

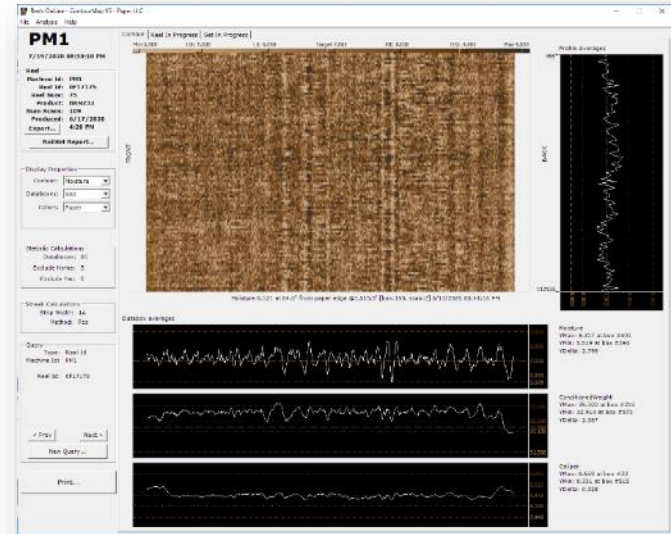
*Presented By,*



**Cayonyx**  
Advanced Software Solutions

# REELS ONLINE v5

July 2020



# History | Purpose

## Developed for Paper Production Industry

- ▣ In operation 24/7/365 since 2003
- ▣ Originally, interfaced with 1180 and 1190 DIUs
- ▣ Updated to OPC in 2013

## Purpose:

- ▣ Enhanced quality visualizations for historic reels and rolls based on standard trim patterns
- ▣ Computes “quality” statistics in real-time: 2 sigma, scan deviation, and streak index
- ▣ Visualize 4 hours of paper production in a condensed contour (gradient)

# Agenda

- Overview
- Contour Tab
- Reel In-Progress Tab
- Set In-Progress Tab
- Roll Report (Streak Report)
- Statistical Calculations
- Other Views (Queries)

# Overview

Left Area: reel information, display properties, calculation information, and the current “Query” type

- ❑ New Queries button allows search and alternate views
- ❑ Print button allows printing a snapshot of the display

**PM1**  
7/19/2020 08:30:10 PM

Reel  
Machine Id: PM1  
Reel Id: 0F17175  
Reel Num: 75  
Product: BAMZ32  
Num Scans: 109  
Produced: 6/17/2020  
Export... 4:20 PM  
RollSet Report...

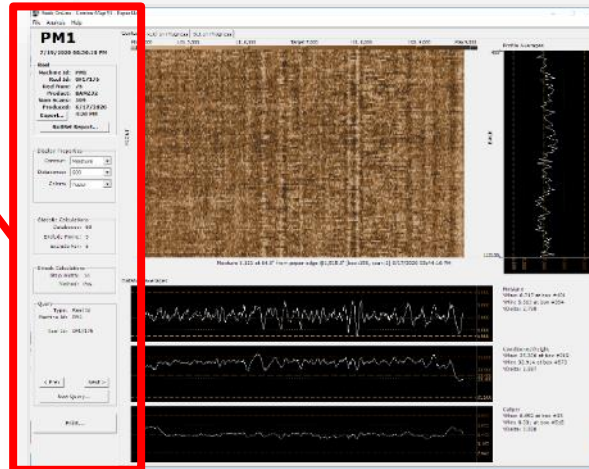
Display Properties  
Contour: Moisture  
Databoxes: 600  
Colors: Paper

Statistic Calculations  
Databoxes: 60  
Exclude Home: 5  
Exclude Far: 5

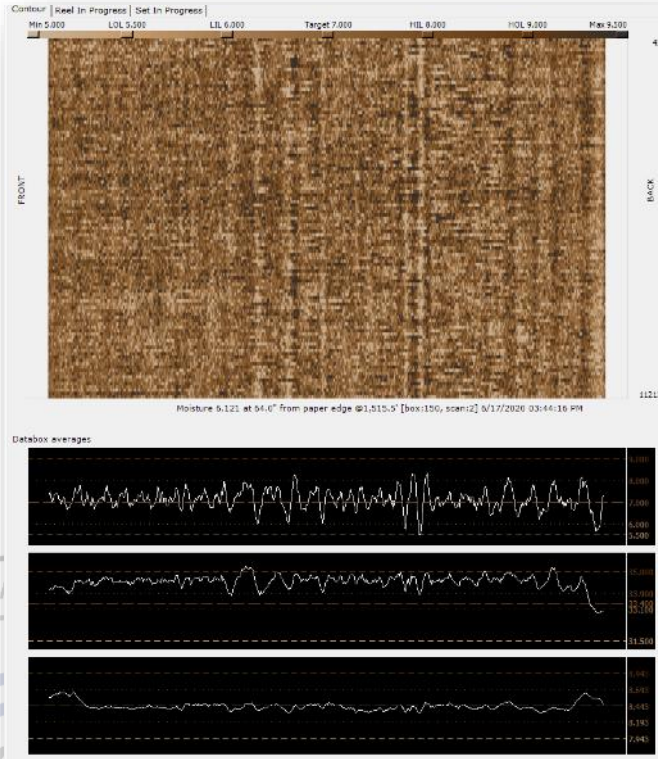
Streak Calculations  
Strip Width: 14  
Method: Pos

Query  
Type: Reel Id  
Machine Id: PM1  
Reel Id: 0F17175

< Prev    Next >  
New Query...  
Print...

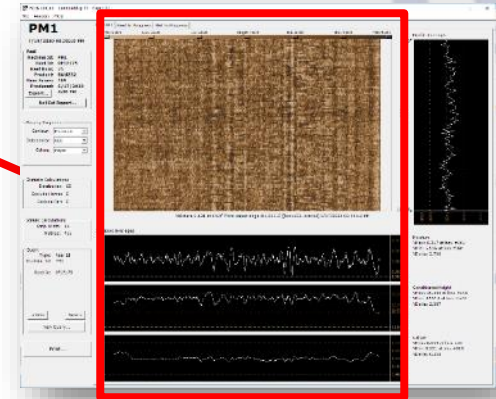


# Overview



Center Area: Contour, reel in-progress, set in-progress

Moisture Visualization

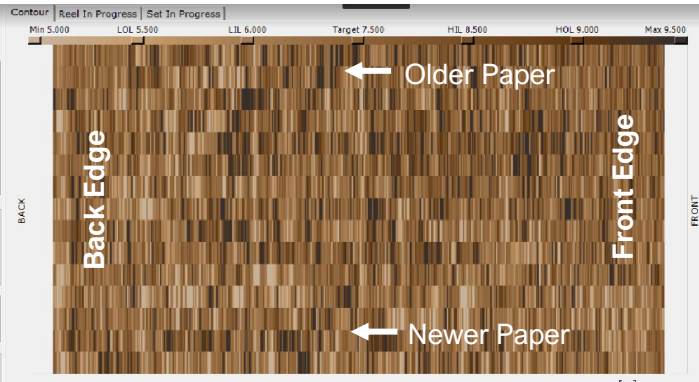


Moisture

Conditioned Weight

Caliper  
(units of "mils" where 1 mil = 1/1000 of an inch)

# Overview – Control Room View Orientation



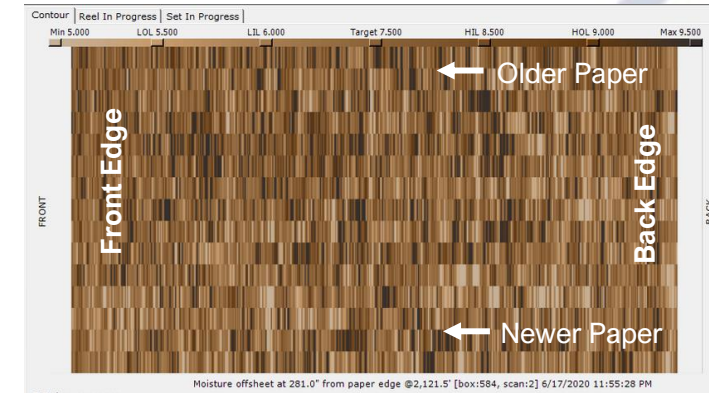
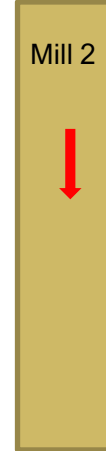
Back Edge



Control Room



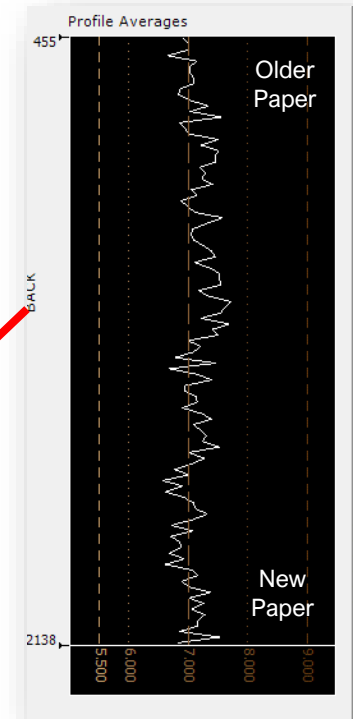
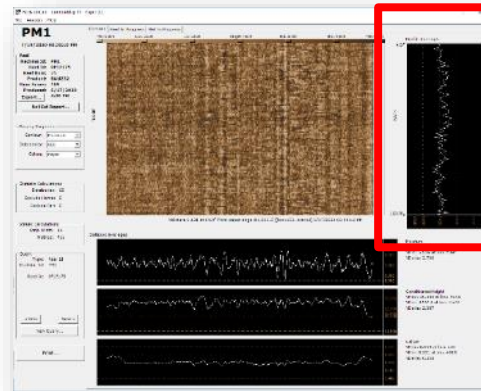
Front Edge



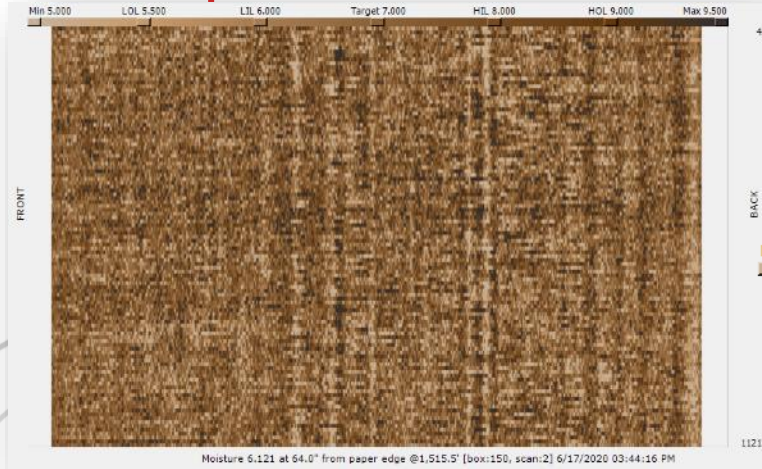
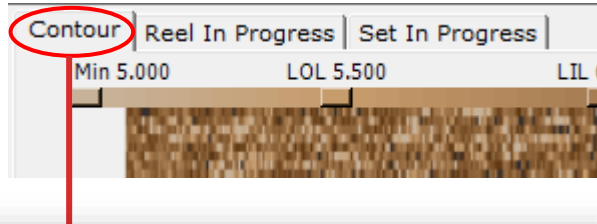
Back Edge

Right Area: Contour reel in-progress set in-progress

- Profile Statistics - Moisture Average (MD: Machine Direction)

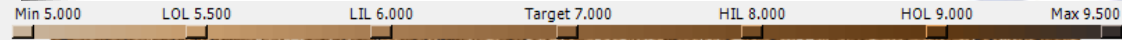


# Overview – Contour Tab

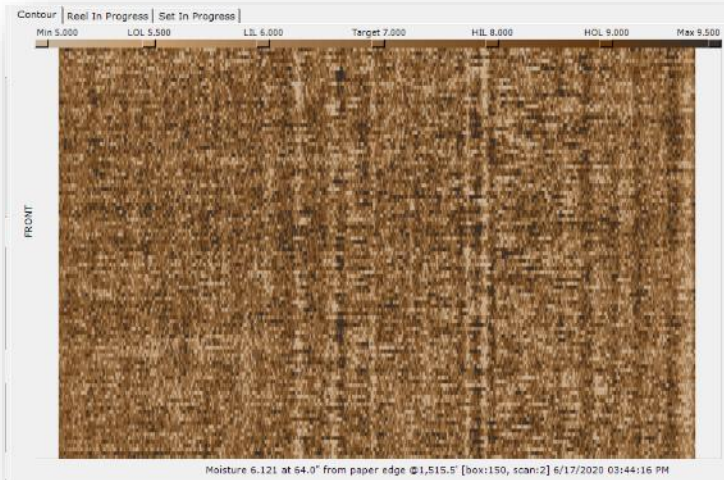


Displays the “current reel” overview

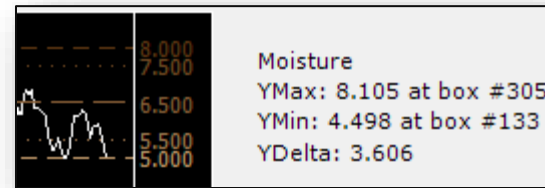
- Each of the 600 data boxes is shown with a color assigned based on the data box value
- Colors are graduated from a light brown (dry) to dark brown (wet) based on Min, Low Outer, Low Inner, Target, High Inner, High Outer, and Max limits
  - 10 colors per range → 60 colors total



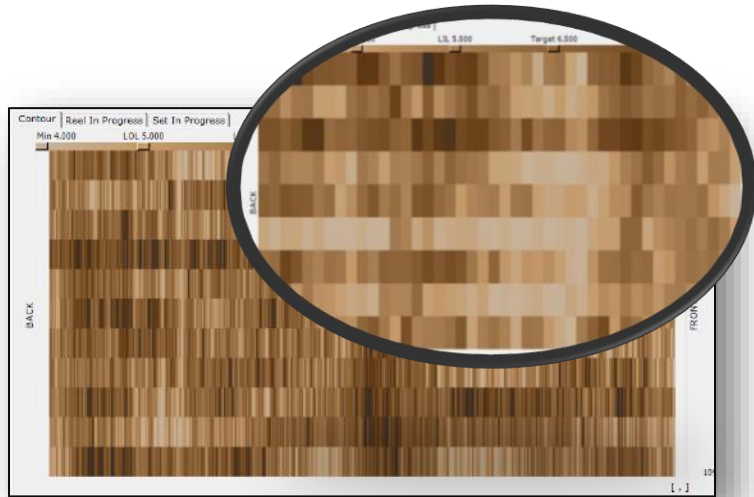
# Overview – Contour Tab



- ❑ 600 data box average profiles are displayed below the contour for Moisture, Conditioned Weight, and Caliper
- ❑ Scan average profile (machine direction) is displayed for Moisture
- ❑ Max, Min, and Delta are also displayed

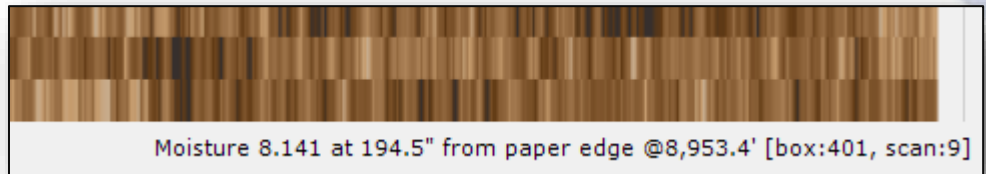


# Overview – Contour Tab

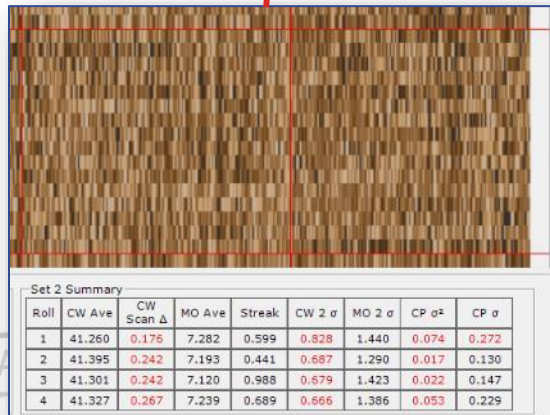
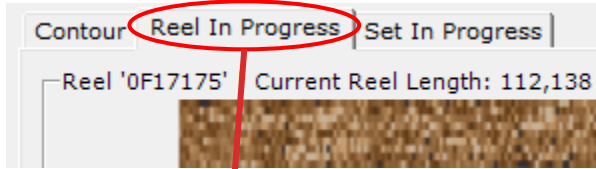


Zoom with left mouse button click and drag.  
Reset with right mouse button click.

- ▣ Rubber-band selection is active within the contour graphic and allows zoom-in display
- ▣ Mouse movement over the contour graphic displays Moisture value, position from paper edge, footage, and box location



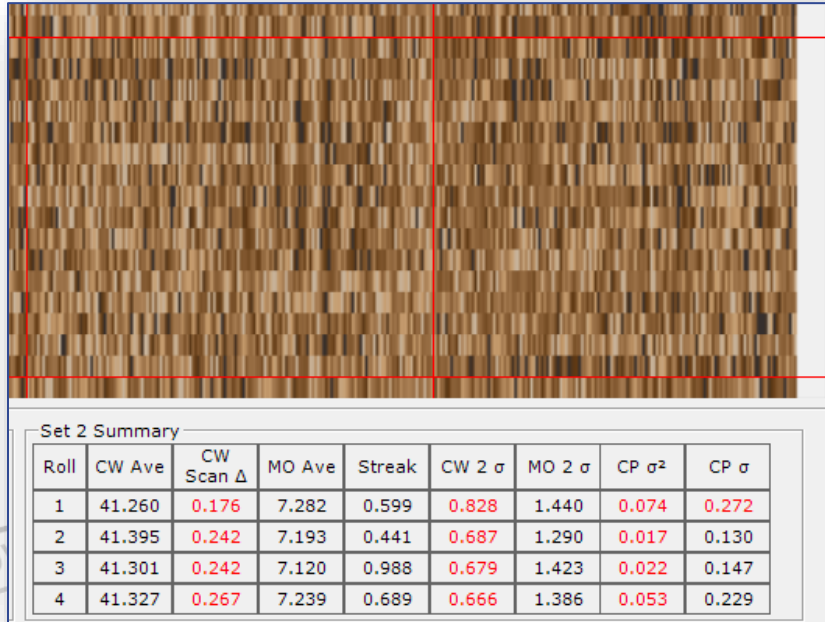
# Overview - Reel In-Progress Tab



- Displays “current” reel contour with typical trim pattern
- “Set” length information is shown above
- “Set/Roll” Statistics
  - Average
  - Scan deviation ( $\Delta$ )
  - Streak
  - 2 Sigma ( $2\sigma$ )
  - Standard Deviation ( $\sigma$ )
  - Variance ( $\sigma^2$ )

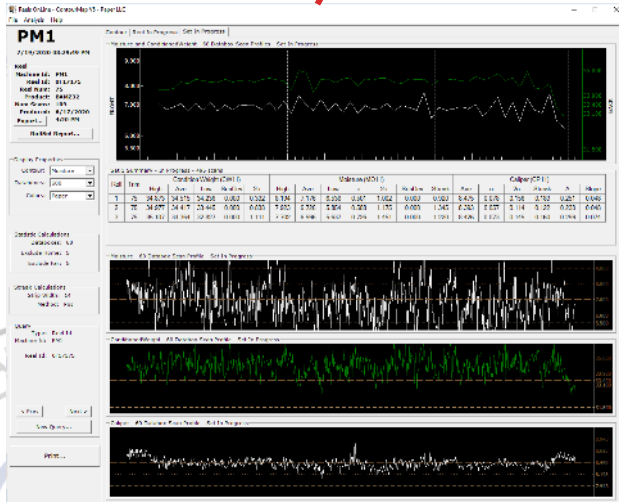
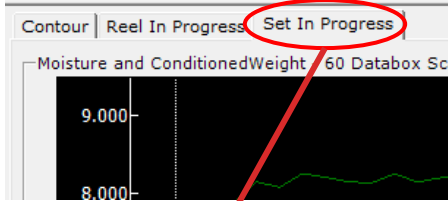
Reel '5L19161' In Progress - Current Reel Length: 51,234.5 - Current Set Length: 7,106.4 - Target Set Length 22,500.0 - Last Set Length 21,129.9

# Overview - Reel In-Progress Tab



- ▣ Statistic values exceeding limits are shown in red
- ▣ Statistic Tables:
  - ▣ Completed Sets
  - ▣ In-Progress identified with scan count

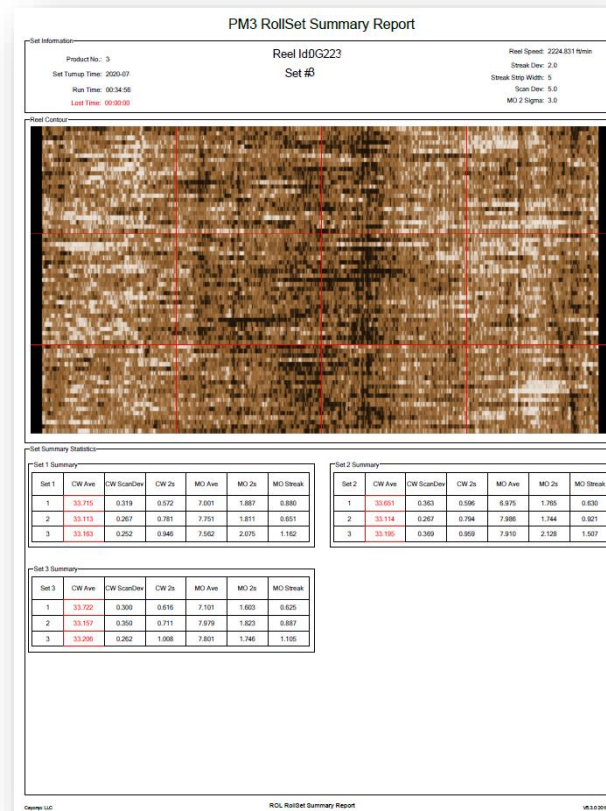
# Overview - Set In-Progress Tab



- ❑ More traditional control dashboard
- ❑ Limited to the current set
- ❑ Upper 120/60 dual line-graph for Moisture and Conditioned Weight
- ❑ Middle statistics tables
- ❑ Lower 600 data box scan average graph

# Roll Report (Streak Report)

- ▣ Printed at reel turn-up
- ▣ Moisture Contour
- ▣ Roll & Set statistics
- ▣ Statistics exceeding limits are flagged in red



Update Image Before and After installing ROL

# Statistical Calculations

- ▣ Traditional statistics are computed according to mill policies, typically 60 or 120 data boxes
- ▣ High, average, low, standard deviation, variance, and streak
- ▣ “Exclude Home” and “Exclude Far” data boxes are removed from the edges based on 600 data boxes, edges are defined by first and last data boxes values shown on the left

## Statistic Calculations

Databoxes: 120  
Exclude Home: 4  
Exclude Far: 4

# Other Views (Queries)

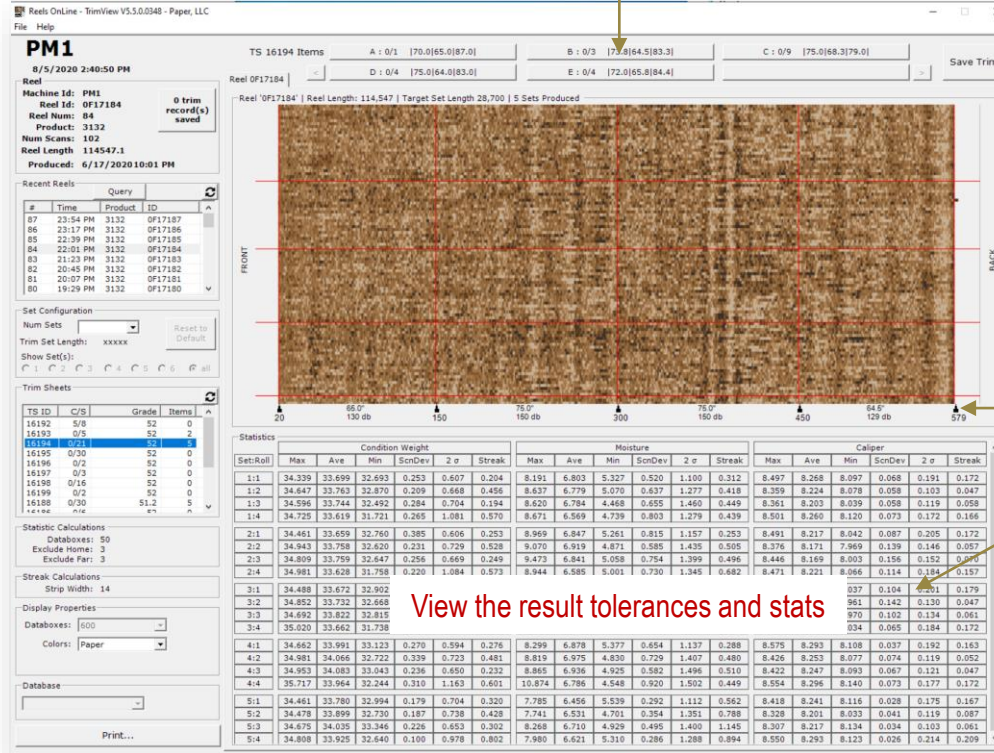
- ▣ Current Reel – view the current “in progress” reel (default query)
- ▣ Reel Id – view historic reels by id or search by date range
- ▣ Real Time – view the most recent N minutes of paper production
- ▣ Time Window – view historic paper production by a range of time

# TrimView

Pick a Trim Sheet Item

Pick the reel of interest

Pick a Trim Sheet



**PM1**  
Reel ID: 0F17184  
Reel Num: 84  
Reel Length: 114547.1  
Product: 3132  
Num Scans: 102  
Produced: 6/17/2020 10:01 PM

0 trim record(s) saved

Recent Reels

#	Time	Product	ID
87	23:54 PM	3132	0F17187
86	23:17 PM	3132	0F17186
85	22:39 PM	3132	0F17185
84	22:01 PM	3132	0F17184
83	21:23 PM	3132	0F17183
82	20:45 PM	3132	0F17182
81	20:07 PM	3132	0F17181
80	19:29 PM	3132	0F17180

Set Configuration  
Num Sats: [dropdown]  
Trim Set Length: xxxxxx  
Show Set(s): [checkboxes]

Trim Sheets

TS ID	C/S	Grade	Items
16192	5/8	S2	0
16193	0/5	S2	0
16196	0/2	S2	0
16197	0/3	S2	0
16198	0/16	S2	0
16199	0/2	S2	0
16188	0/30	S1.2	5
16188	0/6	S1.2	5

Statistics Calculations  
Databoxes: 50  
Exclude Home: 3  
Exclude Far: 3  
Strip Width: 14

Display Properties  
Databoxes: [dropdown]  
Colors: Paper

Database: [dropdown]

Print...

Reel '0F17184' | Reel Length: 114,547 | Target Set Length 28,700 | 5 Sets Produced

Statistics

Set:Roll	Condition Weight						Moisture						Caliper					
	Max	Ave	Min	ScnDev	2 σ	Streak	Max	Ave	Min	ScnDev	2 σ	Streak	Max	Ave	Min	ScnDev	2 σ	Streak
1:1	34.339	33.699	32.693	0.253	0.607	0.204	8.191	6.803	5.327	0.520	1.100	0.312	8.497	8.268	8.097	0.068	0.191	0.172
1:2	34.647	33.763	32.870	0.209	0.668	0.456	8.637	6.779	5.070	0.637	1.277	0.418	8.359	8.224	8.078	0.058	0.103	0.047
1:3	34.596	33.744	32.492	0.284	0.704	0.194	8.620	6.784	4.488	0.655	1.460	0.449	8.361	8.203	8.039	0.058	0.119	0.058
1:4	34.725	33.619	31.721	0.285	1.081	0.570	8.671	6.569	4.739	0.803	1.279	0.438	8.501	8.260	8.120	0.072	0.172	0.166
2:1	34.461	33.659	32.765	0.385	0.806	0.253	8.969	6.847	5.261	0.815	1.157	0.253	8.491	8.217	8.042	0.087	0.205	0.172
2:2	34.943	33.758	32.620	0.231	0.729	0.528	9.075	6.919	4.871	0.585	1.435	0.505	8.376	8.171	7.969	0.139	0.146	0.057
2:3	34.809	33.759	32.647	0.256	0.669	0.249	9.473	6.841	5.058	0.754	1.399	0.496	8.446	8.169	8.003	0.156	0.152	0.045
2:4	34.981	33.628	31.758	0.220	1.084	0.573	8.944	6.585	5.001	0.730	1.345	0.682	8.471	8.221	8.066	0.114	0.184	0.157
3:1	34.488	33.672	32.902										8.037	8.104	8.001	0.104	0.179	
3:2	34.852	33.732	32.668										9.611	8.142	8.130	0.047	0.047	
3:3	34.692	33.822	32.815										8.701	8.102	8.134	0.061	0.061	
3:4	35.020	33.662	31.758										8.234	8.065	8.184	0.172	0.172	
4:1	34.682	33.991	33.122	0.270	0.994	0.276	8.299	6.878	5.377	0.694	1.137	0.288	8.875	8.293	8.108	0.037	0.192	0.163
4:2	34.961	34.066	32.722	0.339	0.723	0.481	8.815	6.975	4.830	0.729	1.407	0.480	8.426	8.253	8.077	0.074	0.119	0.052
4:3	34.953	34.083	33.043	0.236	0.850	0.232	8.865	6.936	4.925	0.582	1.496	0.510	8.422	8.247	8.093	0.067	0.121	0.047
4:4	35.717	33.964	32.244	0.310	1.163	0.601	10.874	6.786	4.548	0.920	1.502	0.449	8.584	8.296	8.140	0.073	0.177	0.172
5:1	34.461	33.780	32.994	0.179	0.704	0.320	7.785	6.456	5.539	0.292	1.112	0.562	8.418	8.241	8.116	0.028	0.175	0.167
5:2	34.478	33.899	32.730	0.187	0.738	0.428	7.741	6.531	4.701	0.354	1.351	0.788	8.328	8.201	8.033	0.041	0.119	0.087
5:3	34.675	34.035	33.346	0.226	0.653	0.302	8.268	6.710	4.929	0.496	1.400	1.145	8.307	8.217	8.134	0.034	0.103	0.061
5:4	34.808	33.925	32.840	0.160	0.978	0.802	7.989	6.621	5.310	0.286	1.288	0.894	8.550	8.293	8.123	0.028	0.214	0.209

Move the "roll" (vertical) slitters.

View the updated stats

View the result tolerances and stats



**Cayonyx**

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