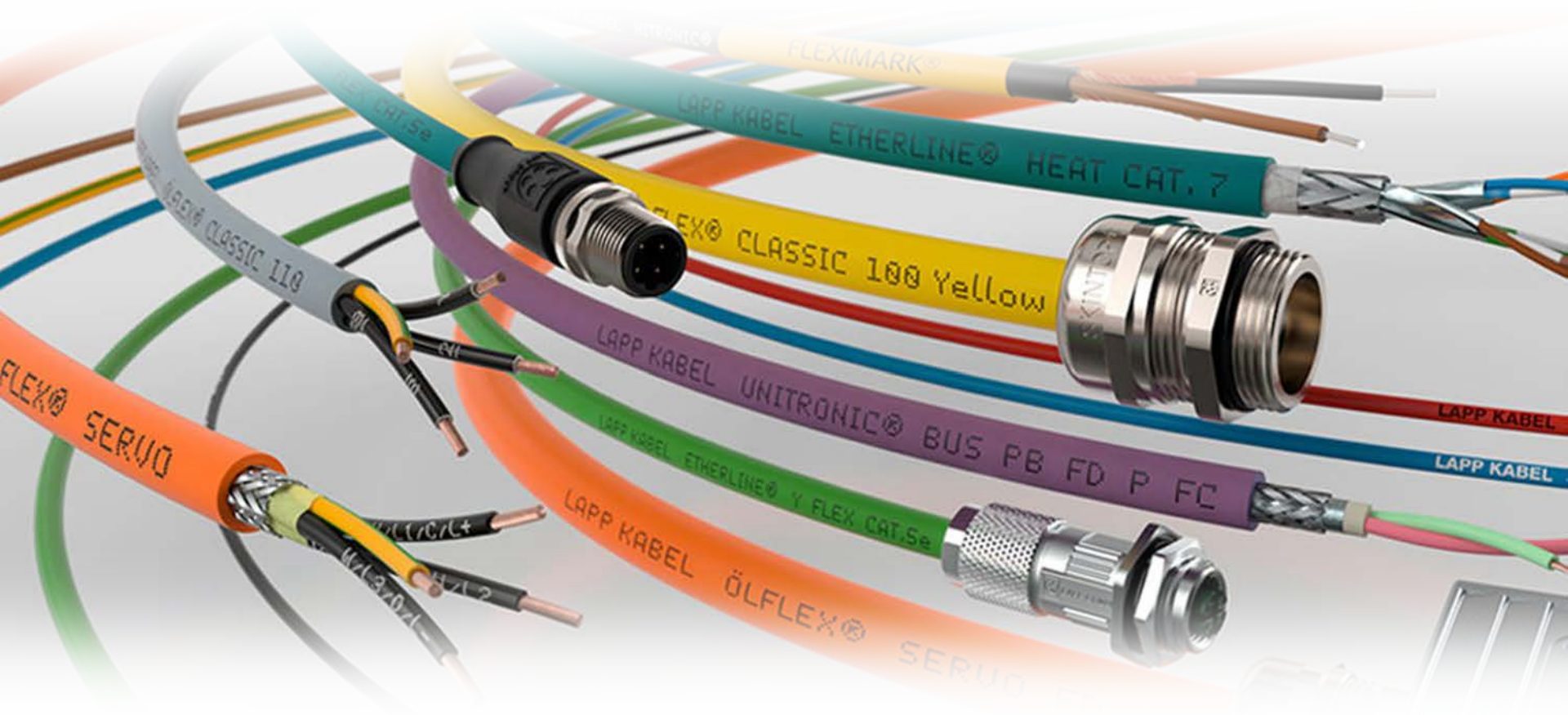


LAPP GROUP - CEAM : the data-cables experience



CEAM Italian Plants



Alba (CN) 10/05/2017

CEAM CAVI SPECIALI SPA



CEAM is ...

... a part of LAPP GROUP

... a producer of a wide range of data-cables

... a tailor-made Company

... an very innovative Company

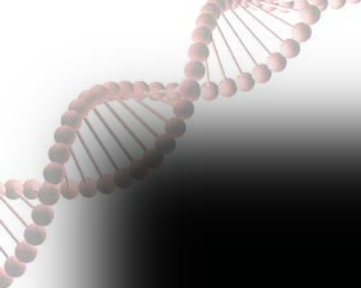
... a small Company



CEAM HISTORY 1971 +2017

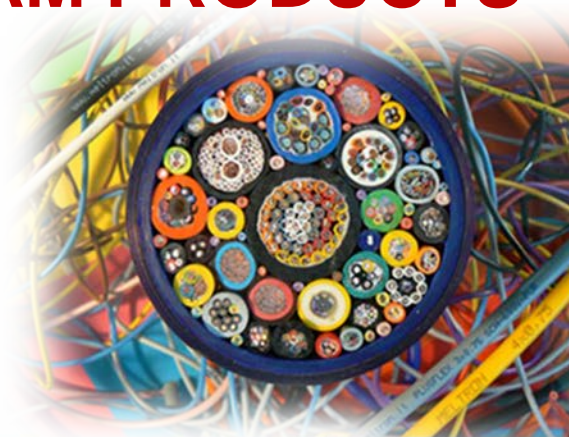


1971	Foundation of the company by Mr. Giovanni Magon
1973	Startup of the production of coax cables
1982	Startup of the production of audio and video cables
1991	Relocation of the plant and headquarters to Monselice
1996	ISO 9001 company certification
2000	Extension of the plants' area up to 36.000 m ² (16.000 m ² covered)
2004	Homologation of the cables for Industrial Automation at the UL/CSA Institutes
2012	Industrial Automation project Data & Flexi Land. Fire resistant silicon cables
2014	Fire resistant data cables CEI EN 50200 – Profibus - LAN
2015	Robust data cables – UL listed upgrade of CMX – CMR - CMG for data
2016	Ceam become part of Lapp Group Stuttgart
+2017	Ceam become «Worldwide's Competence Center» for Lapp Group for Data Cables
+2020	Trends – Big Data-ZettaByte Era, PR-personal robots, electrical automotive system & autonomous drive, mobile financial transaction, wearing technology, extended reality, 3d printing ...



Catalogo generale 2011
CEAM
DNA italiano

CEAM PRODUCTS



- CAVI Sicurezza e Allarme
- CAVI per Controlli
- CAVI per Dati BUS e NET
- Cavi coassiali video
- Cavi Sicurezza



CEAM CAVI SPECIALI SPA



CEAM Overview

Annual Turnover +23 M€

Floor area = 16.000 m².

Employees = 106 (Italy) +3600
(Worldwide)

10 Engineers in R&D Division

Over 1.000 std items always available on stock

More than 600 articles manufactured monthly

300 new articles produced every year

8% of the annual turnover invested on R&D and
new technologies



CEAM Overview

+1500km copper insulated
daily

+50 orders processed daily

+1500 info-batch upload daily

+2000 quality-check upload daily

+200h training per month

+10 SFM-group managed by weeks

Industry 4.0 - focus improvements



CEAM SHOP FLOOR



INDUSTRY 4.0 for CEAM is ...

- topics-

Process control and informations to share — process overview, feedback managements

Strong quality control needed — projects input & attributes, shopfloor control

Continuous traceability needed — processes, materials, machines & maintenances, trainings

INDUSTRY 4.0 for CEAM is ...

- Initial ideas-

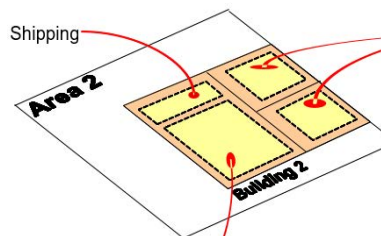
Computerize the process control and the information, shared every-time, -where, -body... the born of GPA (automatic production management)

Real time / On line Quality control

Production per period and Cycle traceability available on line



- Shipping



- Packaging
- Finished Products Warehouse

- Packaging
- Finished Products Warehouse

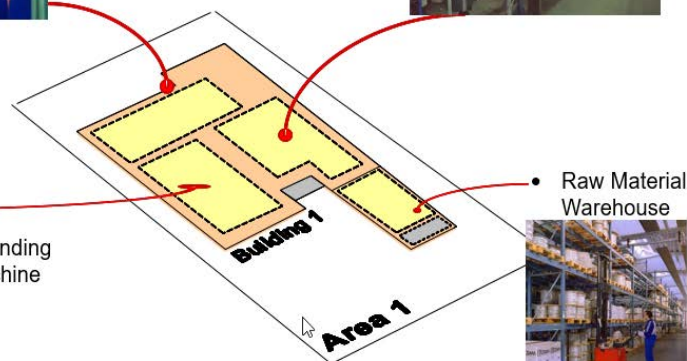


- Braiding

- Extrusion



- Stranding machine



- Raw Material Warehouse



INDUSTRY 4.0 for CEAM is ...

- On course-

IT architecture –

- FAST2GPA – from concepts to production
- BM2JOL – from area allocation matrix to single PO traceability
- APS upgrade

ASSEGNARE UN UDC/BM AD UN JOL

L'udc/bm selezionato viene assegnato al jol, viene inserito in un elenco di materiale da movimentare e non può più essere assegnato ad altri jol dalla procedura di evasione delle richieste materiali, fino a quando non viene restituito.

Elenco Udc/BM Mat. - 26- LogLog by

Lotto: P033344 Op: 10
 Articolo: 1001205
 Materiale: 6020050083
 P/VCA86N- FK86/10- E/7008-PM NATU
 Qtà rimanente: 31,838

☒ Assegna ☐ Assegna e movimentata

UDC/BM	Locazione	Quantità
U35123	1 - 1/ACBMAT/A/1/1	60

Simula compatibilità Esci

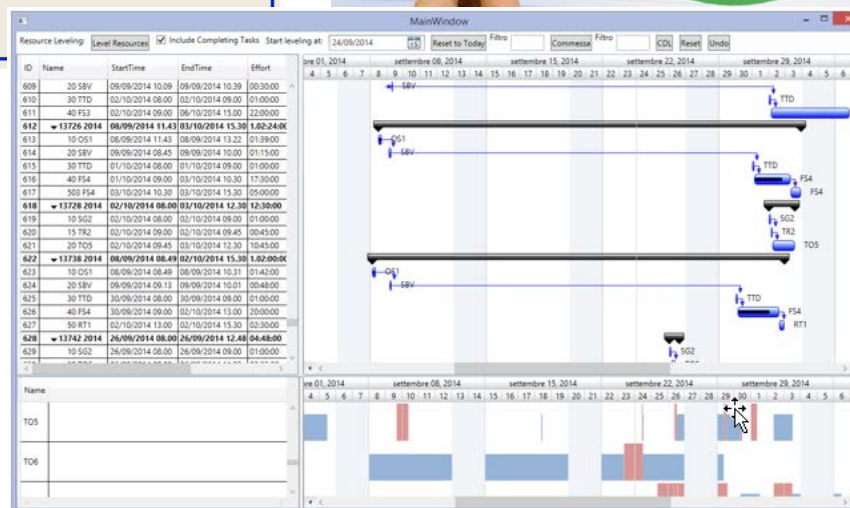
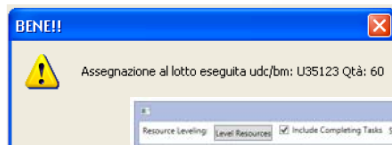
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☒ Assegna ☐ Assegna e movimentata

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Simula compatibilità Esci



INDUSTRY 4.0 for CEAM is ...

- On course-

PO, Quality annex, Control plan in paperless way

- MOTOROLA ET1 wifi tablet

Lotto (ODL) PS161111 **Data ODL** 10/11/2016 **Qtà ODL [km]** 10 **Stato** R **CDL Memo**

0489657 - DATAMOTION SP (TK) UL 9YC11Y(TP) 7x2x0,34 mm² (KAWEFLEX 16082451 SK-TP-C-PUR UL/CSA TI)

Fase Centro di lavoro
10 E09 - ISOLAMENTO
Fase successiva: 20 - C11 (CBIN)

Attenzione esistono dei controlli.
Vuoi effettuarli subito?

SI **NO**

Verifica Materiale
Annulla verifica materiale
Trasferimento bobine

CAVO NUOVO - LOTTO STANDARD Rilev. Media Diametro Cap Scheda Attributi Rilevaz. Tempi Setup e Fermo Riepliego tempi JOL Torna

Lotto (ODL) PS161111 **Data ODL** 10/11/2016 **Qtà ODL [km]** 10 **Stato** R **CDL Memo**

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Fase Centro di lavoro
10 E09 - ISOLAMENTO
Fase successiva: 20 - C11 - C11 (CBIN)

BM	Q. OK Prod [km]	Q. OK Saldo [km]	Q. Scarto [km]	Q. Att Def [km]	Colore	Qtà prevista per il lotto/fase [km]	Qtà totale prod. per il lotto/fase [km]
Totale [km]:	0	0	0	0	No colore	158,462	0
EM090909	0	0	0	0	No colore	FIC	COMPLETA
EM097790	0	0	0	0	No colore	FIC	COMPLETA
EM090909	0	0	0	0	No colore	FIC	COMPLETA
EM090909	0	0	0	0	No colore	FIC	COMPLETA
EM090909	0	0	0	0	No colore	FIC	COMPLETA

Aggiungi Bobina
Scheda Attributi
Quantità Prodotta per Elemento
Termina Lotto/Fase
Sospendi lotto/fase
Rilevaz. Tempi Setup e Fermo
Riepliego tempi JOL
Torna

Elenco controlli per il materiale 6020200010

Tipo controllo	Controlli
Qualitativo	Verifica colore
Quantitativo	Centatura isolamento
Qualitativo	Materiale integro

Torna

Lotto (ODL) PS161111 **Data ODL** 10/11/2016 **Qtà ODL [km]** 10 **Stato** R **CDL Memo**

0489657 - DATAMOTION SP (TK) UL 9YC11Y(TP) 7x2x0,34 mm² (KAWEFLEX 16082451 SK-TP-C-PUR UL/CSA TI)

Fase Centro di lavoro
10 E09 - ISOLAMENTO
Fase successiva: 20 - C11 - C11 (CBIN)

Elenco materiali / semi lavorati

Codice/Semi Lav.	Descrizione	Um	Qtà Dda	Qtà ncev	Qtà reale	CO
6020200010	PROPYLPLUS 713 NATURALE	KG	133,7	800		CO
70100502072	TREFOLO CU 44x0,19 P=15,20 mm SX	KM	471,8	473,819		CO

Verifica Materiale
Annulla verifica materiale
Trasferimento bobine
START
Torna

CAVO NUOVO - LOTTO STANDARD Rilev. Media Diametro Cap Scheda Attributi Rilevaz. Tempi Setup e Fermo Riepliego tempi JOL Torna

INDUSTRY 4.0 for CEAM is ...

- On course-

On line improvements – bidirectional interactions

- kaizen group activities = SMED, 5S, Ishikawa – foto and

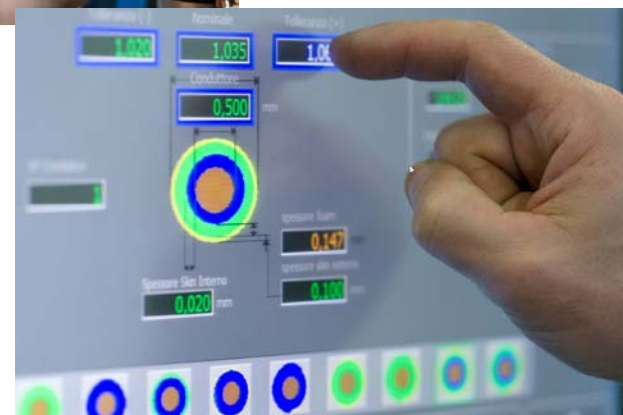
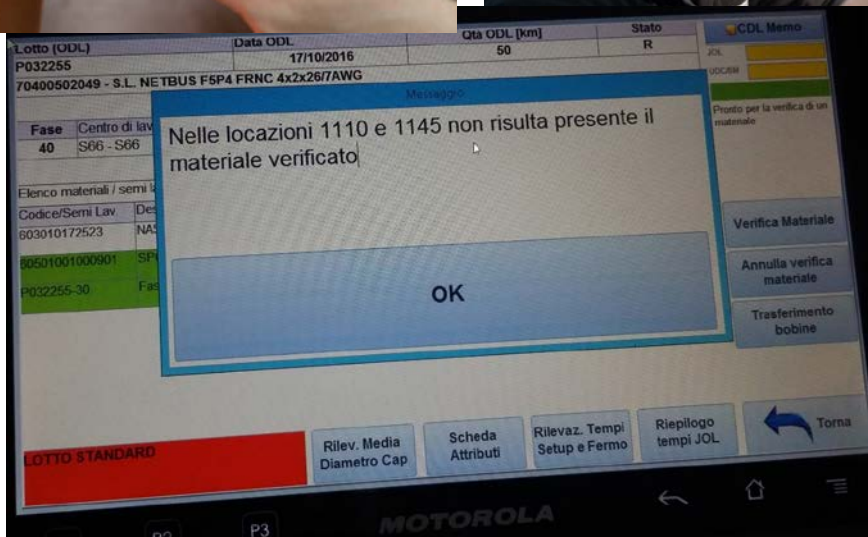


INDUSTRY 4.0 for CEAM is ...

- On course-

MES

- on line, shared GPA front end-data storage



INDUSTRY 4.0 for CEAM is ...

- On course-

GPA backend

- PC dashboard with PO-infos

GPA - Lotti GPA - Dettaglio Bobine di Manovra TEC - CaviCode TEC - Assemblaggio Transazioni - BETA TEST Variante dati e Lotti CONFERMATI P1

Articolo: nr-0921

1P00033 - DATASUM 2Y11Y 7x0.25
1P00034 - DATASUM 2Y11Y 4x0.34
1P00035 - DATASUM 2Y11Y UL 7x0.25
1P00036 - DATASUM 2Y11Y UL 4x0.34
1P00037 - DATASUM 2Y11Y (TP) UL 10x2x0.34
1P00038 - DATASUM 2Y11Y (TP) UL 4x2x1.00 CAVO
1P00039 - DATASUM 9Y11Y 4x0.34 mmq

Oper Cicko Wc Desfase Generale Cordatura - Passo/Senso

0 - C02 CONF2
1 - C05 CORDE
2 - C06 ESTRUSORI
3 - C07 REPERTO
4 - C08 SCHEMATRICI
5 - C09
6 - C10

Articolo Diametro Ultima Fase Diametro Esterno

1P00033 - DATASUM 2Y11Y 7x0.25 5.800 0.000 0.400 0.430 0.45 0.49
1P00034 - DATASUM 2Y11Y 4x0.34 5.200
1P00035 - DATASUM 2Y11Y UL 7x0.25 6.400
1P00036 - DATASUM 2Y11Y UL 4x0.34 5.800
1P00037 - DATASUM 2Y11Y (TP) UL 13.500

Schermatura Materiale Passo Formazione

Spessore Minimo Guaina 0.00 0.10 0.13 0.15 0.17 0.175
Spessore Medio Guaina 0.00 0.04 0.13 0.15 0.19 0.2
Capacità 0.000 18.000 51.000 52.000
Tolleranza Diametro +0.05
Tolleranza Capacità

Colori Anima Nr. Anima Colore Anima

Anima / Colore

1 - AR0000-M
1 - AR2003-M
1 - AR2009-M
1 - ARFLUO-M
1 - AR1014-M
1 - AZ0000-M
1 - BE1001-M
1 - BI0000-A-AR0000
1 - BI0000-A-BL0000
1 - BI0000-A-NE0000
1 - BI0000-A-RO0000
1 - BI0000-B-BL0000
1 - BI0000-M
1 - BI1013-M
1 - BI0003-M
1 - BI0010-M
1 - BI0015-M
1 - BI0018-M
1 - BL0000-A-DI0000
1 - BL0000-M
1 - BL5000-M
1 - BL5001-M

Gestione a Pozzi no si

Peso per unità Articolo

1P00033 - DATASUM 2Y11Y 7x0.25
1P00034 - DATASUM 2Y11Y 4x0.34
1P00035 - DATASUM 2Y11Y UL 7x0.25
1P00036 - DATASUM 2Y11Y UL 4x0.34
1P00037 - DATASUM 2Y11Y (TP) UL 10x2x0.34
1P00038 - DATASUM 2Y11Y (TP) UL 4x2x1.00 CAVO
1P00039 - DATASUM 9Y11Y 4x0.34 mmq



Gestione Produzione Automatizzata

(Menu Azione - SE (PUB))

Articolo - Ditta-Drive

Report: 09210921

Filtro solo dati con N° di Cavi almeno da 17

Lotto	Op - CCL	Colore	Descrizione	N° - CCL	N° - BBI	N° - BBI	N° - CCL	Descrizione	Colore	Colore	Colore	Colore
P02063	38 - SPIN1	0001-01	NETBUS PNC PARTTOP 10x2x0.34x0.34 UL	38 - SPIN1	2	5.50	1	5.50	5.50	5.50	5.50	5.50
P02111	40 - SPIN1	0001-01	NETBUS PNC PARTTOP 10x2x0.34x0.34 UL	40 - SPIN1	2	24.00	1	24.00	24.00	24.00	24.00	24.00
P02135	76 - SPIN2	7640000000	S.L. 175 E 175/25 50/50 40x2x0.34x0.34 UL	76 - SPIN2	1	18.44	1	18.44	18.44	18.44	18.44	18.44
P02164	38 - SPIN1	0001-01	DATASUM 2Y11Y UL 7x0.25 CAVO SODEMATO PIRELLA	38 - SPIN1	3	20.74	1	20.74	20.74	20.74	20.74	20.74
P02161	40 - SPIN1	0001-01	NETBUS 2100 V302 10x2x0.34x0.34 UL	40 - SPIN1	1	12.36	1	12.36	12.36	12.36	12.36	12.36
P02171	38 - SPIN1	0001-01	NETBUS 2100 V302 10x2x0.34x0.34 UL	38 - SPIN1	3	19.36	1	19.36	19.36	19.36	19.36	19.36
P02172	40 - SPIN1	0001-01	S.L. 175 E 175/25 50/50 40x2x0.34x0.34 UL	40 - SPIN1	3	59.81	1	59.81	59.81	59.81	59.81	59.81
P02174	38 - SPIN1	0001-01	NETBUS PNC PARTTOP 10x2x0.34x0.34 UL	38 - SPIN1	3	136.88	2	136.88	136.88	136.88	136.88	136.88
P02175	40 - SPIN2	0001-01	S.L. 175 E 175/25 50/50 40x2x0.34x0.34 UL	40 - SPIN2	1	9.34	1	9.34	9.34	9.34	9.34	9.34
P02176	38 - SPIN1	0001-01	S.L. 175 E 175/25 50/50 40x2x0.34x0.34 UL	38 - SPIN1	3	12.36	1	12.36	12.36	12.36	12.36	12.36
P02178	38 - SPIN1	0001-01	S.L. 175 E 175/25 50/50 40x2x0.34x0.34 UL	38 - SPIN1	2	14.34	2	14.34	14.34	14.34	14.34	14.34
P02180	38 - SPIN1	0001-01	DATASUM 2Y11Y UL 7x0.25 CAVO SODEMATO PIRELLA	38 - SPIN1	3	19.36	1	19.36	19.36	19.36	19.36	19.36
P02181	38 - SPIN1	0001-01	DATASUM 2Y11Y UL 7x0.25 CAVO SODEMATO PIRELLA	38 - SPIN1	3	19.36	1	19.36	19.36	19.36	19.36	19.36
P02182	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	7.34	1	7.34	7.34	7.34	7.34	7.34
P02183	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	11.40	1	11.40	11.40	11.40	11.40	11.40
P02184	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	4.93	1	4.93	4.93	4.93	4.93	4.93
P02187	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	5.50	1	5.50	5.50	5.50	5.50	5.50
P02189	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	11.33	1	11.33	11.33	11.33	11.33	11.33
P02190	40 - SPIN2	0001-01	DATASUM 2Y11Y (TP) UL 10x2x0.34x0.34 UL	40 - SPIN2	1	5.50	1	5.50	5.50	5.50	5.50	5.50
P02193	38 - SPIN1	0001-01	ECO BODI CAVO COAX	38 - SPIN1	1	5.50	1	5.50	5.50	5.50	5.50	5.50
P02196	38 - SPIN1	0001-01	S.L. ECO BODI CAVO COAX	38 - SPIN1	1	107.30	2	107.30	107.30	107.30	107.30	107.30

Stampa etichette

Stampa etichette

Stampa etichette

Stampa etichette

Stampa etichette

GPA - Menu

Gestione Produzione Automatizzata

Menu (Versione - 16.09.06)

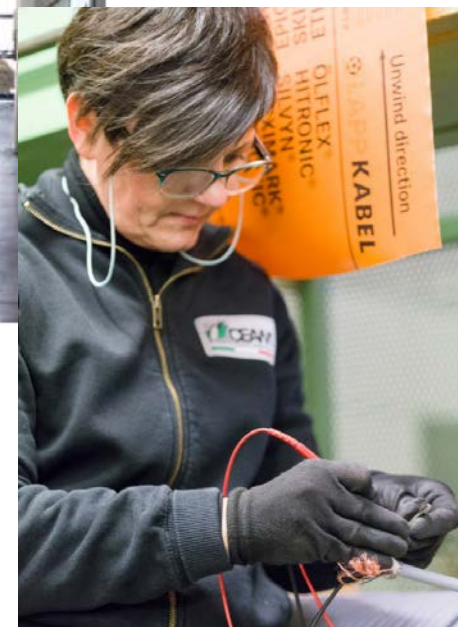
- Gestione lotti
 - Dito UDL
 - Animi
 - Jol relativi
 - Schermato
 - Corde / Estrusori
 - Riattiva lotti/are sospeso
 - Tolleranza chiusura Jol
 - Accoppiamento Jol
 - Crea accoppiamento estrusione
 - Fusione di accoppiamenti in fase di estrusione
 - Cerca accoppiamento
 - Crea accoppiamento binaria
 - Ripristina in stato WIP un lotto/area terminato
 - Chiudi lotto
 - Documenti pezzature
 - Gestione messaggi
- Confezionamento
 - Invio lotti al confezionamento
 - Stato lotti inviati al confezionamento
 - Elenco lotti non approvati dal confezionamento
 - Elenco jol parziali da stampare
- Confezionamento
- Controllo qualità
- Lancio in produzione massivo
- Gestione tempi
- Anagrafica Colori
- Dati tecnici
 - Dita STD
 - Scheda attributi
 - Ordinamento lotti articolo
- Gestione bobine
 - Informazioni bobine
 - Bobine attese definizione
 - Modifica già e stato pezzature / elimina bobine
 - Realizza pezzature bobine
 - Configura pezzature
 - Riattiva bobina
 - Completa bobina
 - Riaggi gestione bobina
 - Stampa bobine inventariate
 - Sceglie bobine presenti nella locazione
- Magazzino
 - Stampa etichette
 - Gestione utenti
 - Gestione CCL
 - Disconnetti terminali

INDUSTRY 4.0 for CEAM is ...

- On course-

WIP Management and line-loading perfect fulfillment

- Apps to manage and to mark the single Loading Unit (BM)
- Shopfloor's material supply chain and attribute's control
- On line material inspection interface





INDUSTRY 4.0 for CEAM is ...

- 1st Quad-Goals -

Topic	UM	2016	2017 1° Quad	Trend
Efficiency	Kg/h	10,4	11,8	↑
Inventory turnover	times/y	5,38	6,94	↑
Scraps ratio	$\frac{\text{Kg scraps}}{\text{Kg tot}}$	9,08	7,01	↑
Lead time	<u>wks</u>	8,00	7,50	↑
OEE	<u>%</u>	67,6	72,8	↑

INDUSTRY 4.0 for CEAM is ...

- The next future -

- Maintenance masterplan and on-line breakdown analysis
- APS development
- Stock management and Group e-kanban
- HR – safety, environment & training

INDUSTRY 4.0 for CEAM is ...

- The Road MAP -

- GPA – to become reliable & widespread
- GPA – to upload and update on line
- To complete the Training
- Computerize the reports – the BI experience



THANK YOU !