SyncMaster

Synchronized Splice Control

Over forty years ago, Copar built the first synchronized splice system for the corrugated industry. CSSC SyncMaster™, now the ninth generation of the product line, incorporates Allen Bradley PLC processors along with robust hardware and software for the most reliable system to date.

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

Automatic End of Roll Splicing

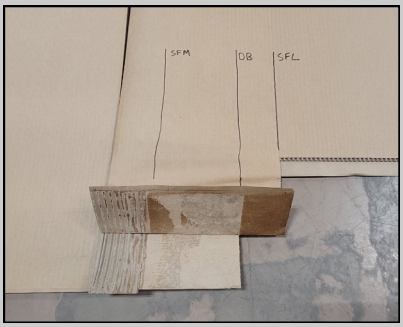
- Automatic splicing at the end of the roll helps reduce waste while avoiding paper tear-outs.
- Automatic speed control increases production by minimizing the time spent at slower splice speeds.
- All splices are recorded for roll tracking and statistical analysis, whether it was initiated by Copar or the operator.
- Bridge fill automatically adds extra material to the bridge before a singlefacer splice, which helps keep the doublebacker running at production speed during the splice sequence.
- Provisions for special split roll and laminated roll configurations are available.
- The latest system's high speed PLCs improve measurement accuracy and roll data reporting.

Automatic Restock Roll Splicing

- The Restock Roll Splice feature is used to splice a roll early to avoid small butt rolls at the end of the order.
- Pressing a single push button automatically fills the bridge (if fill mode is enabled), slows the machine to splice speed, splices the roll, and then resumes the previous production speed.
- Automating the sequence keeps the machine at run speed longer, while freeing the operator for other tasks.

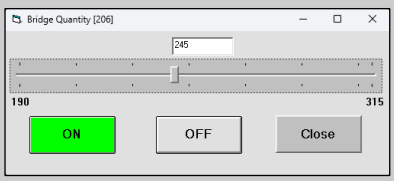
Synchronized Splicing for Paper Changes

- The Synchronized Splice process aligns papers to one another for grade or width changes and automatically removes the them at the shear.
- If single cut (sever) is permitted, the splice packet will be deposited on top of the last stack for the operator to remove at the stacker.
- Synchronized Splice Types:
  - *End of Wet End Run*: Order change at the scheduled order lineal plus any scrap that was added
  - *Immediate*: Start the order change right away without regard for order lineal.
  - *Synchronize on Roll*: Align the order to end of designated particular roll, for start the order change lined up to the end of a pre-print or wax roll.



Singlefacer Bridge Control with Variable Bridge Loading

- Bridge Control is a key feature that syncs the singlefacer speed with that of the doublebacker.
- Bridge Fill function boosts production by automatically increasing bridge quantity before each singlefacer splice. Due to the extra material, the singlefacer can slow to splice while the doublebacker maintains production speed.
- Variable Bridge Loading helps control down warp by maintaining an increased amount of bridge material. This is particularly useful when running heavy weight, pre-print, or coated papers.
  - Operators can increase the bridge by adjusting the slider bar left or right in one foot increments.
  - With the optional Laser Warp Correction, the system can be setup to increase the bridge automatically when down warp is detected.



COPAR SOLUTIONS™

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Practical Features

Paper Break Detection and Automatic Stops

- SyncMaster will automatically stop the machine if the paper tears out, for example, due to a missed splices, a web break, or if the paper tears out in the singlefacer.
- The system will also stop the doublebacker to prevent a web break if the singlefacer shuts down unexpectedly, for example, due to a drive fault, whisker switch being hit, a safety gate opened, or any time the singlefacer stop button is pressed.
- The system can be setup to automatically stop an idling singlefacer to prevent the bridge from overfilling after a predefined time or footage value.

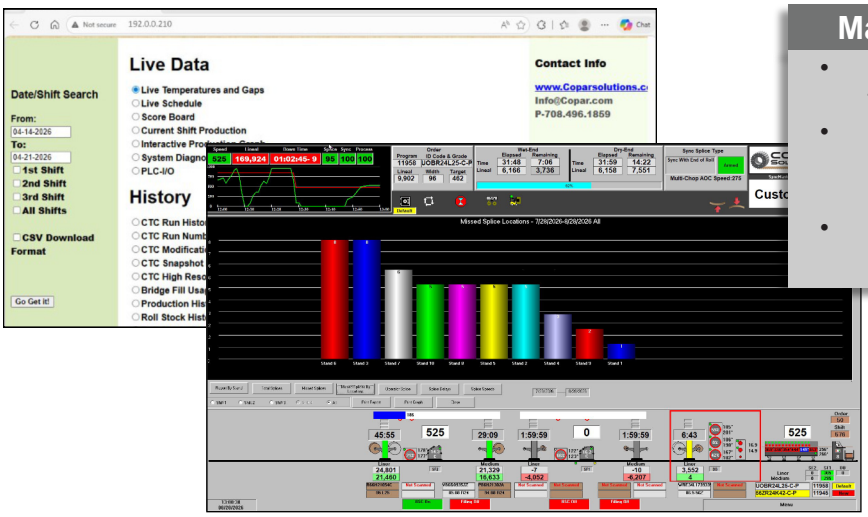
Indicators and Operator Tools

- Highly visible, three-color light stacks inform operators about a running roll's status. These lights indicate when a splice is approaching, if there are roll slip measurement issues, or if the roll tag has not been scanned (optional feature).
- As the splice reaches the dry end, Copar marks it with water and activates an audible/visual alarm to alert stacker employees of its location for removal.
- The waste removal push-button at the heating section entrance enables the operator to start the shear remotely and remove bad product coming off the bridge. This function is typically used during machine startup.
- (Optional feature) Extra-large Overhead Production Displays inform operators of the current speed, lineal produced, downtime, and other production details. The 98" screen's data is color coded to identify when above or below defined production goals.
- (Optional feature) Splicer Displays above each splicer show the order's paper requirements to help clamp truck drivers deliver paper on time.

Splice Status Indicator

Communications Interfaces

- Order Scheduling Systems
  - With a link to the plant's scheduling system the order line-up is automatically transferred and may be viewed from any operator touchscreen.
- Roll Inventory Systems (optional feature)
  - With a link to the plant's roll inventory system, scanned roll ID's will be displayed on each Copar screen.
  - After each splice, roll usage information is sent and a new tag is automatically printed out.
  - With all systems, roll splice details are logged. With a roll inventory link, the roll's ID is also recorded for tracking purposes.

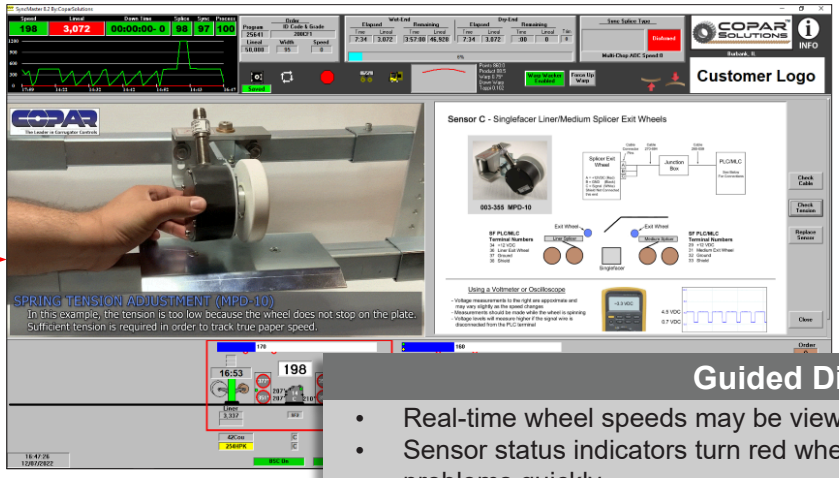


Maintenance and Management Tools

- Reports, graphs, and help screens are viewable from each touchscreens.
- Copar's Web Report interface may be viewed remotely from office computers or laptops connected to the plant network.
- Production reports are emailed to key employees automatically (optional).

Advanced Diagnostics with Black Box

The SyncMaster 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. Identifying hard to find problems is easier with the built-in Black Box "Flight Data" recorder.



Troubleshooting videos are built into the alarm screens

Sensor Alarm Screen

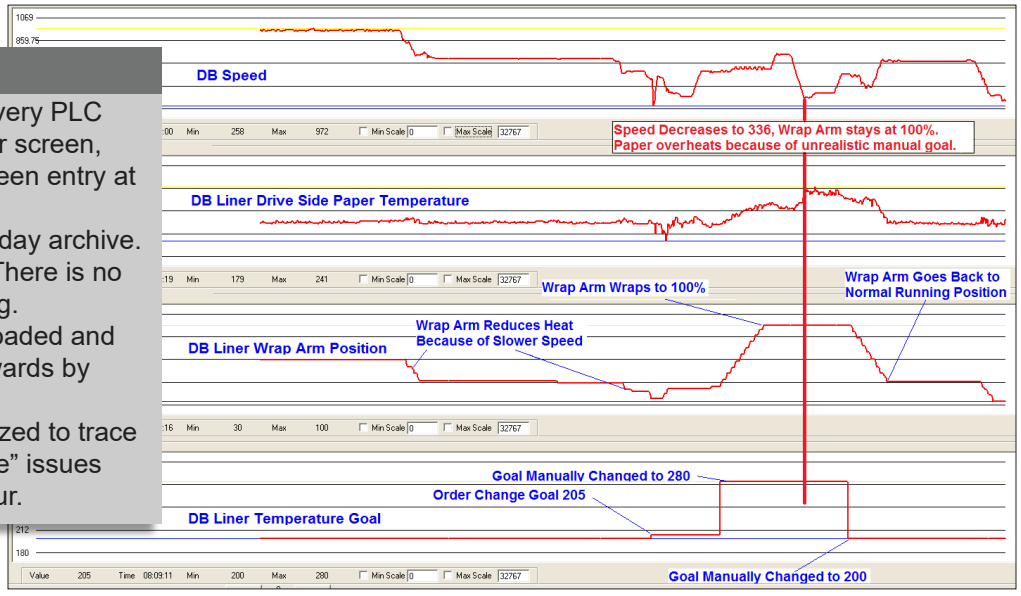
PLC I/O Screen

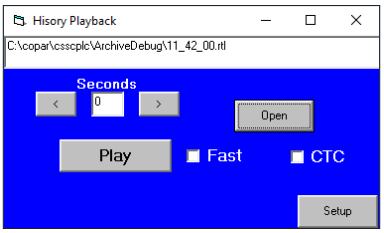
Guided Diagnostics

- Real-time wheel speeds may be viewed from any operator touchscreen.
- Sensor status indicators turn red when the sensor has an error to help identify problems quickly.
- Sensor locations, wire terminals, and the expected voltage level graphics are built into the sensor alarm screens at each operator station.
- Sensor repair videos and PM procedures are integrated into the alarm screens, and may be viewed from any operator screen.
- PLC I/O screens provide monitoring without the need to open electrical cabinets.
- Automatic email/text notifications may be setup to alert specific people if a PLC or sensor error occurs (optional).
- Informational help screens may be viewed from any touchscreen by pressing the info button in the top right corner.

Black Box

- Copar's Black Box records every PLC input and output, every Copar screen, and every operator touch screen entry at 1/4 second intervals.
- Data is saved as a rolling 35 day archive.
- Black Box is always active. There is no need to start or stop recording.
- Historical data can be downloaded and replayed forwards and backwards by Copar Engineers like a DVR.
- The saved data can be analyzed to trace down elusive, "once in a while" issues days or weeks after they occur.





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

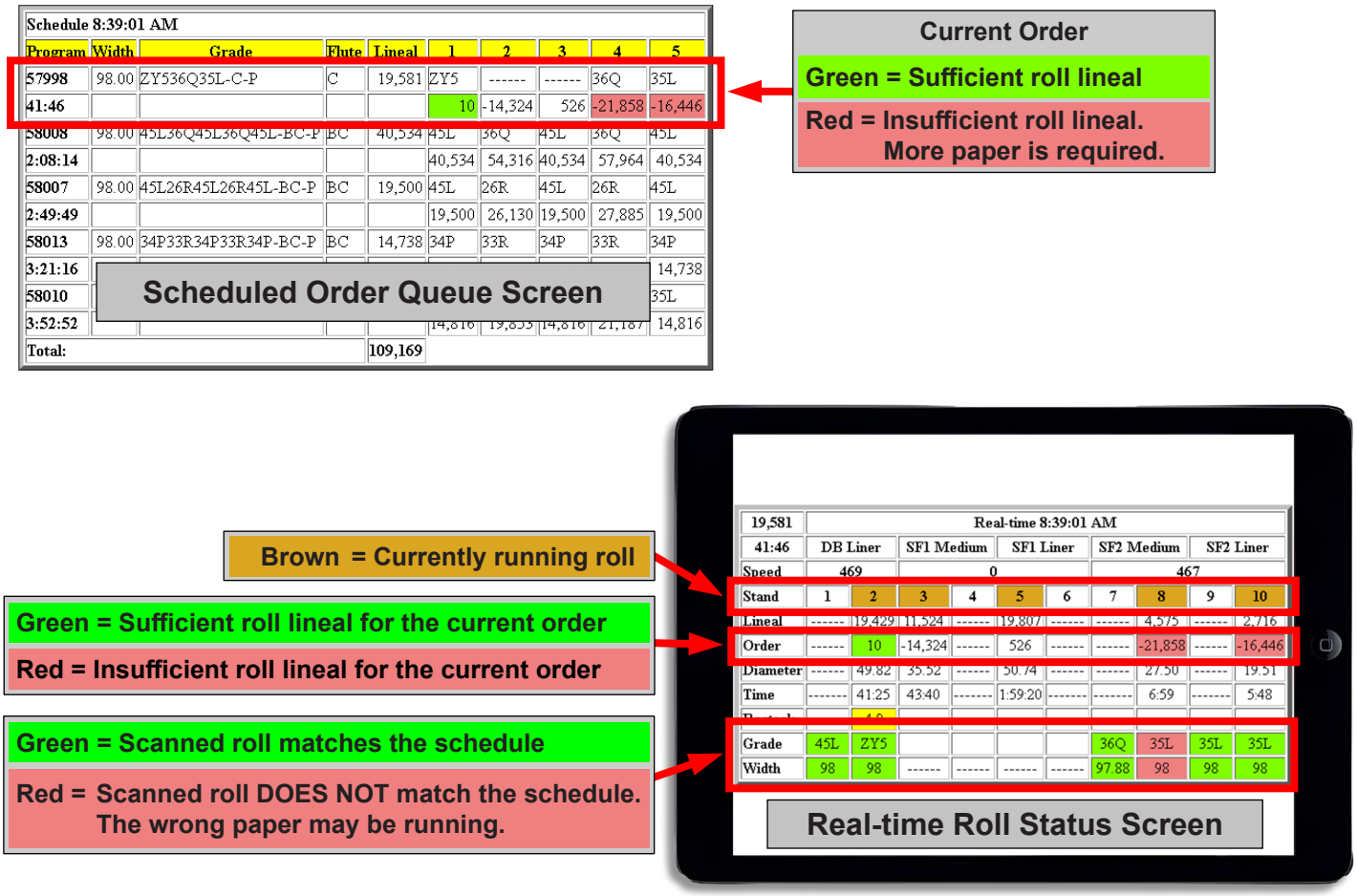
When the DB slowed down, the paper overheated to 241°F (116°C) which probably caused warped sheets. The operator realized the mistake and changed the goal back to 200°F (93°C).

SyncMaster Options

Clamp Truck Software (Optional)

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

- The scheduled order line-up 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 8:39:01 AM

Program	Width	Grade	Flute	Lineal	1	2	3	4	5
57998	98.00	ZY536Q35L-C-P	C	19,581	ZY5	------	------	36Q	35L
41:46					10	-14,324	526	-21,858	-16,446
58008	98.00	45L36Q45L36Q45L-BC-P	BC	40,534	45L	36Q	45L	36Q	45L
2:08:14					40,534	54,316	40,534	57,964	40,534
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
58010									35L
3:52:52					14,816	19,833	14,816	21,187	14,816
Total:				109,169					

Scheduled Order Queue Screen

Current Order

Green = Sufficient roll lineal

Red = Insufficient roll lineal. More paper is required.

Brown = Currently running roll

Green = Sufficient roll lineal for the current order

Red = Insufficient roll lineal for the current order

Green = Scanned roll matches the schedule

Red = Scanned roll DOES NOT match the schedule. The wrong paper may be running.

19,581 | Real-time 8:39:01 AM

41:46	DB Liner	SF1 Medium	SF1 Liner	SF2 Medium	SF2 Liner
Speed	469	0		467	

Stand	1	2	3	4	5	6	7	8	9	10
Lineal	------	19,429	11,524	------	19,807	------	------	4,575	------	2,716
Order	------	10	-14,324	------	526	------	------	-21,858	------	-16,446
Diameter	------	49.82	35.52	------	50.74	------	------	27.50	------	19.51
Time	------	41:25	43:40	------	1:59:20	------	------	6:59	------	5:48
Grade	45L	ZY5					36Q	35L	35L	35L
Width	98	98	------	------	------	------	97.88	98	98	98

Real-time Roll Status Screen

History 8:39:41 AM

Stand	Roll ID	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	3214						o Diameter
4	3211						o Diameter
8	12347	2343	4	4.68	8/13/2013 8:16:36 AM	8/13/2013 8:20:23 AM	Auto Diameter

Spliced Roll History Screen

Rollstock Inventory Software (Optional)

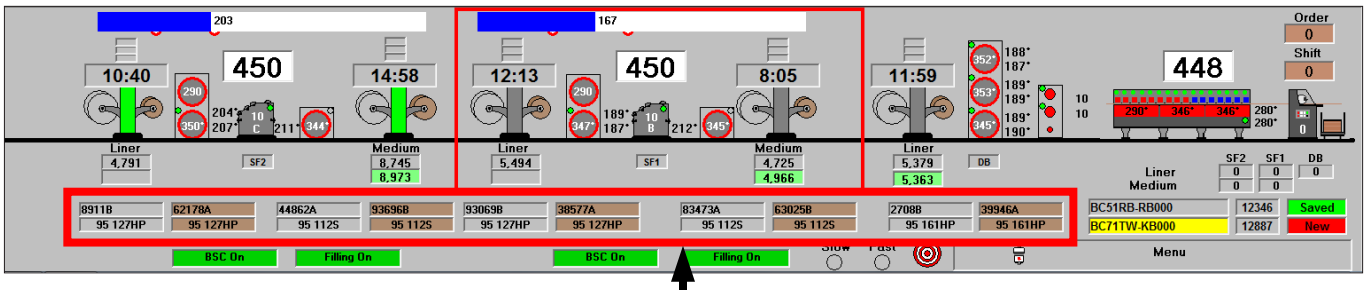
Include Roll ID tracking with your Copar splice control system. Interface with an existing Kiwi, CTI, or other roll management software.

- Eliminate measurement errors by misreading the roll's diameter with a tape.
- Avoid entry errors when manually typing into roll inventory systems.
- Save time by automatically printing roll tags after each splice.
- Once the roll has been scanned, the mounted roll ID, grade, and width is displayed at each Copar screen. This information can help the operator to verify the correct paper is being used.
- Get a handle on inventory with roll ID scanned/spliced history.
- 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 below each rollstand

SyncMaster Options (Continued)

Automatic Email Reports (Optional)

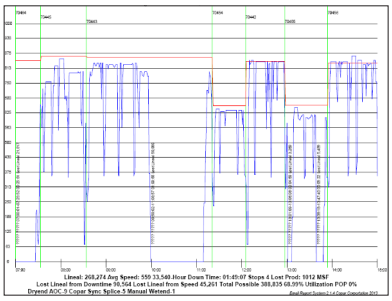
Automatically generated email reports save valuable time for managers and maintenance. Each email has unique information for efficient production tracking. The reports include individual shift statistics, as well as combined totals.

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 Feet/Meters** - Total over or under target

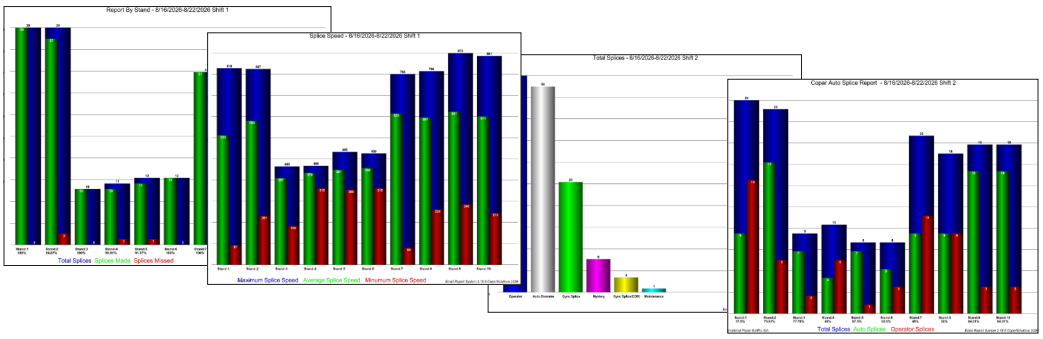
Detailed Production Report 6/4/2013 Shift: 1

Run	Width	Lineal	Grade	Flute	Target	Average	POP%	Start	End	Stops	Downti
70452	61	11,008	125C-23M	C	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	C	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	C	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	C	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	C	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	C	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	C	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	C	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	C	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	C	700	697	0%	6/4/2013 2:33:44 PM	6/4/2013 3:00:00 PM	0	00:00:0



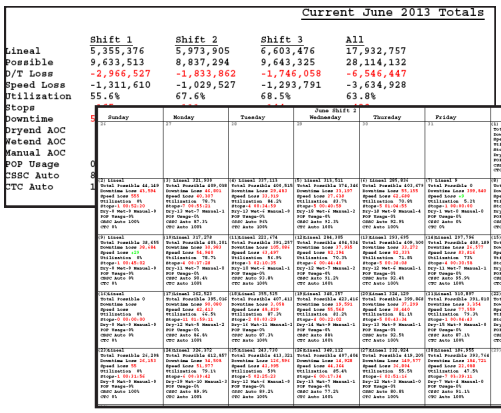
Weekly Reports

- **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
- **Total Lineal Loss due to downtime**
- **Total 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.



Current June 2013 Totals

	Shift 1	Shift 2	Shift 3	All
Lineal	5,355,376	5,973,905	6,603,476	17,932,757
Possible	9,633,513	8,837,294	9,643,325	28,114,132
D/T Loss	-2,966,527	-1,833,862	-1,746,058	-6,546,447
Speed Loss	-1,311,610	-1,029,527	-1,293,791	-3,634,928
Utilization	55.6%	67.6%	68.5%	63.8%
Stops				
Downtime				
Dryend AOC				
Wetend AOC				
Manual AOC				
POP Usage				
CBSC Auto				
CTC Auto				

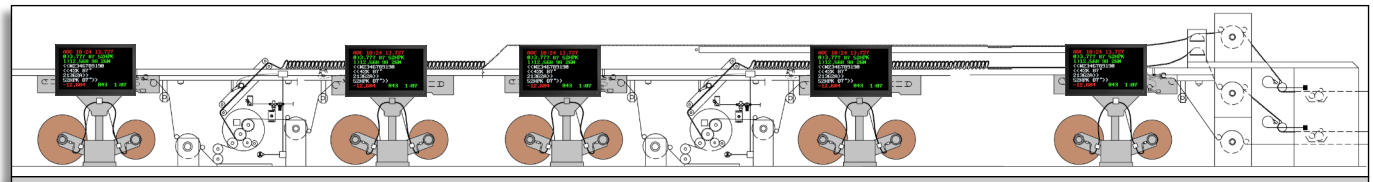
June Shift 2

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

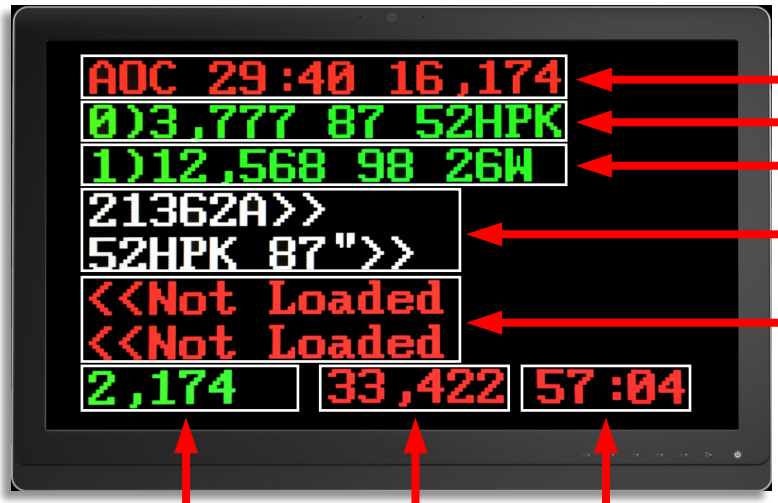
LED TV Splicer Display (Optional)

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.



One Screen at Each Splicer



Wet End AOC Time and Lineal remaining
- = Sync Splice Armed
- = Sync Splice Not Armed

Current Order Remaining, Lineal, Width and Grade

Next Order Remaining Lineal, Width, and Grade

Right Roll

Scanned Roll ID, Grade, and Width
- = Roll Has Not Been Scanned

Left Roll

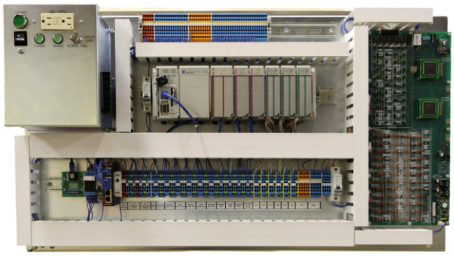
Time Remaining until the end of the roll (based on current run speed).
- = Ready to Splice
- = Not Ready to Splice (roll is not in place)

Lineal Remaining on the running roll.
- = Ready to Splice
- = Roll is Not Ready to Splice (roll is not in place)

Estimated Lineal On Roll at the end of the order.
- = There is enough paper to complete the order (Positive Number).
- = There is not be enough paper to complete the order (Negative Number).

24 Volt Controls - “Touch Safe”

All Control Cabinets, Alarms, Switches, Push Buttons, and Indicators operate at 24 Volts DC for safe operations and troubleshooting.



Operator Stations

- Industrial grade 23” 1920x1080 HD resistive touchscreens
- NEMA Type 4X sealed enclosures
- Each touchscreen operates independently with full operator control at each station. Tasks may executed at each screen without affecting the others.
- The Main Station is normally installed in the dry end control room.
- Remotes are typically installed near the glue station and each singlefacer, but they can also be added to other locations, for example, near the stacker. The remote’s compact design allows for mounting flexibility.
- Each station is equipped with an internal AC outlet and battery backup surge protector.

Main Station

Remote Station

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 zinc plated for durability, corrosion resistance, and to give a professional look and feel.

Minimized Spare Part Inventory

- SyncMaster uses Allen Bradley PLC Processors and I/O modules which are readily available worldwide, or may be purchased directly from Copar. Same day shipment/delivery is available when ordering from Copar’s.
- Syncmaster was designed to keep a plant’s spare part inventory minimized. Having only a few sensor types in maintenance will cover all sensor locations.
- An essential Spare Parts Kit is included with all systems to keep your system running. The Spare Parts Kit comes in a briefcase type package for easy storage and to help keep everything in one place.

Unparalleled Customer Support

- 24/7 Phone Support is available
- VPN Support
  - When help is needed, Copar can help diagnose previous events 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.