin breaking die pack bolts loose Ⓢ it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet			5	Assigned persons to begin breaking die pack bolts loose Ⓢ it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet			5	Assigned persons to begin breaking die pack bolts loose Ⓢ it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet			5	Assigned persons to begin breaking die pack bolts loose Ⓢ it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet		
6	Remove bolts from where the carriage rests against pack			6	Remove bolts from where the carriage rests against pack			6				6			
6	Remove bolts from where the carriage rests against pack			6	Remove bolts from where the carriage rests against pack			6				6			
7	Go to drive side of beam			7	Go to operator side of beam			7	Assist Crane operator. Lookout for machinery and assist in controlling load when needed.			7	Using 12.5 ton hoist on the line crane, bring carriage down through beam opening. Being aware of machinery and the handle on carriage.		
8	Unhook chains when carriage is lowered to the rails			8	Unhook chains when carriage is lowered to the rails			8	Assist Crane operator. Lookout for machinery and assist in controlling load when needed.			8	After chain hooks are detached from carriage, Lift up spreader bar and stage on yellow support stands on top level		
9	Roll the carriage under the die body, and begin raising support.			9	Roll the carriage under the die body, and begin raising support.			9				9			
10	Raise carriage support using hand crank screw jack until support is 1/2" away from die face			10	Get the X 2 M10 cap screws per pack (secure pack to carriage)			10				10			
11				11				11				11	Insert M10 cap screws through the carriage support to the pack face		
12	Continue to raise the carriage support until it is up tight against the pack face			12				12				12			
	Each person has a designated area to remove or replace bolts: Your area is on drive side to left of the supports where the pack is being held.				Each person has a designated area to remove or replace bolts: Your area is on drive side to left of the supports where the pack is being held.				Each person has a designated area to remove or replace bolts: Your area is on drive side to left of the supports where the pack is being held.				Each person has a designated area to remove or replace bolts: Your area is on drive side to left of the supports where the pack is being held.		
13	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT			13	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT			13	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT			13	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT		
14	Be absolutely positive all bolts and washers are removed and accounted for.			14	Be absolutely positive all bolts and washers are removed and accounted for.			14	Be absolutely positive all bolts and washers are removed and accounted for.			14	Be absolutely positive all bolts and washers are removed and accounted for.		
15	When given the "Ok" by the crane operator, Lower the die pack with the carriage hand crank			15				15	Go to 3rd level get 12.5 ton crane hoist and assist in the preparation of the spreader bar in position at the beam			15	Go to 3rd level get 12.5 ton crane hoist and assist in the preparation of the spreader bar in position at the beam		
16	Go to drive side and in with person 2 and pull the die pack carriage to the right under the opening to the upper level.			16	Go to the operator side and in with person 1 and pull the die pack carriage to the left under the opening to the upper level.			16				16			
17				17				17	Assist in the lowering of the spreader bar through opening to die pack carriage			17	Lower the spreader bar through opening to die pack carriage		

With SMED there are essentially 5 steps

- ✓ Preparation of Operations – get the place 5Sd as a prerequisite
- ✓ Elimination of Unnecessary Settings and Adjustments – tool elimination, tool unification, method substitution
- ✓ Rationalization of handling and tightening means – ergonomics
- ✓ Synchronization – you do that while I do this at the same time
- ✓ Standardization – commit everything to a standardize work procedure

Two important documents come from a SMED event a Preparation Checklist and a Changeover Procedure. Here is the most expansive SMED Changeover Procedure that I have done to date.

18	▲ While the load is being lifted or lowered do not walk or place any parts of yourself under the load and keep hands and fingers out from carriage/quench chamber rail	18	▲ While the load is being lifted or lowered do not walk or place any parts of yourself under the load and keep hands and fingers out from carriage/quench chamber rail	18	Assist in the die pack carriage with spreader bar and move over the railing and place beside the opening	18	Raise the die pack carriage with spreader bar and move over the railing and place beside the opening
19	After load is no longer over the opening go and get the X 3 5 – 5 layers X 18' leader sheet (total of 9 leader sheets)	19	After load is no longer over the opening go and get the X 3 5' – 5 layers X 18' leader sheet (total of 9 leader sheets)	19	Assist in raising the die pack carriage with spreader bar and move over the railing and place beside the opening	19	Raise the die pack carriage with spreader bar and move over the railing and place beside the opening
20	After load is no longer over the opening, get the X 3 5' – 5 layers X 18' leader sheet (total of 9 leader sheets)	20	After load is no longer over the opening, get the X 3 5' – 5 layers X 18' leader sheet (total of 9 leader sheets)	20	Assist with removal of Teflon seals from the die pack breaker plate using the flat head screwdriver.	20	Be sure all Teflon seals from the die pack breaker plate are removed.
21	Lay out X 1 of the X 5 layers thick leader sheets across the intermediate channel on top of the 3' X 7' lengths of pressboards making sure it is centered	21	Lay out X 1 of the X 5 layers thick leader sheets across the intermediate channel on top of the 3' X 7' lengths of pressboards making sure it is centered				
21	Distribute the X 3 leader sheets per beam	21	Distribute the X 3 leader sheets per beam	21	Detach hooks from carriage eyelets and hook to silver rings at top of chains.	21	Detach hooks from carriage eyelets and hook to silver rings at top of chains.
22	Lay out X 1 of the X 5 layers thick leader sheets across the intermediate channel on top of the 3' X 7' lengths of pressboards making sure it is centered. Sheets will not reach full length of channel)	22	Lay out X 1 of the X 5 layers thick leader sheets across the intermediate channel on top of the 3' X 7' lengths of pressboards making sure it is centered. Sheets will not reach full length of channel)	22	Assist with detaching spreader bar and have chain hooks ready to place on hoist.	22	Place spreader bar on yellow supports and detach hoist from spreader bar.
23	Increase speed of spin up speed extruder/s at the local operator control panel on 2nd level to 20 RPM	23	Goto 1st level and set beam to spin up at the operator station	23	Assist with attaching chain hooks to hoist and grey support. Get tray of M10 cap screws and cordless drill. Assist with aligning bolt holes in support to the removed pack.	23	Assist with attaching chain hooks to hoist and grey support. Get tray of M10 cap screws and cordless drill. Assist with aligning bolt holes in support to the removed pack.
24	Note: When the purge waste accumulates on top of the leader sheets do not allow it to accumulate to a point of where it overflows the sides of the intermediate channel as this will make it very heavy to move. ▲ Caution purge waste is HOT, heavy and melted.	24	Note: When the purge waste accumulates on top of the leader sheets do not allow it to accumulate to a point of where it overflows the sides of the intermediate channel as this will make it very heavy to move. ▲ Caution purge waste is HOT, heavy and melted.	24	Attach support to pack using total of the (12) M10 bolts. Only finger tighten.	24	Attach support to pack using total of the 12 M10 bolts. Only finger tighten.
25	Remove purge waste from intermediate channel by wrapping up with the sides of the leader sheet and roll purge up, and place out of the way of the walk area, and Not on top of air lines	25	Remove purge waste from intermediate channel by wrapping up with the sides of the leader sheet and roll purge up, and place out of the way of the walk area, and Not on top of air lines	25	Proceed to floor level while looking for possible persons under load as load is moved in the air to back of line.	25	Remove the (2) M10 bolts from carriage support to the pack face. Prepare for raising pack and moving toward back of line.
26	Repeat Purging Process until clear sheet of material is flowing down. No Black spots, a solid flow of poly is flowing down, with the ends tapering toward center. This may take 3 or 4 purges.	26	Repeat Purging Process until clear sheet of material is flowing down. No Black spots, a solid flow of poly is flowing down, with the ends tapering toward center. This may take 3 or 4 purges.	26	At the back of the line set the red barriers at both sides. (Operator and Drive Side) Making sure no one is in the area. Have pack cart in location for pack to rest on.	26	Take pack to back of the line above the preheat oven, check for red barriers and for assistant.
27	Notify assigned person to dry ice blast that purging is completed and ok to clean the die body.	27	Notify assigned person to dry ice blast that purging is completed and ok to clean the die body.	27		27	
28	Take a 15 minutes break	28	Take a 15 minutes break	28	Go to 3 rd level get 12.5 ton crane and assist in the preparation of the spreader bar in position at the beam	28	Go to 3 rd level get 12.5 ton crane and prepare spreader bar in position at the beam
29	Assist 3rd and 4th persons in preparing to start next pack removal.	29	Assist 3rd and 4th persons in preparing to start next pack removal.	29	Take a 15 minutes break	29	Take a 15 minutes break
30	If 3rd and 4th person is finished with second pack; continue to the 3rd beam OR seek direction if 3rd and 4th person needs assistance with removing next pack.	30	If 3rd and 4th person is finished with second pack; continue to the 3rd beam OR seek direction if 3rd and 4th person needs assistance with removing next pack.	30		30	
31	Take the 3/4" drive 40" breaker bars to the next beam (2nd or 3rd beam)	31	Take the 3/4" drive 40" breaker bars to the next beam (2nd or 3rd beam)	31		31	
32	Unless, 3rd and 4th persons need assistance at previous beam (2nd beam) start breaking bolts loose on 3rd beam	32	Unless, 3rd and 4th persons need assistance at previous beam (2nd beam) start breaking bolts loose on 3rd beam	32	Place tools and materials on mobile pegboards and move to next beam	32	Place tools and materials on mobile pegboards and move to next beam
33	Begin breaking die pack bolts loose ① it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet	33	Begin breaking die pack bolts loose ① it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet	33	Begin breaking die pack bolts loose ① it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet	33	Begin breaking die pack bolts loose ① it is only necessary to break the bolt loose, do not waste energy unscrewing bolts using breaker bar ratchet
34	Remove bolts from where the carriage rests against pack	34	Remove bolts from where the carriage rests against pack	34	Remove bolts from where the carriage rests against pack	34	Make certain the bolts from where the carriage rests against pack are removed.
35	Go to drive side of beam	35	Go to operator side of beam	35	Go to 3rd level. Assist Crane operator. Lookout for machinery and assist in controlling load when needed.	35	Go to 3rd level. Using 12.5 ton hoist on the line crane, bring carriage down through beam opening. Being aware of machinery and the handle on carriage.
36	Unhook chains when carriage is lowered to the rails	36	Roll the carriage under the die body, and begin raising support.	36	Assist Crane operator. Lookout for machinery and assist in controlling load when needed.	36	After chain hooks are detached from carriage, Lift up spreader bar and stage on yellow support stands on top level
37	Raise carriage support using hand crank screw jack until support is 1/2" away from die face	37	Get the X 2 M10 cap screws per pack (secures pack to carriage)	37		37	
38		38		38		38	Insert M10 cap screws through the carriage support to the pack face
39	Continue to raise the carriage support until it is up tight against the pack face	39	Continue to raise the carriage support until it is up tight against the pack face	39		39	
40	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT	40	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT	40	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT	40	Using the impact wrenches and 14 mm Allen socket attachment remove the die pack bolts and place in the black/yellow side of bolts pyramid ▲ bolts are HOT

Cont.

42	When given the "Ok" by the crane operator, Lower the die pack with the carriage hand crank	42		42	Go to 3rd level get 12.5 ton crane and assist in the preparation of the spreader bar in position at the beam	42	Go to 3rd level get 12.5 ton crane and prepare spreader bar in position at the beam
43	Go to drive side and in with person 2 and pull the die pack carriage to the right under the opening to the upper level.	43	Go to the operator side and in with person 1 and pull the die pack carriage to the left under the opening to the upper level.	43		43	
44		44		44	Assist in the lowering of the spreader bar through opening to die pack carriage	44	Lower the spreader bar through opening to die pack carriage
45	Drive side: Attach the chain hooks to the die pack carriage eyelets	45	Operator side: Attach the chain hooks to the die pack carriage eyelets	45		45	
46	▲ While the load is being lifted or lowered do not walk or place any parts of yourself under the load and keep hands and fingers out from carriage/quench chamber rail	46	▲ While the load is being lifted or lowered do not walk or place any parts of yourself under the load and keep hands and fingers out from carriage/quench chamber rail	46	Assist in raising the die pack carriage with spreader bar and move over the railing and place beside the opening	46	Raise the die pack carriage with spreader bar and move over the railing and place beside the opening
47	After load is no longer over the opening, get the X 3' 5" – 5' layers X 18' leader sheet (total of 9 leader sheets)	47	After load is no longer over the opening, get the X 3' 5" – 5' layers X 18' leader sheet (total of 9 leader sheets)	47	Assist with removal of Teflon seals from the die pack breaker plate using the flat head screwdriver	47	Be sure all Teflon seals from the die pack breaker plate are removed.
48	Distribute the X 3 leader sheets per beam	48	Distribute the X 3 leader sheets per beam	INSTRUCTIONS FOR THE DISASSEMBLY OF B BEAM PACK STARTS HERE			
49	Increase speed of spin up speed extruder/s at the local operator control panel on 2nd level to 20 RPM	49	Go to 1st level and set beam to spin up at the operator station	49	All tools; for breaking and removing bolts; separating the two plates; and cleaning the polymer from the plates need to be in close proximity to B beam upper level.	49	Have ½" ratchet and 8 mm Allen ready in hand or nearby.
50	Note: When the purge waste accumulates on top of the leader sheets do not allow it to accumulate to a point of where it overflows the sides of the intermediate channel as this will make it very heavy to move ▲ Caution purge waste is hot, heavy and melted	50	Note: When the purge waste accumulates on top of the leader sheets do not allow it to accumulate to a point of where it overflows the sides of the intermediate channel as this will make it very heavy to move ▲ Caution purge waste is hot, heavy and melted	50	Follow up bolt breaking with cordless drill and the 8 mm Allen head to back bolts out and possibly remove from pack (might need 8 mm Allen wrench) and put in plastic tray for reuse shortly.	50	After carriage is rested on top level floor. Begin breaking the (16) M10 cap head bolts loose. Only Break loose. Then, Assist in removing all bolts from pack.
51	Remove purge waste from intermediate channel by wrapping up with the sides of the leader sheet and roll purge up, and place out of the way of the walk area, and Not on top of air lines	51	Remove purge waste from intermediate channel by wrapping up with the sides of the leader sheet and roll purge up, and place out of the way of the walk area, and Not on top of air lines	51	Assist with Unhooking the chains of spreader bar from carriage; hook chain to silver ring at top end of chain.	51	Unhook the chains of spreader bar from carriage; hook chain to silver ring at top end of chain.
52	Repeat Purging Process until clear sheet of material is flowing down. No Black spots, a solid flow of poly is flowing down, with the ends tapering toward center. This may take 3 or 4 purges.	52	Repeat Purging Process until clear sheet of material is flowing down. No Black spots, a solid flow of poly is flowing down, with the ends tapering toward center. This may take 3 or 4 purges.	52	Assist with Placing the Spreader bar on yellow supports, remove spreader bar from hoist. Attach chain hooks to hoist and to gray support on floor.	52	Place Spreader bar on yellow supports, remove spreader bar from hoist. Attach chain hooks to hoist and to gray support on floor.
53	Notify assigned person to dry ice blast that purging is completed and ok to clean the die body.	53	Notify assigned person to dry ice blast that purging is completed and ok to clean the die body.	53	Assist with attaching chain hooks to hoist and gray support. Get tray of M10 cap screws and cordless drill. Assist with aligning bolt holes in support to the removed pack.	53	Lift gray support up and over pack, aligning bolt holes with pack lay on top of pack.
54	Move all purge to location that will not interfere with pack replacement	54	Move all purge to location that will not interfere with pack replacement	54	Attach support to pack using total of the (12) M10 bolts. Only finger tighten.	54	Attach support to pack using total of the (12) M10 bolts. Only finger tighten.
55	Take Lunch Break if not already taken; (Communicate with Pack Change Leader)	55	Take Lunch Break if not already taken; (Communicate with Pack Change Leader)	55	Assist crane operator and give a second set of eyes to watch for problems or safety issues. You may even do the	55	Lift crane hoist; (making sure hoist is aligned with center of pack) enough to slightly pull up on gray support. U Are NOT lifting pack with crane. ONLY creating pull on the top plate
56		56		56	Have the two 6-1/2" brass scrapers ready in hand.	56	When top is separated from bottom, raise top plate up so it is about head level.
57		57		57	With a 6-1/2" brass scraper remove the top excess polymer and let drop on top of bottom plate. Ⓢ Plates will be reassembled to lower to ground level, so mating surfaces need to be free of excess polymer.	57	With a 6-1/2" brass scraper remove the top excess polymer and let drop on top of bottom plate. Ⓢ Plates will be reassembled to lower to ground level, so mating surfaces need to be free of excess polymer.
58		58		58	Remove the Teflon seal on underside of top plate.	58	Remove the Teflon seal on underside of top plate.
59		59		59		59	Move top plate over out of the way.
60		60		60	Continue removing polymer from bottom plate, again no excess polymer on surface that mates with top plate.	60	Continue removing polymer from bottom plate, again no excess polymer on surface that mates with top plate.
61		61		61	Reassemble the two plates as they were, using the same bolts, except for (4) bolts all will be reused. Only finger tighten bolts.	61	Reassemble the two plates as they were, using the same bolts, except for (4) bolts all will be reused. Only finger tighten bolts.
62		62		62	Proceed to floor level while looking for possible persons under load as load is moved in the air to back of line.	62	Remove the (2) M10 bolts from carriage support to the pack face. Prepare for raising pack and moving toward back of line.
63		63		63	At the back of the line set the red barriers at both sides. (Operator and Drive Side) Making sure no one is in the area. Have pack cart in location for pack to rest on.	63	Take pack to back of the line above the preheat oven, check for red barriers and for assistant.
64		64		64	Look for and Wait for crane operator to drop guide rope to you and use rope to prevent pack from swinging, twisting and contacting other machinery.	64	Attach guide rope to operator end of pack support. When pack is clear of preheat oven and assistant is ready, drop rope end to assistant.
65		65		65	Take Lunch Break if not already taken (Communicate with Pack Change Leader)	65	Take Lunch Break if not already taken (Know where the Rest of your group is)
66	Depending on where the Dry Ice blasting process is on the first beam removed; confirm if First pack is ready for replacement (If ready skip down to # ??); or go to third pack and prepare to break bolts loose.	66	Depending on where the Dry Ice blasting process is on the first beam removed; confirm if First pack is ready for replacement (If ready skip down to # ??); or go to third pack and prepare to break bolts loose.	66	Depending on where the Dry Ice blasting process is on the first beam removed; confirm if First pack is ready for replacement (If ready skip down to # ??); or go to third pack and prepare to break bolts loose.	66	Depending on where the Dry Ice blasting process is on the first beam removed; confirm if First pack is ready for replacement (If ready skip down to # ??); or go to third pack and prepare to break bolts loose.

Cont.

Replacement of Packs "A", "E" or "B"; Follow the instructions below for the corresponding pack to be replaced.

67	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	67	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	67	Assist crane operator with: Position spreader bar close by for quick attachment after removing pack from preheat oven. Prepare to remove pack from preheat Oven. Protective Sleeves, Gloves, and Have the Crane Hoist, Chain Hooks, Cordless Drill with 8mm Allen and chuck adaptor, 2 M10 Cap Head bolts close by at the beam that the pack is being replaced.	67	Position spreader bar close by for quick attachment after removing pack from preheat oven. Prepare to remove pack from preheat Oven. Protective Sleeves, Gloves, and Have the Crane Hoist, Chain Hooks, Cordless Drill with 8mm Allen and chuck adaptor, 2 M10 Cap Head bolts close by at the beam that the pack is being replaced.
68		68		68		68	Open air supply to door opening valve; Open door; Once door is completely open close air supply to door opening valve.
69	Prepare tools, and materials for pack placement; Alignment Pins, bolt pyramid, 14mm Allen sockets, impact wrenches, air lines, etc.	69	Prepare tools, and materials for pack placement; Alignment Pins, bolt pyramid, 14 mm Allen sockets, impact wrenches, air lines, etc.	69	Have one of the hooks in hand. **Packs, support and interior of oven is HOT **	69	Position Hoist in front of preheat oven with one of the hooks in hand. **Packs, support and interior of oven is HOT **
70	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	70	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	70	Place hook into eyelet on grey support bar attached to pack, making sure it latched and on top of pack support bar. Take notice of the two screens and placement (small screen towards winder)	70	Place hook into eyelet on grey support bar attached to pack, making sure it latched and on top of pack support bar. Take notice of the two screens and placement (small screen towards winder)
71		71		71	Assist Crane Operator by obtaining control of pack if swinging of load becomes out of control.	71	Raise Hoist, to lift pack up, being aware of hoist alignment with pack, to maintain minimal swinging of pack.
72		72		72	Have cordless drill with 8 mm Allen socket and adaptor in hand.	72	Centering Pack as much as possible. Place pack on carriage, using the 2 M10 cap head bolts to secure pack.
73		73		73	Once Crane Operator have placed pack down, begin removing bolts on top, securing support to pack. Lean bolts over to prevent bolts falling back into holes.	73	Be sure bolts are leaning over to prevent bolts "grabbing" support.
74		74		74	Assist in guiding support to specified location.	74	Lift Support and place at specified location.
75		75		75	Assist with removing ring from hoist and reattaching spreader bar.	75	Remove Chain hooks from hoist and pick up spreader bar.
76	Clean Die body one last time, be sure sealing surfaces are clean.	76	Clean Die body one last time, be sure sealing surfaces are clean.	76	Attach hooks to carriage eyelets, being sure chains are not twisted Move spreader bar to carriage with pack, and attach hooks to carriage eyelets, being sure chains are not twisted	76	Attach hooks to carriage eyelets, being sure chains are not twisted Move spreader bar to carriage with pack, and attach hooks to carriage eyelets, being sure chains are not twisted
77	When Crane operator is ready to lower carriage, move to drive side and clear of opening where carriage is lowered. Get alignment pin in hand. ** Keep hands down! ** When Crane operator is ready to lower carriage, move to operator side and clear of opening where carriage is lowered. ** Keep hands down! **	77	When Crane operator is ready to lower carriage, move to drive side and clear of opening where carriage is lowered. Get alignment pin in hand. ** Keep hands down! ** When Crane operator is ready to lower carriage, move to operator side and clear of opening where carriage is lowered. ** Keep hands down! **	77		77	Make sure Persons one and two are ready for carriage to be lowered and that the die body has been cleaned one last time, just before lowering carriage with pack down.
78		78		78	Assist Crane operator while lowering carriage down; Do Not handle or "direct" load unless it becomes unstable; be aware of surrounding equipment and the handle of the carriage. Look for the carriage wheels to rest onto railing at lower level; help in being sure rollers are seated correctly on railing.	78	Lower carriage down; be aware of surrounding equipment and the handle of the carriage. Rest carriage wheels onto railing at lower level, be sure rollers are seated correctly on railing.
79	After carriage is seated correctly on railing above, remove hooks from eyelets in carriage. Place hooks onto silver rings hanging at top of hanging chain. Give the crane operator to ok to raise the spreader bar out of beam opening.	79	After carriage is seated correctly on railing above, remove hooks from eyelets in carriage. Place hooks onto silver rings hanging at top of hanging chain. Give the crane operator to ok to raise the spreader bar out of beam opening.	79		79	
80	Push carriage to your left.	80	Push carriage to your right.	80	When given the ok by persons one and two at lower level, assist in raising spreader bar out of beam opening and sit spreader bar on the yellow supports on top level.	80	After given the ok by persons one and two at lower level, raise spreader bar out of beam opening and sit spreader bar on the yellow supports on top level.
81	Watch and align the pack as it is being raised. Do not allow pack to hit or be raised up against monomer channels.	81	Begin raising pack toward die body, using the hand crank. Watch and align the pack as it is being raised. Do not allow pack to hit or be raised up against monomer channels.	81	Quickly move down to 2nd level.	81	Quickly move down to 2nd level.
82	Have alignment pin in hand	82	Continue raising pack into die body as instructed by Pack Change Leader.	82	Assist with aligning pack into die body.	82	Get alignment pin in hand
84	Quickly get one bolt specified for the ends of the pack (Four-M16 X 70 mm total); Insert into one of the end bolt holes, when bolt is being pushed down by die body, and you can start the bolt with 2-3 turns into die body then, the person raising the pack with hand crank, needs to be instructed to stop raising pack. You want pack to still be able to move if needed.	84	Stop raising pack when instructed; be sure pack is Not all the way up against the die body. (Crank will be more difficult to turn)	84	Go to the back side of channel to assist with starting bolts, when the time comes.	84	Quickly get one bolt specified for the ends of the pack (Four-M16 X 70 mm total); Insert into one of the end bolt holes, when bolt is being pushed down by die body, and you can start the bolt with 2-3 turns into die body then, the person raising the pack with hand crank, needs to be instructed to stop raising pack. You want pack to still be able to move if needed.
85	**The four bolts on both sides (8 total) have to be hand started and only 2-3 turns into die body, before the rest can be inserted into the pack**.	85	**The four bolts on both sides (8 total) have to be hand started and only 2-3 turns into die body, before the rest can be inserted into the pack**.	85	**The four bolts on both sides (8 total) have to be hand started and only 2-3 turns into die body, before the rest can be inserted into the pack**.	85	**The four bolts on both sides (8 total) have to be hand started and only 2-3 turns into die body, before the rest can be inserted into the pack**.

Cont.

86	Your area is on drive side to left of where the carriage is holding pack.	86	Your area is at front center between supports where the pack is being held.	86	Your area is at front center between supports where the pack is being held.	86	Your area is at front center between supports where the pack is being held.
87	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	87	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	87	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	87	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.
88	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	88	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	88	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	88	Be sure all bolts are started that can be started (Can't get above carriage support, yet)
89	Go to back of channel with person number three.	89	Raise pack firmly against die body	89		89	
90	Get an impact wrench with 14 mm Allen socket	90	Grab impact wrench with 14 mm Allen socket	90	Get and set torque wrench at 180 Nm, with any extension if needed.	90	Get and set torque wrench at 180 Nm, with any extension if needed.
91	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.	91	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.	91	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.	91	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.
92	Starting in the Center, again and go toward operator side allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.	92	Starting in the Center, again and go toward operator side allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.	92	Starting in the Center, again and go toward operator side behind the guy using impact wrench. Torque bolts that were just put in. (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.	92	Starting in the Center, again and go toward operator side behind the guy using impact wrench. Torque bolts that were just put in. (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.
93	After all bolts have been torque, stay in back, to place remaining bolts while carriage is being removed from die body.	93		93	Come out from back of channel.	93	After all available bolts are torque, with carriage still in die body, lower carriage support with hand crank, allowing clearance for cart to be moved out into open space. Fold handle down.
94	Hand start remaining bolts, impact tighten, then torque to 180 Nm, also.	94		94		94	Lower spreader bar with crane hoist
95		95	On drive side, connect hooks to eyelets on carriage, Give crane operator the ok to lift carriage	95	On operator side, connect hooks to eyelets on carriage. Give crane operator the ok to lift carriage	95	After given the ok to raise carriage, raise and sit on top level, and place spreader bar on top of carriage support.
96	First torque is completed	96	First torque is completed	96	First torque is completed	96	First torque is completed. Increase die body and extruder zones to 220°C
97	15 minute break, and clarify instructions on what is next.	97	15 minute break, and clarify instructions on what is next.	97	15 minute break, and clarify instructions on what is next.	97	Wait a minimum of 20 minutes to start second torque of 200 Nm. 15 minute Break
	During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.		During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.		During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.		If third pack needs removed, instruct to begin removing pack per the instructions as previously outlined. (According to "A"/"E" or "B"); If all packs have been removed, move on to replacing second pack ("B" or "E"/"A") When Dry ice blaster has completed all tasks, have him help with anything needed to be done.
98	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	98	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	98	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	98	
99	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	99	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	99	Assist crane operator with: Position spreader bar close by for quick attachment after removing pack from preheat oven. Prepare to remove pack from preheat Oven. Protective Sleeves, Gloves, and Have the Crane Hoist, Chain Hooks, Cordless Drill with 8 mm Allen and chuck adaptor, 2 M10 Cap Head bolts close by at the beam that the pack is being replaced.	99	Position spreader bar close by for quick attachment after removing pack from preheat oven. Prepare to remove pack from preheat Oven. Protective Sleeves, Gloves, and Have the Crane Hoist, Chain Hooks, Cordless Drill with 8 mm Allen and chuck adaptor, 2 M10 Cap Head bolts close by at the beam that the pack is being replaced.
To replace the Second BiCo pack ("A" or "E") follow above instructions, again.							
Replacing "B" pack							
100		100		100		100	Open air supply to door opening valve; Open door; Once door is completely open close air supply to door opening valve.
101	Prepare tools, and materials for pack placement; Alignment Pins, bolt pyramid, 14 mm Allen sockets, impact wrenches, air lines, etc.	101	Prepare tools, and materials for pack placement; Alignment Pins, bolt pyramid, 14 mm Allen sockets, impact wrenches, air lines, etc.	101	Have one of the hooks in hand. **Packs, support and interior of oven is HOT.**	101	Position Hoist in front of preheat oven with one of the hooks in hand. **Packs, support and interior of oven is HOT.**
102		102		102		102	Move hoist over Pack to be removed from preheat oven
103	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	103	Keep Die Body clear of polymer, with a brass scraper, that may prevent pack sealing up on Die Body. (Sealing Surfaces) Clean off polymer that has dropped onto the press boards	103	Place hook into eyelet on grey support bar attached to pack, making sure it latched and on top of pack support bar. Take notice of the two screens and placement (small screen towards winder)	103	Place hook into eyelet on grey support bar attached to pack, making sure it latched and on top of pack support bar. Take notice of the two screens and placement (small screen towards winder)
104		104		104	Assist Crane Operator by obtaining control of pack if swinging becomes out of control.	104	Raise Hoist, to lift pack up, being aware of hoist alignment with pack, to maintain minimal swinging of pack.
105		105		105	Have cordless drill with 8 mm Allen socket and adaptor in hand.	105	Centering Pack as much as possible. Place pack on carriage, using the 2 M10 cap head bolts to secure pack.
106		106		106	Once Crane Operator have placed pack down, begin removing bolts on top, securing support to pack; Lean bolts over to prevent bolts falling back into holes.	106	Be sure bolts are leaning over to prevent bolts "grabbing" support.
107		107		107	Assist in guiding support to specified location.	107	Lift Support and place at specified location.

Cont.

108		108		108	Assist with removing ring from hoist and reattaching spreader bar.	108	Remove Chain hooks from hoist and pick up spreader bar.
109	Clean Die body one last time, be sure sealing surfaces are clean.	109	Clean Die body one last time, be sure sealing surfaces are clean.	109	Attach hooks to carriage eyelets, being sure chains are not twisted	109	Move spreader bar to carriage with pack, and attach hooks to carriage eyelets, being sure chains are not twisted
110	When Crane operator is ready to lower carriage, move to drive side and clear of opening where carriage is lowered. Get alignment pin in hand. **Keep hands down! **	110	When Crane operator is ready to lower carriage, move to operator side and clear of opening where carriage is lowered. **Keep hands down! **	110	Remove All aluminum weights from the top of the pack screen, except three: One on each end and center.	110	Make sure Persons one and two are ready for carriage to be lowered and that the die body has been cleaned one last time, just before lowering carriage with pack down.
111		111		111	Assist Crane operator while lowering carriage down; Do Not handle or "direct" load unless it becomes unstable; be aware of surrounding equipment and the handle of the carriage. Look for the carriage wheels to rest onto railing at lower level; help in being sure rollers are seated correctly on railing.	111	Lower carriage down; be aware of surrounding equipment and the handle of the carriage. Rest carriage wheels onto railing at lower level; be sure rollers are seated correctly on railing.
112	After carriage is seated correctly on railing above, remove hooks from eyelets in carriage. Place hooks onto silver rings hanging at top of hanging chain. Give the crane operator the ok to raise the spreader bar out of beam opening.	112	After carriage is seated correctly on railing above, remove hooks from eyelets in carriage. Place hooks onto silver rings hanging at top of hanging chain. Give the crane operator the ok to raise the spreader bar out of beam opening.	112		112	
113	Push carriage to your left.	113	Push carriage to your right.	113	When given the ok by persons one and two at lower level, assist in raising spreader bar out of beam opening and sit spreader bar on the yellow supports on top level.	113	After given the ok by persons one and two at lower level, raise spreader bar out of beam opening and sit spreader bar on the yellow supports on top level.
114	Watch and align the pack as it is being raised. Do not allow pack to hit or be raised up against monomer channels.	114	Begin raising pack toward die body, using the hand crank. Watch and align the pack as it is being raised. Do not allow pack to hit or be raised up against monomer channels.	114	Quickly move down to lower level.	114	
115	Have alignment pin in hand	115	Continue raising pack into die body as instructed by Pack Change Leader.	115	Assist with aligning pack and have tools ready to hand to everyone. Tools: (4) long 14 mm Allen Sockets, and bolt trays.	115	Get alignment pin in hand
116	Insert Alignment pin into first bolt hole in corner, search for threaded hole inside die body. Moving pack with pin to find and start alignment pin into intended bolt hole. **Alignment pin should turn freely with no binding or continuous rubbing of the pack while screwing pin into die body**.	116	Do Not raise pack against die body until bolts are in and hand started.	116	Go to back of channel and prepare to put bolts in at the back of beam.	116	Insert Alignment pin into first bolt hole in corner, search for threaded hole inside die body. Moving pack with pin to find and start alignment pin into intended bolt hole. **Alignment pin should turn freely with no binding or continuous rubbing of the pack while screwing pin into die body**.
117	Quickly get one bolt for the ends of the pack (Four- M16x70mm total); Insert into one of the end bolt holes, when bolt is being pushed down by die body, and you can start the bolt with 2-3 turns into die body then, the person raising the pack with hand crank, needs to be instructed to stop raising pack. You want pack to still be able to move if needed.	117	Stop raising pack when instructed; be sure pack is Not all the way up against the die body. (Crank will be more difficult to turn)	117		117	Quickly get one bolt for the ends of the pack (Three- M16 X 70 mm total); Insert into one of the end bolt holes, when bolt is being pushed down by die body, and you can start the bolt with 2-3 turns into die body then, the person raising the pack with hand crank, needs to be instructed to stop raising pack. You want pack to still be able to move if needed.
118	**The four bolts on driveside and 3 on operator side (7 total) have to be hand started and only 2-3 turns into die body. First then the four center bolts(Round Holes) must be started also**, before the remaining bolts can be started.	118	**The four bolts on drive side and 3 on operator side (7 total) have to be hand started and only 2-3 turns into die body. First then the four center bolts(Round Holes) must be started also**, before the remaining bolts can be started.	118	**The four bolts on drive side and 3 on operator side (7 total) have to be hand started and only 2-3 turns into die body. First then the four center bolts(Round Holes) must be started also**, before the remaining bolts can be started.	118	**The four bolts on drive side and 3 on operator side (7 total) have to be hand started and only 2-3 turns into die body. First then the four center bolts (Round Holes) must be started also**, before the remaining bolts can be started.
119	Your area is on drive side to left of supports where the pack is being held.	119	Your area is at front center between supports where the pack is being held.	119	Your area is at back center between supports where the pack is being held.	119	Your area is on operator side to the right of supports where the pack is being held.
120	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	120	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	120	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.	120	Hand Start all bolts, and with only 2-3 turns each into die body. DO NOT screw any bolts up against pack.
121	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	121	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	121	Be sure all bolts are started that can be started (Can't get above carriage support, yet)	121	Be sure all bolts are started that can be started (Can't get above carriage support, yet)
122	Go to back of channel with person number three.	122	Raise pack firmly against die body	122		122	
123	Get an impact wrench with 14 mm Allen socket	123	Grab impact wrench with 14 mm Allen socket	123	Get and set torque wrench at 180 Nm, with any extension if needed.	123	Get and set torque wrench at 180 Nm, with any extension if needed.
124	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.	124	Starting in the Center and go toward drive side, allowing impact wrench to turn bolt until it stops turning the bolt. Tighten all bolts with impact wrench; **Making certain that the Allen head is completely inside bolt head**.	124	Starting in the Center and go toward drive side behind the guy using impact wrench. Torque bolts that were just put in. (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.	124	Starting in the Center and go toward drive side behind the guy using impact wrench. Torque bolts that were just put in. (Slotted Holes) **Making certain that the Allen head is completely inside bolt head**.
126		126		126		126	Raise temps to 220°C in all zones
127	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	127	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	127	After temps are increased to 220°C, wait 15 – 20 minutes for stability.	127	After temps are increased to 220°C, wait 15 – 20 minutes for stability.
128	During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.	128	During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.	128	During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.	128	During the wait, other tasks can be done; Start on other beams pack replacement; clean up; moving tools to next location they will be needed; etc.
129	Second torque is 200 Nm @ 220°C; Begin at center of beam, again; torque all bolts.	129	Second torque is 200 Nm @ 220°C; Begin at center of beam, again; torque all bolts.	129	Second torque is 200 Nm @ 220°C; Begin at center of beam, again; torque all bolts.	129	Second torque is 200 Nm @ 220°C; Begin at center of beam, again; torque all bolts.
Finish up or start on the third pack if it is still to be replaced or another pack is in need to be torque; COMPLETE these tasks.							
Finishing up							

Cont.

130	Pick up all purge waste at each beam; place in Blue "Purge Waste Bin"; place bin in SC2 area away from potential fire hazards to cool for 48 hrs.	130	Pick up all purge waste at each beam; place in Blue "Purge Waste Bin"; place bin in SC2 area away from potential fire hazards to cool for 48 hrs.	130	Clean up any tools and materials on all levels of line; Look for tools, bolts , Teflon, and polymer waste.	130	Spray spinneret face thoroughly with silicon spray before purging spin pack. MUST BE VISUALLY WET.
131		131		131		131	Set beam to spin up and begin purging at 10 rpm
132		132		132		132	Place all tools on peg boards at their respected location; Check that both peg boards have ALL the tools placed on them.
133		133		133		133	Look for leaks and any possible problems. After filaments have started falling and entire spinneret has material flowing, slow down purge to 1 rpm for drooling.
134	Changeover complete - handover to operations	134	Changeover complete - handover to operations	134	Changeover complete - handover to operations	134	Changeover complete - handover to operations
135	Begin post changeover set in order activities	135	Begin post changeover set in order activities	135	Begin post changeover set in order activities	135	Begin post changeover set in order activities
136		136		136		136	
137		137		137		137	
138		138		138		138	
139		139		139		139	
140		140		140		140	
141		141		141		141	
142		142		142		142	
143		143		143		143	
144		144		144		144	
145		145		145		145	
146		146		146		146	
147		147		147		147	
148		148		148		148	
149		149		149		149	
150		150		150		150	
SUPPLEMENTAL INFORMATION - REFERENCES - TOOLS - MATERIALS - PPEs - JSAs - QRA - POST CHANGEOVER							
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	

Phew! That was quite a changeover...

CHANGEOVER PREPARATION CHECKLIST

MACHINE: Reicofil

CHANGE FROM: Bico A, B & E Die Pack (Exchange)

CHANGEOVER TIME: 3 Hours 20 Minutes

! ▲ ONLY PERSONS TRAINED HOW TO DO THESE TASKS ARE TO CARRY OUT TASKS ▲ !

▲ = SAFETY POINT ◆ = QUALITY POINT 🧤🧦 = PPEs REQUIRED ✂ = TOOLS REQUIRED ⓘ = CRITICAL NOTE

↓ MATERIALS/TOOLS/PPEs REQUIRED FOR TASK ↓

REFERENCES: Spun Spinpack Change (S-SM-PR-7118)
(Binder # 5)
Changeover Procedure Reicofil BiCo A, B & E Die Pack (S-SM-PR-7XXX)

MATERIALS: 2nd Level

Bolt Pyramids:

X 139 - M16 x 70mm Allen cap head bolts for B beam and empty pyramid for used bolts (From Pack Room)

X 132 - M16 x 75mm Allen cap head bolts for A and E beam in the die bolt storage pyramids (From Pack Room)

X 8 - M16 x 70mm - will be in pyramid with rest of A and E beam bolts (get from pack room)

X 2 - M10 cap screws per pack - secures pack to carriage (get from pack room)

X 3 5' - 5 layers thick X 18' leader sheet - total of 9 leader sheets (get from back of line or at "A" frames between winder and slitter)

X 12 - Quench chamber covers per beam (stored on 2nd level guard rails)

X 3 - 3' X 7' lengths of pressboards (store on 2nd level floor to left of beam)

3rd Level:

X 12 - M10 Allen cap screws per pack to attach to support - will be up to 36 if changing all 3 beams (get from pack room)

Materials to clean monomer exhaust:

The next important document – actually it's the first as it is this document the Preparation Checklist that you should review first ahead of the changeover to the calculated preparation checklist lead time that is how long it takes to prepare for the changeover. This needs to be done of course 'external' to the changeover in time.

TOOLS:

X 1 - 50000 Lbs. Overhead crane
X 1 - 18' 4180 Lbs. Crane spreader bar
X 4 - 2000 Kg. Chain hooks (X 2 at each end of spreader bar)
X 3 - Die pack carriage (X 1 at each beam)
X 9 - 15" Spreader bar support stands (X 3 at each beam)
X 3 - Support beams (X 1 at each beam)
X 1 - Overhead crane remote control pendant

2nd Level mobile pegboard checklist:

X 2 - 1/2" Drive 30" long breaker bars
X 2 - 1/2" Drive ratchet Adaptor w/ 16mm Hex
X 4 - 4" 1/2" Drive short extensions
X 1 - 9" 1/2" Drive long extension
X 4 - 14 mm 6" long Allen 1/2" drive sockets
X 3 - 14 mm 2" short Allen 1/2" drive socket
X 2 - Die pack alignment hex bolt pins
X 3 - 1/2" Drive air Impact wrenches
X 1 - 30' 3/8" Air hose extension
X 1 - 32' Ice blasting machine extension hose
X 4 - 1/2" Drive torque wrenches
X 1 - 12" Pry Bar
X 1 - 3" Die body brass scraper

Tools to clean monomer exhaust:





X 1 - 5 mm Allen wrench
X 1 - 3/8" Drive 8mm Allen socket
X 1 - Drill chuck to 3/8" socket drive adaptor
X 1 - 3/8" Drive ratchet and 10mm socket
X 1 - 20' long extension 'painting' pole
X 1 - 18V 3/8" cordless drill (battery on charge in pack room tool room)

3rd Level mobile pegboard checklist:

X 1 - Drill chuck to 3/8" socket drive adaptor
X 1 - 3" Brass scraper
X 2 - 8 mm long Allen wrenches
X 1 - Chain shackles w/ big ring
X 1 - 1/2" Drive ratchet

TOOLS: Carts in place Riecofil (one for each pack)

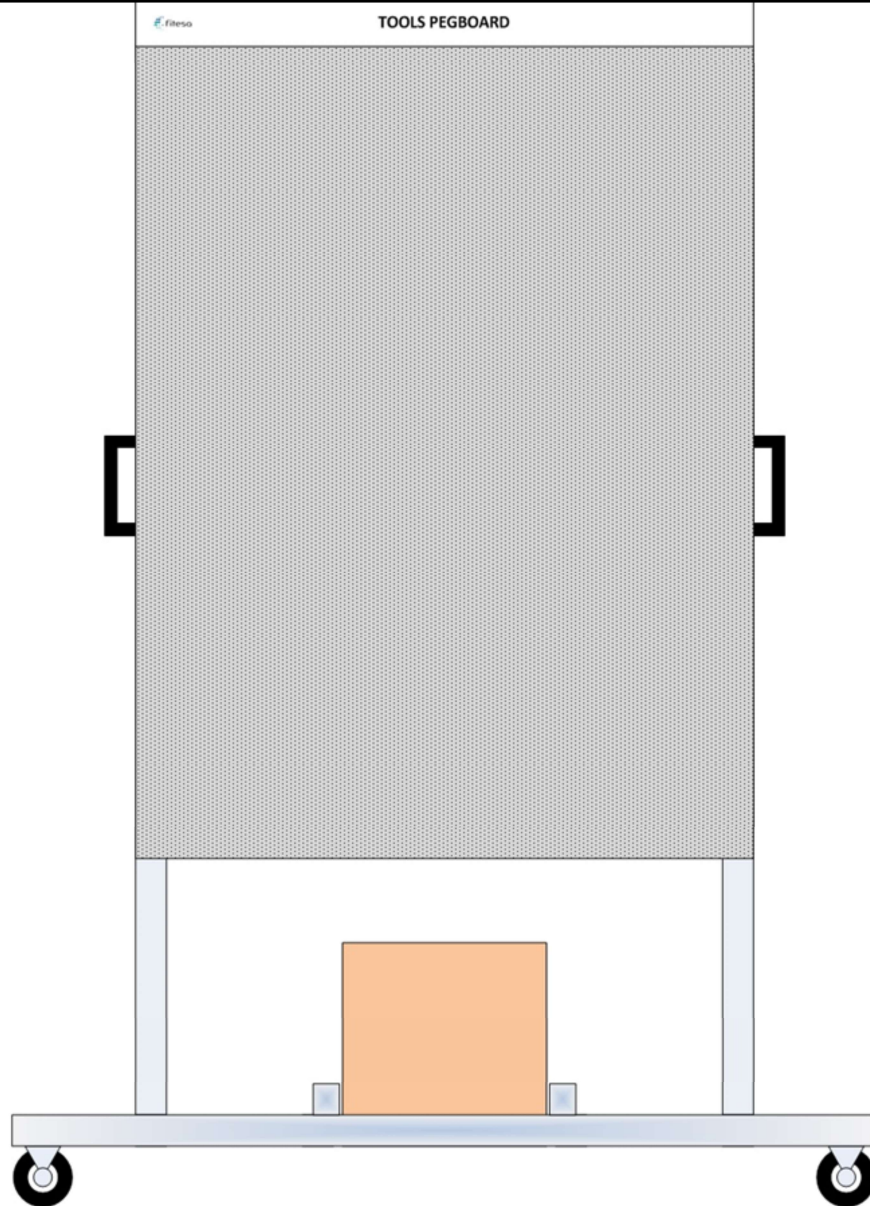
Cont.

PPEs: X - 1 Pair leather gloves for <u>all</u> Involved X - 1 Pair heat resistant arm sleeves for <u>all</u> Involved or jackets X - 1 Face shield (for ice blasting)		PPEs: X - 1 Pair leather gloves for <u>all</u> Involved X - 1 Pair heat resistant arm sleeves for <u>all</u> Involved or jackets	
Nº	↓  CHECKLIST FOR 2 TEAM MEMBERS  ↓	Nº	↓  CHECKLIST FOR 2 + 1 TEAM MEMBERS  ↓
-	Complete quick risk assessment	-	Complete quick risk assessment
-	Get PPEs and put on	-	Get PPEs and put on
ENTIRE TEAM IS TO PREPARE FOR TASK AS LISTED BELOW, UNTIL NOTIFIED THROUGH THESE OR OTHER INSTRUCTIONS			
-	FROM PACK ROOM	-	LEAD PERSON
-	Cart staged at back of Riecofil; Bolt Pyramids (5 if changing 3 packs; 2 pyramids each = A & E; 1 pyramid = B)	-	From the Pack Room, take this to Riecofil: X 2 - Charged 18V Cordless Drill Batteries. (1 on 3rd Level; 1 on 2nd Level) X 14+ - M10 X 50mm Cap Head bolts (per pack to be removed) (@ least 42) 12 per pack placed on 3rd Level; (2 per pack placed on 2nd Level)
-	At back of line, make leader sheet to be used during purging; five (5) layers and at a full arms length (Arms stretched out wide) wide. Need at least 3 at each beam.		
1	Stage tools @ beam that pack is being removed. (Peg Board on 2 nd Level at Backside of A beam, toward Fan Room)	1	Check operation of overhead crane to ensure function in all axis and that pendant batteries are not flat.
2	Stage A beam bolts (Pyramid) on 2 nd level on floor.	2	Check 12' overhead crane spreader bar is available
3	Stage B beam bolts on 2 nd level on floor. (Red Trays) Carry Empty Pyramid to B beam, also.	3	Connect tools and air lines, such as impact wrenches;
4	Stage E beam bolts on 2 nd level on floor. (Pyramid)	4	Connect 14 mm Allen sockets to breaker bars and extensions if needed
5	Persons Not involved in Monomer or Die Body Cleaning now meets with pack change group and continues to follow rest of preparation procedures.	5	Extend air hoses from reels and place on floor under both sides of quench chambers, so impact wrenches can be reached while beside beam.
-	DIE BODY AND MONOMER EXHAUST CLEANER	6	Hook crane to spreader bar and stage at beam where first pack is being removed.

Cont.

6	Set up the ice blasting machine, at the first beam being removed, it is located in the batch room.	7	Begin Procedure for Pack Removal.
7	Person conducting ice blasting cleaning on die body, gets the X 1 570 lbs/11ft³. Blue container of dry ice (stored at rack G1 in west bay, but use partial if one in batch room)		
8	Person conducting ice blasting cleaning on die body get Tools and Materials listed above from Peg Board on 2 nd Level		
9	Person conducting ice blast cleaning make connections to ice blasting machine, 110 power supply outlet, air hose connections, nozzle connections, earth ground connection.		
10	Carry ice blast nozzle to 2 nd level to where first die body is to be cleaned		
11	Uncoil 32' ice blasting hose from 2 nd level (Located on 2 nd Level Peg Board) and lower Male end down to ground level to connect to ice blasting machine		
12	Connect nozzle hose to 32' extension end and connect electrical control plug extension		
13	Go to ground level and connect hose extension to 32' hose from ice blasting machine		
14	If necessary place safety cones alongside 110 power supply cord and air supply hose to ice blasting machine		
15	Person assigned to conduct monomer cleaning, get tools and material listed above (Tools, and Materials located on 2 nd Level Peg Board) and stage at beam area to be cleaned first		
16	Position the X 3 yellow spreader bar support stands on 3 rd level to the beam being changed		
17	Begin Procedure for Monomer Exhaust Cleaning at a beam that No team is conducting a PM or other task		
18	At any point in time you are caught up and/or waiting on any team, proceed to assist with pack changing process, ask pack change leader what is needed		
19			
SUPPLEMENTAL INFORMATION - REFERENCES - TOOLS - MATERIALS - PPEs - JSAs - QRA - POST CHANGEOVER			
1		1	
2		2	

Cont.



This is my own design of a mobile or portable SMED tool board using Bosch aluminum profile and of course polypropylene plastic pegboard.

Bosch now has their own profile design software that you can use to design your own projects. I used MS Visio.



This is my own design of a mobile or portable SMED tool board using Bosch aluminum profile and of course polypropylene plastic pegboard.

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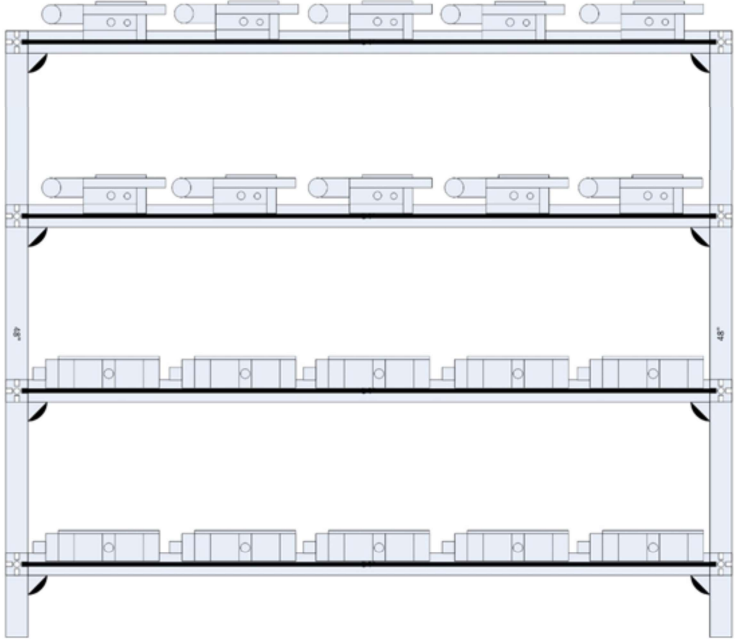
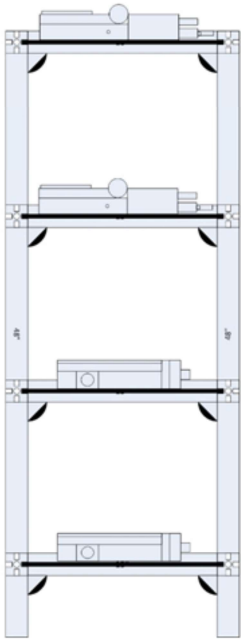
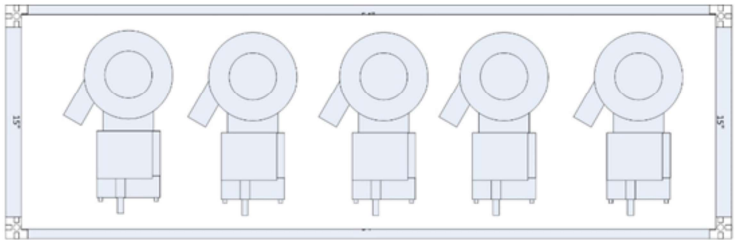


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45 X 45 END CAP

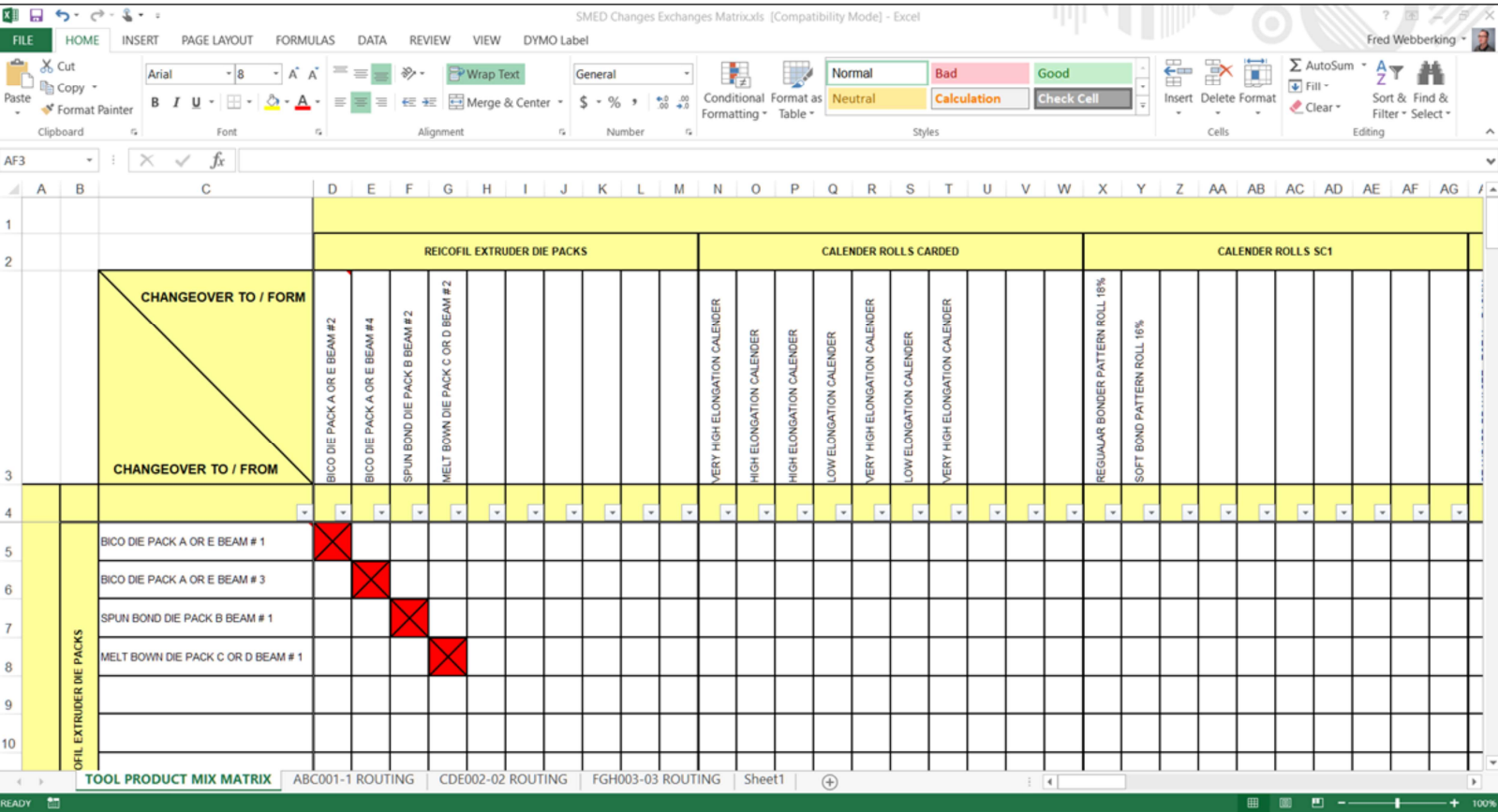


SC1 MALE / FEMALE SLITTER KNIVES STORAGE RACK (AUXILIARY VIEW)	DESIGNED BY: FIELD WORKING INC.			
	MATERIALS: 6061 ALUMINUM STRUCTURAL TUBING PROFILE 45 X 45			
REPLACEMENT BY EXCHANGE	DATE	DATE REC	DATE REC	REV
	1.1		SC1-001	1
	1.1	2ND ANGLE PROJECTION		1 OF 2

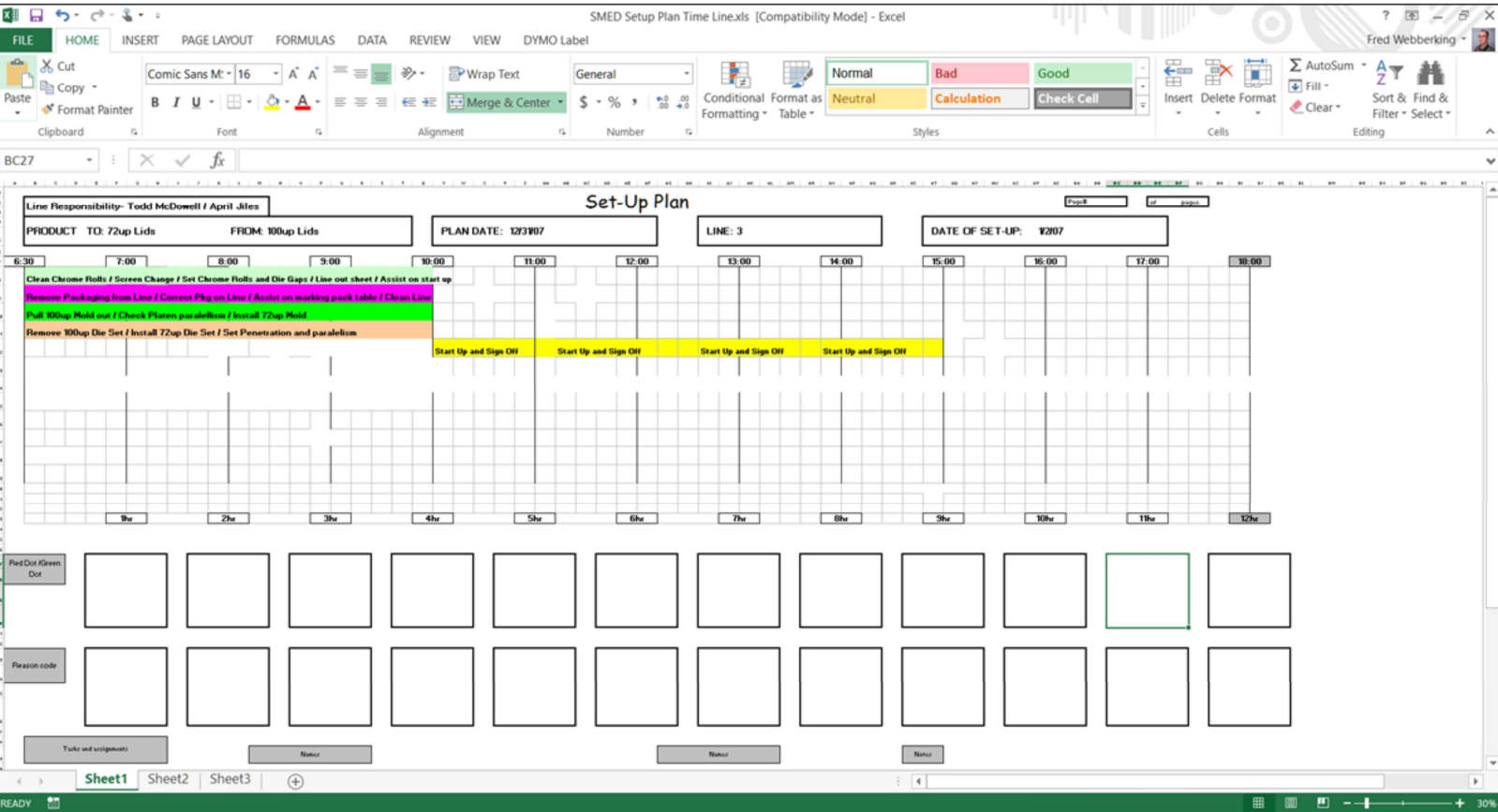
This is a slitter knives line side storage rack that I designed and built. For a quick change of female or male knives. The rack has 4 shelves each storing 5 knives. The two upper shelves are either new or refurbished knives with the lower two shelves are for to-be-repaired storage.



This is the finished deal. I later added storage posts for sharp and dull male knives...



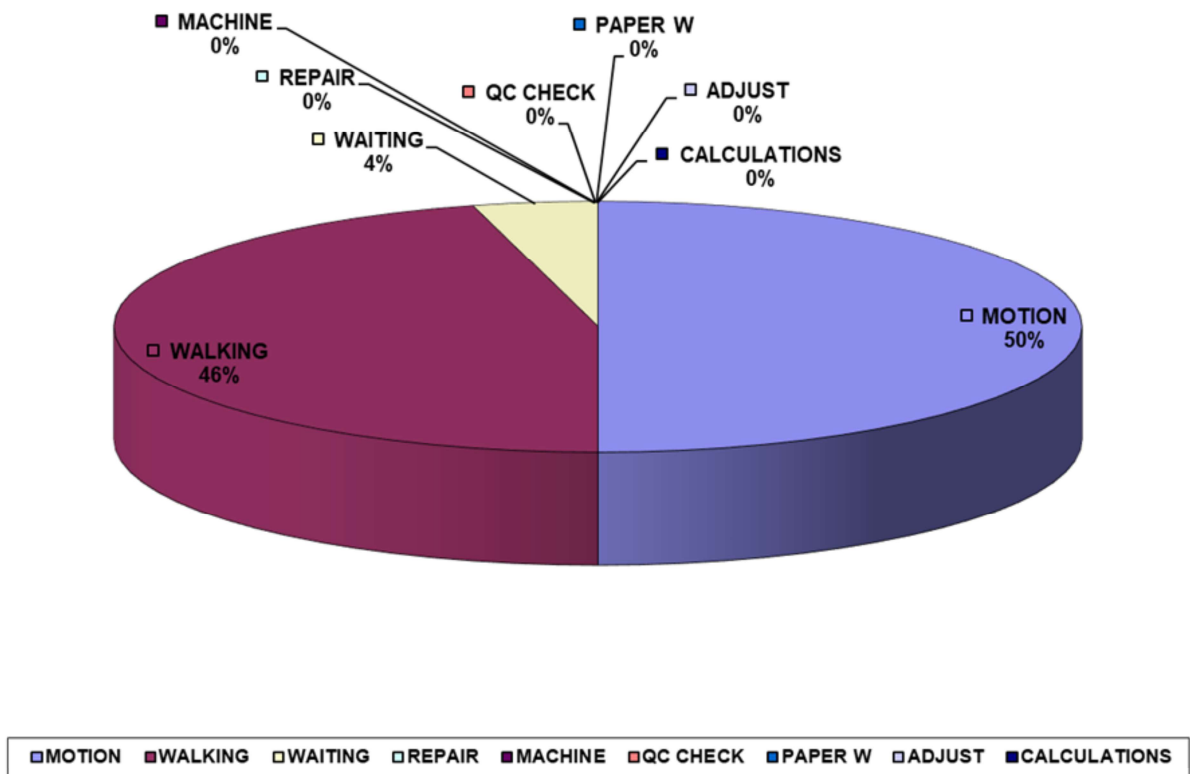
If you have a high mix of changeovers it's a good idea to figure out those combinations of molds or tools types – left – right – back – front – US – UK whatever it may be and register a changeover matrix.



Some changeovers can by their nature of the beast take a long time. Have a plan in place that shows a timeline of completion. I develop this to track the changeover and set-up plan of action.

This is my own changeover analysis worksheet with population chart showing what parts of changeover took the time amounts.

PIE CHART SHOWING THE CHANGEOVER IN PROPORTIONS OF THE ELEMENTAL CATEGORIES
EACH AS A PERCENT OF THE TOTAL CHANGEOVER TIME



This is my own changeover analysis worksheet with population chart showing what parts of changeover took the time amounts.