



Cama 1 s.p.a.
Via Como, 9 - 23846
Garbagnate Monastero (LC)

RISK ESTIMATION

Machine:
ELECTRONIC HOT-MELT TYPE BOX FORMING MACHINE


Serial number:
20161160FA024

Rev.
1

ANNEX 2

TRANSLATED FROM ITALIAN LANGUAGE


RISK ESTIMATION

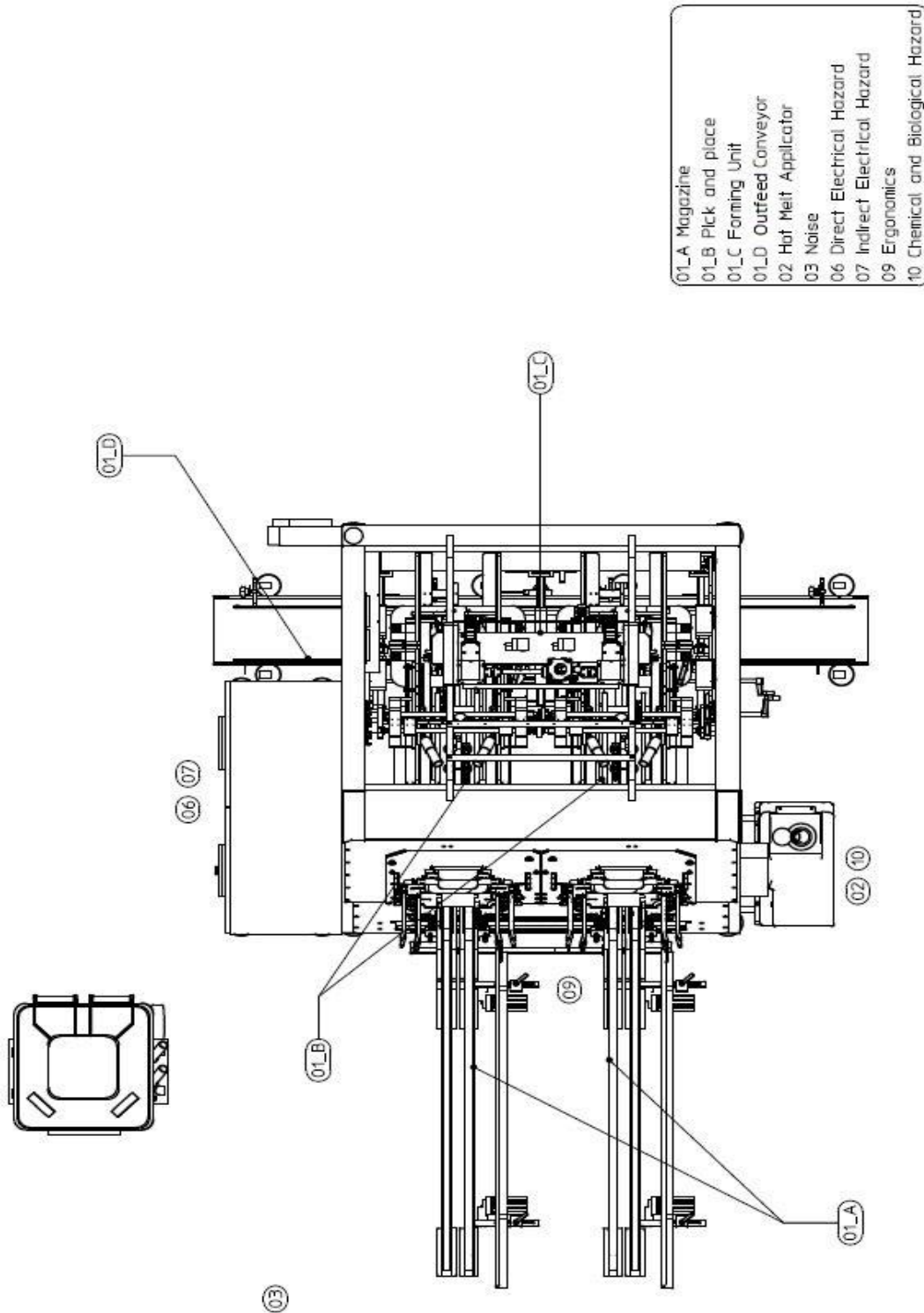
This document was drafted by:  S.L.M. s.r.l. address Via del dosso, 54 - 22040 Alzate Brianza (CO), Italia

This document complies with UNI EN ISO 12100:2010, is a method to list and evaluate machinery risk, applying hybrid instrument refer to UNI ISO TR 14121-2:2013

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RISK ESTIMATION (accordance EN ISO 12100:2010; applying hybrid tool from ISO TR 14121-2:2013)

Serial number:
20161160FA024

Red area = High risk

☒ Preliminary risk evaluation

Issued by:
S.L.M.

Yellow area = Medium risk

☐ Intermediate risk evaluation

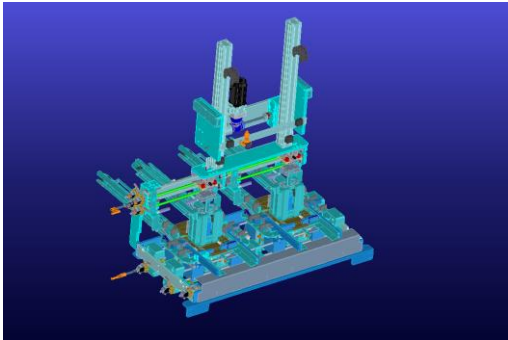
Date:
15/12/2016

Green area = Low risk

☐ Final risk evaluation

Consequence	Severity Se	Class Cl (Fr + Pr + Av)					Frequency Fr	Probability Pr	Avoidance Av	
		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	Cl	Note	Risk
1	1	entanglement	2	5	2	3	10	Magazine	Medium
2	1	friction or abrading	1	5	2	3	10	Magazine	Low
3									
4									
5									
6									
7									
8									
9									
10									

Ref. Picture	Note
<p>Accidental contact with moving magazine belt</p> 	<p>Magazine belt has a step movement: at each blank pick-up correspond a step movement; this movement is drive by a lever moved by blank itself.</p> <p>Risk is reduced by proper design and major point of risk are no accesible by design of support and fixed local guard.</p>

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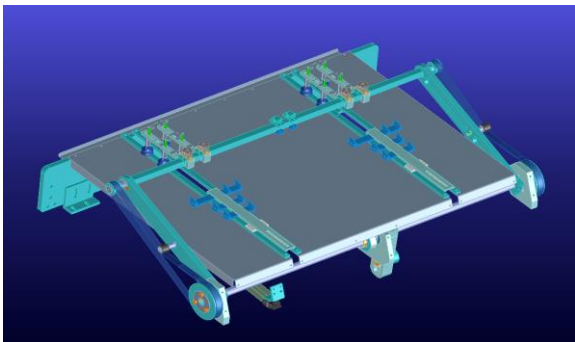
Date:
15/12/2016

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Consequence	Severity Se	Class CI (Fr + Pr + Av)					Frequency Fr	Probability Pr	Avoidance Av	
		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	1	entanglement	2	4	2	3	9	Pick and place	Medium
2	1	cutting or severing	3	4	2	3	9	Pick and place	High
3	1	impact	3	4	2	3	9	Pick and place	High
4	1	shearing	3	4	2	3	9	Pick and place	High
5									
6									
7									
8									
9									
10									

Ref. Picture	Note
<p>Contact with moving part of pick-up device</p> 	<p>Device has an alternative motion Risk could not be reduced by design Risk is reduced by separation with:</p> <ul style="list-style-type: none"> - Fix guard - Movable interlocked guard - Blanks as requested by EN 415 series

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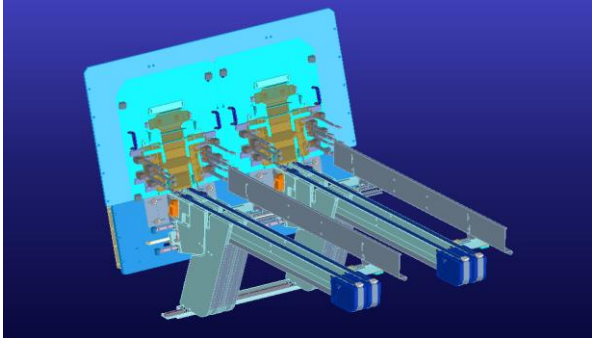
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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	Cl	Note	Risk
1	1	entanglement	2	4	2	3	9	Forming unit	Medium
2	1	cutting or severing	3	4	2	3	9	Forming unit	High
3	1	impact	3	4	2	3	9	Forming unit	High
4	1	shearing	4	4	2	3	9	Forming unit	High
5									
6									
7									
8									
9									
10									

Ref. Picture	Note
<p>Contact with moving part of forming area</p> 	<p>Device has an alternative motion Risk could not be reduced by design Risk is reduced by separation with:</p> <ul style="list-style-type: none"> - Fix guard - Movable interlocked guard <p>In case of vertical axes, it's keep in position by a redundant and monitored safety system</p>

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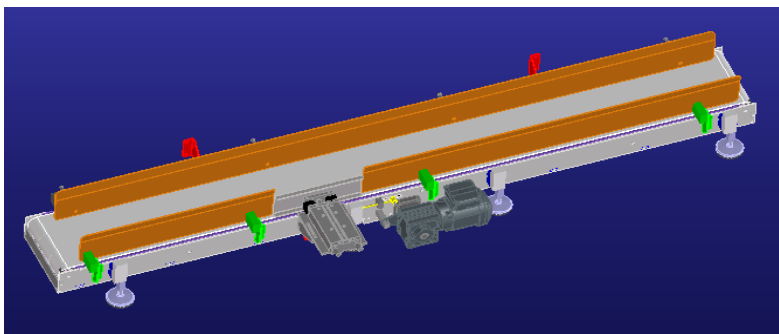
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Consequence	Severity Se	Class CI (Fr + Pr + Av)					Frequency Fr	Probability Pr	Avoidance Av	
		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	1	entanglement	2	4	2	3	9	Outfeed conveyor	Medium
2	1	friction or abrading	1	4	2	1	7	Outfeed conveyor	Low
3									
4									
5									
6									
7									
8									
9									
10									

Ref. Picture	Note
<p>Accidental contact with moving conveyor belt or roller unit.</p> 	<p>Device has a belt in continuous motion or roller unit that guide products outside machine. Risk is reduced by proper design.</p>

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		4	5 - 7	8 - 10	11 - 13	14 - 15			
Death, losing an eye or arm	4						≥1h	5	Very high
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely
							<1year	2	Negligible

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	Cl	Note	Risk
1	3	injuries by the radiation of heat sources	2	4	2	1	7	Hot melt applicators	Low
2									
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
Burns/scalding caused by contact with hot surfaces, hot melt applicators.	Hot melt inside devide is used to saled cases. Risk is reduct by separation with: - Fix guard - Movable interlocked guard

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	4	stress	2	5	3	1	9	Noise	Medium
2	4	tinnitus	2	5	3	1	9	Noise	Medium
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
Stress caused by tinnitus or any other noise near the machine.	Risk is reduced by proper design.

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	Cl	Note	Risk
1	2	electrocution	3	3	2	1	6	Electric cabinet	Medium
2									
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
Electrocution caused by direct contact or injury caused by faults in the electrical power supply and/or control and command system.	Risk is reduced by proper design. IP 20 INSIDE – IP 54 OUTSIDE

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	2	electrocution	3	3	2	1	6	Electric cabinet	Medium
2									
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
Electrocution caused by indirect contact or injury caused by faults in the electrical power supply and/or control and command system.	Risk is reduced by proper design. EQUIPOTENTIAL EARTHING SYSTEM + MT PROTECTION

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	8	low-back morbidity	2	5	3	1	9	Cartons magazine	Medium
2	8	fatigue	2	5	3	1	9	Cartons magazine	Medium
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
Manual handling of loads and repetitive actions of upper limbs.	Risk is reduced by proper design and informing the operator.

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
1	7	chemical effects	2	4	2	3	9	Hot melt	Medium
2									
3									
4									
5									
6									
7									
8									
9									
10									

Details (Description of the accident scenario)	Note
The risk arises from inhalation of fumes and the possible of hot glue sketch.	Hot melt inside devide is used to saled cases. Risk is reduct by separation with: - Fix guard - Movable interlocked guard

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		4	5 - 7	8 - 10	11 - 13	14 - 15				
Death, losing an eye or arm	4						≥1h	5	Very high	5
Permanent, losing fingers	3						From <1h to ≥24h	5	Likely	4
Reversible, medical attention	2						From <24h to ≥2weeks	4	Possible	3
Reversible, first aid	1						From <2weeks to ≥1year	3	Rarely	2
							<1year	2	Negligible	1

N° ref.	N° type of hazard	Hazard	Se	Fr	Pr	Av	CI	Note	Risk
01_A	1	entanglement	1	5	2	3	10	Magazine	Low
01_A	1	friction or abrading	1	5	2	3	10	Magazine	Low
01_B	1	entanglement	1	4	2	3	9	Pick and place	Low
01_B	1	cutting or severing	1	4	2	3	9	Pick and place	Low
01_B	1	impact	1	4	2	3	9	Pick and place	Low
01_B	1	shearing	1	4	2	3	9	Pick and place	Low
01_C	1	entanglement	1	4	2	3	9	Forming unit	Low
01_C	1	cutting or severing	1	4	2	3	9	Forming unit	Low
01_C	1	impact	1	4	2	3	9	Forming unit	Low
01_C	1	shearing	1	4	2	3	9	Forming unit	Low
01_D	1	entanglement	1	4	2	3	9	Outfeed conveyor	Low
01_D	1	friction or abrading	1	4	2	1	7	Outfeed conveyor	Low
02	3	injuries by the radiation of heat sources	1	4	2	1	7	Hot melt applicators	Low
03	4	stress	1	5	3	1	9	Noise	Low
03	4	tinnitus	1	5	3	1	9	Noise	Low
06	2	electrocution	1	3	2	1	6	Electric cabinet	Low
07	2	electrocution	1	3	2	1	6	Electric cabinet	Low
09	8	low-back morbidity	1	5	3	1	9	Cartons magazine	Low
09	8	fatigue	1	5	3	1	9	Cartons magazine	Low
10	7	chemical effects	1	4	2	3	9	Hot melt	Low