# SYNC MASTER

#### SYNCHRONIZED SPLICE CONTROL

Forty years ago, Copar built the first synchronized splice system for the corrugated industry. The latest, tenth generation system incorporates Allen Bradley Compact Logix PLC processors with robust hardware and software for the most reliable system to date.

### Automatic End of Roll Splice

- Automatic core diameter splice at the end of the roll helps prevent paper tear-outs.
- Automatic speed adjustment during a splice sequence keeps the machine at production speed longer.
- Automatic bridge fill adds extra material to the bridge before a singlefacer splice, which helps maintain the doublebacker production speed during the splice sequence.
- Improved roll measurement accuracy and continuous caliper grading throughout the roll.

### **Synchronized Splice**

- Synchronized Splice aligns paper splices to one another for grade or width changes.
- The aligned splices are automatically removed at the shear. If single cut mode is selected, the splice packet will be put on top of the order's last stack for the operator to remove.
- Multiple Synchronized Splice Modes are included to optimize conditions for:
  - Order Lineal requirements Over/under runs are not permitted.
  - Lineal remaining on roll requirements Over/under runs are permitted to avoid small butt rolls.

### Automatic Restock Splice

- Pressing a single pushbutton fills the bridge (if enabled), slows the machine to splice speed, splices the roll, and then resumes the previous production speed.
- A restock splice helps avoid small end of order butt rolls by splicing early into a larger roll.
- Automating the sequence keeps the machine at run speed longer, while freeing the operator for other tasks.

Sync Master will help your plant increase productivity, improve product quality, and reduce waste with minimum operator involvement.

### Singlefacer Bridge Control with Variable Bridge Loading

- Bridge Control synchronizes the singlefacer speed to the doublebacker speed.
- The bridge fill function for singlefacer splices helps keep the machine at full production speed.
- Bridge loading is integrated into the system software and is adjustable from any Copar screen. Bridge loading helps control reverse warp by allowing the web to cool on the bridge.

### **Paper Break Detection**

- The Sync Master automatically stops the machine when a paper break is detected.
- Faster than an operator, this feature protects your machine during missed splices, web breaks, or singlefacer wrap ups by continually monitoring paper speeds.

### Laminated and Split Medium Automation

• Options for alternate medium paths are integrated into the system.



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#### Variable Bridge Loading with Improved Bridge Measurement

- Additional web can be added to the bridge for reverse warp correction, typically when running heavy weight or coated paper.
- Additional web quantity is entered at any touch screen (not a fixed value).
- Bridge loading is integrated through the software. No additional wheels, switches, or photo-eyes are necessary.
- When communicating with the optional Copar Warp Wacker system, the bridge can be automatically loaded when warp is detected.
- Redesigned bridge validation system compensates for inconsistent roll moisture for improved measurements and sync splice accuracy, even when bridge loading is enabled.

#### Indicators and Operator Tools

- Roll status is indicated with highly visible three-color light stacks that alert the operator of impending splices or roll measurement problems.
- Water-marked splices and audible/visual alarms alert the dry end personnel to remove splices from the stacker.
- A remote shear pushbutton at the doublebacker glue station allows the operator to remove bad material during startup.
- Optional Highly customizable overhead displays show run speeds, production lineal, and downtime with color codes to indicate when above or below production goals.
- Optional LED TV Displays at each splicer help roll truck drivers deliver paper on time.



Variable Bridge Quantity Slider



**Splice Status Indicator** 

COPPER Vor Lego Her     Vor Lego Her     Management Tools     Production reports are emailed to key personnel automatically (optional).     Printable reports, graphs, and help screens.     All screens are user friendly and have integrated troubleshooting tools.
<ul> <li>Communications</li> <li>Communication with production scheduling systems.</li> <li>Production schedules are automatically downloaded and viewable from any operator touchscreen.</li> <li>Communications with roll inventory systems (optional).</li> <li>Print butt roll tags automatically with actual spliced diameter, lineal remaining, and roll ID, as well as other information without any manual measurements.</li> <li>Creates a logged history with rollstand location and Roll ID for tracking purposes.</li> </ul>

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# Advanced Diagnostics with Black Box

The Sync Master was developed with a deep understanding of operator needs and machine capabilities from our 40 years of experience making splice controls. Copar has resolved many complex problems that our competitors don't know exist and has made identifying hard to find problems easier with the new Black Box recorder.



#### **Black Box**

- The Copar Black Box records every PLC input and output, every Copar screen, and every operator touch screen entry at 1/4 second intervals.
- Black Box is always active. There is no need to start or stop recording.
- Past history can be easily replayed with actual screen shots and PLC actions.
- Data can be used to trace down elusive, "once in a while" issues weeks after they occur.





Actual customer data "played back" at Copar showing an operator incorrectly change the DB liner goal from 205°F (96°C) to 280°F (137°C), which is far too hot.

When the DB slowed down, the paper temperature increased to  $241^{\circ}F$  ( $116^{\circ}C$ ) which probably caused warped sheets. The operator realized the mistake and changed the goal back to  $200^{\circ}F$  ( $93^{\circ}C$ ).

# **Sync Master Options**

# Clamp Truck Software (Optional)

This software interface provides clamp truck drivers with real-time roll requirements, generated from a Copar CSSC/SyncMaster system. Data is transmitted via the plant's existing WIFI infrastructure to the truck's current onboard computer, tablet, or mobile device. With this software, the driver can view:

- The scheduled order queue with the current order's lineal remaining.
- Real-time running roll status including lineal remaining, diameter, time to splice, and current speed.
- Roll lineal required to complete the order. When more paper is required, the field is highlighted RED.
- The roll's paper grade that was scanned onto a rollstand. The field turns RED if the grade does not match the schedule, indicating the wrong paper may be running. (Rollstock software interface is required).
- Spliced roll history along with its roll tag ID (Rollstock software interface is required).

Schedule	hedule 8:39:01 AM										Current Order
rogram	Width	Grade	Flute	Lineal	1	2	3	4	5		
57998	98.00	ZY536Q35L-C-P	С	19,581	ZY5			36Q	35L		Green = Sufficient roll lineal
41:46					10	-14,324	526	-21,858	-16,446		Red = Insufficient roll lineal.
58008	98.00	45L36Q45L36Q45L-BC-P	BC	40,534	45L	36Q	45L	36Q	45L		More paper is required.
2:08:14					40,534	54,316	40,534	57,964	40,534		more paper is required.
58007	98.00	45L26R45L26R45L-BC-P	BC	19,500	45L	26R	45L	26R	45L		
2:49:49					19,500	26,130	19,500	27,885	19,500		
58013	98.00	34P33R34P33R34P-BC-P	BC	14,738	34P	33R	34P	33R	34P		
3:21:16					14 738	19 749	14 738	21.075	14,738		
58010		Scheduled O	rde	er Qu	Jeu	e Sc	ree	n	35L		
3:52:52					14,810			21,187	14,816		
Total:				109,169							



Histor	listory 8:39:41 AM														
<mark>Stand</mark>	<mark>Roll ID</mark>	Used	Remaining	Diameter	Started	Completed	Initated								
1	21342	32156	24978	62.01	8/9/2013 11:27:20 PM	8/13/2013 8:38:06 AM	Splice Type 16								
4	23456	14120	23965	60.7	8/9/2013 11:28:03 PM	8/13/2013 8:36:32 AM	Splice Type 16								
5	71175	3479	4	4.68	8/13/2013 8:31:45 AM	8/13/2013 8:35:31 AM	Auto Diameter								
9	12345	7117	1299	69.3	8/9/2013 9:58:20 PM	8/13/2013 8:35:14 AM	Splice Type 16								
6	12343	3479	4	4.68	8/13/2013 8:27:58 AM	8/13/2013 8:31:45 AM	Auto Diameter								
5	32146	Sn	liced	l Ro	II History	Screen	Auto Diameter								
4	32134	υp					Auto Diameter								
8	12347	2343	4	4.68	8/13/2013 8:16:36 AM	8/13/2013 8:20:23 AM	Auto Diameter								

### Rollstock Inventory Software (Optional)

Include Roll ID tracking with your Copar splice control system. Interface with an existing Kiwi, CTI, or other roll management software.

- Eliminate roll diameter measurement errors when using a tape measure.
- Avoid manual entry errors into roll inventory systems.
- Save time by printing roll tags automatically after a splice.
- Once the roll has been scanned, the mounted roll ID, grade, and width is displayed at each Copar screen. This information helps the operator verify the correct paper is being used.
- Get a handle on where your waste is with roll ID traceability and logging.
- Simple operation:
  - 1. Scan the rollstand location barcode, then scan the roll tag barcode.
  - 2. After the roll splices, the roll diameter, paper caliper, remaining lineal, and lineal consumed are automatically transferred to the roll inventory software.
  - 3. The roll inventory software automatically prints a tag for the operator to attach to the spliced roll.

	Roll ID	Roll Statistics												
	Roll ID	Used	Remaining	Diameter / Target	Caliper	Started	Completed	Initiated	Speed / Target	DF Speed	ms	Initial Diameter	Bridge Quantity	
5	'RD27D2517371	20121	3	4.73/4.68	8.6726	05/11 10:47:23	05/11 11:32:12	Auto Diameter	588/600	603	170	55.32	91	
1	/RG16K3014300	15305.1	12806	43/4.68	9.3388	05/11 10:31:24	05/11 10:47:34	Sync Splice	546/600	546	143	58.32	0	
4	/RG37E0120448	13483.9	21167	45.03/4.68	6.2024	05/11 10:36:12	05/11 10:47:25	Sync Splice	549/550	546	131	59.75	94	
6	/RG16K3014400	9991	22942	48.91/4.68	6.7625	05/11 10:36:41	05/11 10:47:23	Sync Splice	549/600	546	152	55.32	94	
5	/RG16L1909100	25059	3	4.71/4.68	6.7785	05/11 07:09:01	05/11 10:36:41	Auto Diameter	564/600	606	110	45.64	92	
3	/RG37E0123147	32537.3	4	4.73/4.68	6.6979	05/11 07:09:01	05/11 10:36:12	Auto Diameter	555/550	537	116	56.73	104	
2	/RG16L1909300	19694.8	20	4.9/4.68	6.9209	05/11 10:02:53	05/11 10:31:24	Auto Diameter	597/600	597	128	43.55	0	
1	/RS27D2210361	19552.7	4899	26.31/4.68	8.9562	05/11 09:40:38	05/11 10:02:53	Operator	501/600	495	0	58.89	0	
8	'RG37D2923447	10348.2	24898	48.69/4.68	6.1743	05/11 09:53:50	05/11 10:02:30	Operator	459/550	495	0	56.54	233	



The Scanned Roll ID, Grade, and Width are shown

## Automatic Email Reports (Optional)

Automatically generated email reports save valuable time for managers and maintenance. Each email has unique information for efficient production tracking. The reports include individual shift statistics, as well as combined totals.

### **Daily Reports**

- Itemized Order Production Report Lineal Produced, Average Speed, and Downtime during the order
  - Graphical Shift Production Display
    - Lineal Total produced, total lost from downtime, total lost when under target speeds
    - Downtime Number of occurrences and duration, per event and per shift
      - Square Footage/Meters Total over or under target

		D	etailed Production	6/4							
Run	Width	Lineal	Grade	Flute	Target	Average	POP%	Start	End	Stops	Downti
70452	61	11,008	125C-23M	С	856	753	0%	6/4/2013 7:00:00 AM	6/4/2013 7:14:37 AM	0	00:00:0
70478	86.75	68,129	E32C-33UM	С	862	725	0%	6/4/2013 7:14:37 AM	6/4/2013 8:48:34 AM	1	00:04:4
70480	86.75	33,450	200C-33UM 42MW	С	842	429	0%	6/4/2013 8:48:34 AM	6/4/2013 10:06:28 AM	2	00:24:1
70469	80.75	31,297	E44C-33UM	С	681	626	0%	6/4/2013 10:06:28 AM	6/4/2013 10:56:27 AM	0	00:00:0
70476	78.5	15,634	E32C-23M	С	843	568	0%	6/4/2013 10:56:27 AM	6/4/2013 11:23:58 AM	1	00:01:5
70470	85	53,767	125C-23M	С	856	838	0%	6/4/2013 11:23:58 AM	6/4/2013 12:28:07 PM	0	00:00:0
70495	98	22,913	200C-33UM	č	858	578	0%	6/4/2013 12:28:07 PM	6/4/2013 1:07:46 PM	1	00:05:3
70496	80.75	9.308	200C-33UM	Ċ	858	408	0%	6/4/2013 1:07:46 PM	6/4/2013 1:30:34 PM	1	00:04:2
70501	80.75	49 476	200C-23M 42MW	Č.	833	783	0%	6/4/2013 1:30:34 PM	6/4/2013 2:33:44 PM	0	00:00:0
70502	89	18,312	175C-23M 35UPMW 42K	č	700	697	0%	6/4/2013 2:33:44 PM	6/4/2013 3:00:00 PM	ō	00:00:0



### Weekly Reports

- Total Number of Splices With indication of how the splice was made (operator/manual, optical, automatic at diameter, automatic reusable roll, synchronized splice)
- Total Number of Missed Splices By roll stand number with percentages and number of occurrences
- Below Target Speed Excuses (optional) If enabled, the system records when the machine is running below the target speed and the operator is required to enter reasons for the low speed such as "Line Full".



### **Monthly Reports**

- Total Lineal
- Total Lineal Possible Based on individual order target speeds
- Lineal Loss due to downtime
- Lineal Loss due to running under target speed
- System Utilization Percentage Percentage above or below target lineal
- Total number of Wet End, Dry End and Manual Order Changes
- System Usage Percentages Indication if the Copar automated systems are being used. Low percentages
  indicate production and quality are not being maximized.

			Curre	ent June 2013	21 21	Nonday	Tuesday 10	Wednesday 29	7hureday >>		Saturday (1) Lineal 39,121 Total Fossible 252,2
			Curre	ent June 2013			14	0	~		Total resuble 252.
					Totals						Decentions Lose 207,2 mpeed Scar 6,000 Telliantics 15,55 deepe-1 64:00.00 Mry-4 Met-1 Manual- FOT Telge-75 COMPC Auto 11.05 CTC Matto 1000
	shift 1 5,355,376 1e 9,633,513	shift 2 5,973,905 8,837,294	<u>shift 3</u> 6,603,476 9,643,325	All 17,932,757 28,114,132		entine Loss 46,001 and Loss 40,007 ilimition 78,71 app-7 00:55:21	Nowstime Lose 29,483 Rpeed Lose 33,815 Thilisation 84.25 Stope-4 51,24,59	Downtime Loss 33,157 Ryand Loss 27,438 Uniliantics 23.75 Stage-5 00.40.55 Dov-18 Matt-6 Maxaml-2	(1) Linux1 205,014 Total Possible 403,079 Possitime Loss 52,155 Ryadd Loss 62,600 Thilingtime 33,05 Proper 5 11:00.05 Roy-12 Mai-0 Engen1-4 POP Engen-03	trentine Loss 159,443 Ppeed Loss +5 Uniliantion 5.21 Ptope-1 50,40,40 Dev-1 Wai-0 Reseal-0	(8) Linux1 179,841 Total Presible 377, novertime Lose 171.1 Reped Lose 24,937 Hillandsime 47.45 Repge-6 03:25:24 Repge-6 03:25:24 Repge-6 Nat-5 Namesal Not Ensure 55
,966,527	ee -2,966,52	-1,833,862	-1,746,058	-6,546,447		02 ANTO 87.34 C ANTO 1001	CEPC Auto Silv CEC Auto 2005	CREE MADO 12.74 CTT ANNO 1481	CESC Auto \$2.5% CTC Auto 1904	CHER ANTO DA	CROC Auto 45.35 CTC Auto 2001
.6%	Loss -1,311,61 ation 55.6%	-1,029,527 67.6%	-1,293,791 68.5%	-3,634,928 63.8%		and Loss 54,941 ilisation 79,75	Bowshims Loss 108,000 Speed Loss 63,497 Ttilizeting 56,5%	Drumbing Loss 17,918 Speed Loss \$2,194 Utilization T0.25	Total Forstble 409, 300 Bowhims Loss 33, 272 Spand Loss 62, 333 Ttillistics 71, 99	Symphics Loss 26,877 Speed Loss 83,816 Villantics 725	Total Possible 259.5 Broat Law 207.61 Speed Loss 10.624 Willington 54.45
:50:47	165 me 58:50:47	111 37:12:40	144 35:38:10	420 131:41:37			Stops-1 02:10:25 Dry-10 Mak-0 Manual-1 DVF Manual-25	Phope-6 00.44-48 Dey-12 Max-7 Hannal-2 Hiff Yespo-65 ORAD Sales \$1.25			Stops-1 02.56.67 Dep-3 Mat-1 Ensual- Por Unaps-Fi CARO Lute 18.31 (TV Auto 1905
18	AOC 258 AOC 118	280 140	286 136	824 394		hal Pussible 395,036 white Loss 50,080 and tons \$2,413	Potel Persible 407,413 Bowetime Lose 3,018 Road Lose 45,819	Total Possible 423,416 Dructime Loss 15,591 Wrand Loss 55 564	Total Possible 199, 862 Bowstime Long 37, 299 Frond Long 36 440	Total Passible 391,818 Scentize Loss 3,354 Freed Loss 77,555	Scoutine Lose 175,2
	AOC 26 age 0%	27 0%	38 0%	91 0%			#top#-2 #8(#3/29	staps-4 00:22:00 Duy-14 Wet-5 Mexual-1	Wellington E. 11 Stope-5 10(43):34 Rey-13 Met-9 Rescal-1 FOP Earge-91 OBSC Acts 92.55	Stope-1 00:84:43 Dur-15 Mat-5 Mesual-8	Willinsting 0.25 Https-1 03:24:13 Dry-1 Mat-9 Magual- POP Dange-Fi 0000 Auto Fi
	uto 82.5%	88.3%	85.6%	85.6%		Steel 12, 172	25 8 Steal 241 710	TER. ( and ) 147 117	27 KANAR 1 222 824	TENNAL DE 18	CTC Auto 2009
0%	to 100%	100%	100%	100%		estima Lone 14,508 and Lone 51,977 Slimation 79.15 spo-6 09:33:42 V-15 Mat-20 Margan1-2	Downting Loss 114,594 Apard Loss 41,595 Willinstinn 595 Stops-5 42,15-22 Dav-12 Mat-4 Kanunl-9	Domition Loss 14,928 Apart Loss 44,354 Viliantics 45.45 Ptops-6 00:17:34 Div-13 Mut-7 Manual-1	Soutine Loss 149,577 Spand Loss 14,804 Willingtion 55.51 Stope-6 82:51:16 Sup-12 Mat-3 Reson1-0	Counting Lass 184,721 dpasd Lass 22,088 Utilization 47.5% Stope-7 48-29-11 Dur-7 Wei-4 Reseal-0	
.5%				88.3% 85.6%	88.3% 85.6% 85.6%	88.3% 85.6% 85.6% 100% 100%	88.3% 85.6% 55.6% 1000% 100% 100%	88.3% 85.6% 85.6% Provide the second	88.3% 85.6% 85.6%	88.3% 85.6% 85.6% read in the second	88.3% 85.6% 85.6% Fundition in the second se

# LED TV Splicer Display (Optional)

The LED TV Splicer Display above each splicer shows real-time roll information.

- Helps operators and roll truck drivers by displaying information they use frequently.
- Can be customized to show the scanned roll ID or previous spliced roll statistics.
- Each display interfaces with Cat-6 ethernet communication and VGA for simple installation.



### 24 Volt Controls - "Touch Safe"

All Control Cabinets, Alarms, Switches and Indicators are 24 Volts DC for safe troubleshooting without Arc-Flash restrictions.

### **Operator Stations**

- Industrial grade 23" 1920x1080 HD resistive LCD touchscreen
- NEMA Type 4X sealed enclosures
- An Internal GFCI outlet and Battery Backup are included for reliability.
- Remote touchscreens are compact for flexible mounting options.
- Screens function independent of one another, with complete operator control at each station. Different tasks can be performed at each station, simultaneously.
- Additional remote stations can be easily installed for convenience.

### Includes all DC Wires/Cables, Brackets and Hardware

- Ensures correct items are used, eliminating improvised installations.
- Special Teflon/PVC mix wire coating is designed for the environment and is easier to pull through wire ways.
- All steel brackets are manufactured at Copar, then are zinc plated for durability, corrosion resistance, and to give a professional look and feel.

### **Minimized Spare Part Inventory**

- ♦ Allen Bradley PLC Processors and I/O modules are readily available worldwide, or directly from Copar's fully stocked inventory. Same day shipment or delivery is available when ordering from Copar's headquarters.
- There are only two types of wheels used with the Sync Master system. Having one of each on hand will cover your entire system.
  - All wheels use the same bearings and bushings for simplified repairs.
- A Spare Parts Kit is included under consignment for two years. After two years, the plant has the option to purchase the Spare Parts Kit, or can simply return it to Copar.
  - The Spare Parts Kit contains essential parts that are manufactured specifically for the Sync Master.
  - The Spare Parts Kit is packaged in a sealed briefcase type package for easy handling. This package helps keep everything in one place.

### **Unparalleled Customer Support**

- 24/7 Phone Support
- VPN Support
  - When calling for help, Copar can help diagnose issues by using the Black Box feature.
  - We can assist operators and maintenance personnel remotely from Copar by demonstrating basic procedures with mouse cursor and screen actions.

### Free Software Upgrades For Life

Copar does not charge fees for software changes or upgrades for the life of previously purchased features.

### 2 Year Limited Warranty

#### Buy with confidence. Copar is proud of the products we produce, and we stand behind them.

• A standard 2 Year Limited Warranty on all parts is included.



