

Measure, Analyze, Corrective action, and Sustainability

In Search of Chip Quality & Financial Return for Biomass Products



Who are the Chip Doctors ?

Since 1991 The Chip Doctors, LLC have been providing assistance to the Forest Products Industry by identifying, explaining, solving, and sustaining optimal mill efficiency and ideal chip quality (Chip Producers and Pulp Mills). The Company is now in its 4th generation and currently has over 60 yrs. of combined experience.

What can and what do we do?

• <u>Biomass Audits onsite to include;</u>

- <u>Recommendations on best use of Biomass Residue (financial return)</u>
- <u>Wood storage and handling</u>
- Debarking, fuel handling
- <u>Improving Chipping system (production and quality)</u>
- Chip discharge and movement to storage
- <u>Chip screening and resizing</u>
- <u>Digester chip storage</u>
- <u>Digester yields (pulp mill)</u>
- <u>Chip Sampling protocols (collection, testing and data)</u>

Why is this important to the industry!

- Reduction of the amount of fiber utilized for each and every product
- We can guarantee significant returns of dollars for a sectors of wood manufacturing
- Record production for sawmills, in-the Woods chipping , Woodyard, and paper and pulp.



Best Practices and Key Opportunities;

- Understanding what the customer needs are and meeting or exceeding their needs/specifications
 - Maximize financial return for Biomass Products (Limited by supply/demand)
 - Do you have the best markets for your products?
- Understanding that there is potentially more value/\$\$\$ in improving your own yield and efficiencies than the customer will ever pay you for in increased monies for Biomass Product
 - Typically sawmills can achieve (\$1.00 to \$3.00) per ton more for their Biomass Products by "tuning" and adjusting internal Biomass production equipment
 - The same value (\$1.00 to \$3.00) is true for portable in-the-woods chippers, and Satellite Chipping Yards
 - Increase(up to 10%) of bulk density (amount of product)in hauling equipment (more tones/cubic foot of space)
 - Reduced maintenance costs
 - Reduced energy consumption

for every 5% CQI improvement												
	Additional Tons of Chips	Fuel/Energy	Labor	Savings Knives, etc.	Total Increased Tons Chips/yr	Total Savings (knives, energy, labor, etc.)						
mbf/wk				knife changes								
50,000	3.75	10%	less (1)	every 30-40 mbf	195	\$50,000						
100,000	7.5	10%	less (1)	every 30-40 mbf	390	\$75,000						
150,000	11.25	10%	less (1)	every 30-40 mbf	585	\$100,000						
200,000	15	10%	less (1)	every 30-40 mbf	780	\$125,000						

How is this accomplished???



M.A.C.S stands for <u>Measure, Analyze, Corrective Action, and Sustainability</u>.

The Chip Doctors, LLC uses this simple 4 step method to identify, explain, solve, and sustain optimal mill efficiency and ideal chip quality.

<u>The first three steps are achieved by The Chip Doctors</u> using generations of expertise which has allowed TCD's's to develop procedures and protocols which lead to optimal efficiency from log intake to digester feed. <u>The last step</u> (sustainability) is a joint effort between TCD's's and Fiber M. Technologies which allows The Chip Doctors to accurately collect representative chip quality data and then use this data to sustain perfect chip quality for all internal Woodyard's, digester feeds, other chip sampling locations and suppliers.



Measure (1st Step)- This is a proven, 4 step methodology. TCD's will send a certified chip doctor to perform an onsite audit of your facility to identify, detect, and determine specific opportunities to optimize efficiency throughout your processes; these opportunities can be present from log intake all the way through digester feed. TCD's will accurately measure and document all areas where efficiency can be improved.

This step is accomplished by TCD's's sending out their chip quality team to your facility for a 2-4 day audit. The TCD's team will take measurement and make observations within your facility from log intake to digester feed.

Some typical examples are the following:

Debarking, drum improvements, chipper infeed modifications, chipper set-ups:





Analyze (2nd Step) - Is the process where TCD's takes all the measurements, observations, pictures, and data collected on the audit and points out all the areas where your mill can increase efficiency and yield.

TCD's will identify each area, provide an explanation of why that area is not currently efficient and then provide a solution to rectify the problem. These are all outlined in a very detailed report with pictures

after the audit.





Sliver Ring worn beyond acceptable tolerances

- Sliver cutters/wipers worn completely off
- Sliver anvil and containment anvil set >0.125 (tolerance 0.030and 0.060 per print)
- Change bedknife with new or resurfaced one, send used bedknife back to OEM to be resurfaced

• In order to maintain optimal chip quality take 6 samples after new bedknife installation, then over the next 4-6 weeks we will continue to monitor critical dimensions and data in Chip MACS to determine exactly when the bedknife needs to be replaced in order to offset wear and keep CQI 95% or higher.





Corrective Action (3rd Step)- Through the Audit and the reports provided by TCD's all opportunities from log intake, debarking equipment, infeed chains, chipper setup, outfeed chain/belt, resizers, screening facilities, etc. will be identified and solutions to optimize efficiency and wood chip quality will be provided. Your company will have the ability to decide which projects are most important to your processes and which opportunities you would like The Chip Doctors, LLC (TCD's) to fix and provide instructions to your Millwrights and/or Maintenance department on how to maintain new techniques and methods necessary in order to achieve optimal efficiency. TCD's will give onsite seminars, rebuild equipment with your staff, and give the internal Woodyard a step by step plan of action to keep your equipment running at peak performance. This means minimizing whitewood loss through the debarking system, optimizing chipper tons/hr, creating uniform chips which are the ideal size for your digester. Ensuring your mill's CTS (chip screen tower) or other screening facility can properly classify the chip size needed and agreed upon with the pulp mill, as well as fixing any other systems before the chips get to the digester such as blow lines, chip pile stratification, rolling stock, etc. which can all reduce chip quality.

The corrective action depends on what is found at your mill but typically includes a major chipper service, a overhaul of the chip sampling procedures and protocols, and setting up the screening and resizing facility at your mill to handle the change in chip size.











Sustainability (4th Step) – Is the utilization of Chip MACS to take all the representative chip quality data and use that data to make proactive changes to systems and equipment before chip quality degradation is seen. Chip MACS is a user friendly internet based system which allows you to access your chip quality anywhere, anytime. It gives suppliers and upper management the financial data they need to keep all systems running efficiently and does all this with real time, representative data.

TCD's has developed sampling procedures, protocols, and testing methods which have been proven to be statistically correct and accurately portray wood chip quality through different parts of the process. TCD's will identify accurate and safe locations and methods to take samples and setup a chip lab and chip classifier to run chip samples, moisture, bark content, whitewood loss, etc. These sampling protocols combined with the testing procedures is then used to run tests through a Gradex or other chip classifier and is automatically uploaded twice daily into Chip MACS. Chip MACS then gives the Pulp Mill, Forest Resources, Managers, Maintenance, Suppliers, and TCD's technicians the ability to access real time data anywhere in the world at anytime. All data changes, trends, models, forecasting, financial information, benchmarks, costs, CQI's, effective chip costs, actual chip costs, annual financial information, etc, are shown instantly and flawlessly.

In addition weekly reports are sent out to each supplier, the customer, and the manager of each department giving them a quick 1-2 pg. summary that they can use to monitor their process if they are too busy to be on the computer or managing other tasks. The tools, methods, procedures, and techniques provided through TCD's and Chip MACS allow your pulp engineers to dramatically increase pulp yield by being able to maximize their digester efficiency because the digester now has a uniform, consistent product which allows for a dramatically better cook in the digesters.



Online Chip Quality Data Management Process Control for the Suppliers and Customers







Weekly Reporting



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95.11

0.00 %

65.77 %

17.55 %

Measure : Recommended Chip Target Thickness

(Can be different to mill process)

Batch / Kamyr

Correlation

6mm mean

3-4mm mean

7/8" to 15/16" chip

<³/₄" chip

10mm bar (over thick	10%
8mm bar (over thick)	10%
4mm bar (primary accepts 1)	63%
2mm bar (accepts 2, thins)	15%
3mm round hole (pins)	1.5%
Pan (fines)	0.5%
Bark	1.0%





Measure : Sample Collection

- Set-up chip classifier (TMI Chip Class, Gradex, Rader, etc.) sampling files
- Sampling points, sample type (composite) and frequency agreed to
- Validate all sampling ports
- Complete Supplier Baseline data
- Make chip quality database is electronically available





Measure : Sample Collection (Visuals)



Measure : Sampling Procedures

- Automatic Database Upload (for Gradex & Rader databases)
- Manual Data Entry Screen (see next slide)
- Sampling points, sample type (composite) and frequency agreed to
- Baseline data completed



Measure : Manual Data Entry

- Easy to use and customizable
- Alternative to automatic database processing
- Enter data as percentages or weight

Manual Data Entry				
Configuration		Sample Information		
Sample Date/Time :	12/12/2012 09:50 AM		Total: 100.00000 %	
	Demo Paper Company 🔹	F1 - Fines	10.00000	÷
	Demo Pulp Mill 🔻	F2 - Pins	10.00000	×
	Pine 🔻	F3 - 2-4mm	63.00000	×
Supplier :	Demo Supplier 1	F4 - 4-8mm	15.00000	•
Sapple Source :		F5 - 8-10mm	1.50000	-
Sample Source .		F6 - Over 10mm	0.50000	×
Sample Type :		Bark % 🥔	1.00000	* *
Sample Purpose :	Received by Pulp Mill (C)	Total Weight : 🔺	1250.0000)
Comments :	This is a test sample!	Moisture % : 🍐	50.00000	<u>*</u>
		Humidity % : 🔗	0.00000	<u>*</u>
		Rot % : 🧳	0.00000	* *
Enter Data As :	Percentages	Save & Hold S	iample	Cancel



Monthly totals by supplier of loss/gain towards the pulpmill target

Fuel Macs

Continuously updated daily from fuel quality testing

Calculates the following for each supplier and pulpmill:

- BTU value, grit, size distribution, ash content, volatiles, contaminants, moisture, and others
- · develops the ability to correlate boiler efficiency with fuel supply
- Develops the ability to predict and correlate boiler maintenance and repair costs

Analyze : Viewing Live Samples

C View Samples

Start 0	1/01/2011		supplier	product form	species	sample date	realm	F1 - Fines	F2 - Pins	F3 - 2-4mm	F4 - 4-8mm	F5 - 8-10mm	F6 - Over 10mm	total weight	cqi	moisture
End 1	2/31/2011		Vendor 9 <u>57</u>	Sawmill	Pine	12/30/2011 1:18:00 PM	с	2.25	7.02	42.13	41.22	5.62	1.76	0.00	63.60	50.54
Demo Pa	per Company	•	Vendor 957	Sawmill	Pine	12/30/2011 1:17:00 PM	с	1.59	6.18	32.61	48.50	6.24	4.89	0.00	74.62	49.98
Demo Pu	lo Mill		Vendor 431	Sawmill	Pine	12/30/2011 8:18:00 AM	С	1.16	5.22	25.83	51.54	9.36	6.88	0.00	82.79	53.24
	ib (.m.		Vendor 618	Chip Mill	Pine	12/30/2011 8:11:00 AM	С	0.69	3.97	25.11	55.40	8.56	6.26	0.00	85.23	52.72
species		•	Vendor 958	Sawmill	Pine	12/30/2011 6:47:00 AM	с	2.45	4.95	40.06	42.51	4.90	5.14	0.00	67.54	49.12
All (Supp	lier & Process)	-	Vendor 431	Sawmill	Pine	12/29/2011 8:17:00 AM	с	0.18	6.63	23.17	54.36	9.21	6.45	0.00	85.02	54.32
Supply T	ype	-	Vendor 431	Sawmill	Pine	12/29/2011 8:16:00 AM	С	1.43	7.08	25.59	53.33	7.80	4.76	0.00	80.90	55.28
Product F	Form	-	Vendor 618	Chip Mill	Pine	12/29/2011 8:10:00 AM	С	0.88	4.50	21.62	55.67	11.25	6.07	0.00	88.00	0.00
Supplier			Vendor 618	Chip Mill	Pine	12/29/2011 8:09:00 AM	С	0.47	3.90	16.32	57.24	14.37	7.69	0.00	92.25	0.00
Supplier	5	•	Vendor 958	Sawmill	Pine	12/29/2011 6:46:00 AM	С	2.07	5.10	40.25	45.09	5.36	2.12	0.00	67.58	48.30
Process 5	Sample Source	•	Vendor 958	Sawmill	Pine	12/29/2011 6:45:00 AM	С	2.10	5.03	39.82	45.38	4.20	3.47	0.00	68.05	0.00
Process S	Sample Type	•	Vendor 958	Sawmill	Pine	12/29/2011 6:44:00 AM	с	2.53	4.90	40.71	45.21	4.62	2.03	0.00	66.86	0.00
🔍 Viev	w Samples	🕖 Last 6	Vendor 177	Sawmill	Pine	12/28/2011 3:05:00 PM	с	0.98	5.90	27.95	15.66	7.80	7.86	0.00	80.17	40.07
all. Di	a batha a bi	e Treed	Vendor 177	Sawmill	Pine	12/28/2011 3:04:00 PM	С	1.27	7.24	28.95	13.79	7.87	5.92	0.00	77.54	0.00
	Descharado	Conv	Vendor 957	Sawmill	Pine	12/28/2011 1:16:00 PM	с	2.26	6.17	41.84	42.67	4.51	2.55	0.00	64.73	48.93
Se New	Denchmark	Copy	Vendor 957	Sawmill	Pine	12/28/2011 1:15:00 PM	с	1.71	5.39	39.38	46.30	4.41	2.82	0.00	68.52	0.00
ф ^и Ке	set rielus	Export	Vendor 957	Sawmill	Pine	12/28/2011 1:14:00 PM	с	1.70	6.64	40.89	42.95	4.94	2.88	0.00	65.77	0.00
Exte	nded View		Vendor 957	Sawmill	Pine	12/28/2011 1:13:00 PM	С	2.41	5.58	36.82	45.33	6.34	3.52	0.00	70.19	47.45
			Vendor 431	Sawmill	Pine	12/28/2011 8:15:00 AM	С	0.54	3.36	23.05	57.13	8.94	6.99	0.00	88.05	0.00
			Vendor 431	Sawmill	Pine	12/28/2011 8:14:00 AM	с	0.99	6.58	27.45	52.14	8.49	4.34	0.00	79.98	0.00
			Vendor 618	Chip Mill	Pine	12/28/2011 8:08:00 AM	С	1.02	7.44	25.66	56.39	5.88	3.61	0.00	80.88	49.97
			Vendor 618	Chip Mill	Pine	12/28/2011 8:07:00 AM	с	1.03	5.50	28.60	53.47	6.19	5.21	0.00	79.87	43.89
			Vendor 618	Chip Mill	Pine	12/28/2011 8:06:00 AM	С	0.52	1.51	16.09	57.19	15.05	9.64	0.00	92.19	50.42
			Vendor 618	Chip Mill	Pine	12/28/2011 8:05:00 AM	с	1.43	4.75	17.80	55.40	13.45	7.16	0.00	90.41	51.33
			Vendor 958	Sawmill	Pine	12/28/2011 6:43:00 AM	С	2.68	5.10	40.51	41.23	6.02	4.45	0.00	66.71	50.18
			Vendor 958	Sawmill	Pine	12/28/2011 6:42:00 AM	С	2.15	5.03	39.79	42.98	5.64	4.41	0.00	68.03	49.24
			Vendor 958	Sawmill	Pine	12/28/2011 6:41:00 AM	С	0.88	2.89	35.22	51.00	6.42	3.58	0.00	76.01	0.00
12.53	3 14.38	73.09	Vendor 958	Sawmill	Pine	12/28/2011 6:40:00 AM	С	1.08	3.91	38.41	48.16	6.29	2.15	0.00	71.60	0.00
%	%	%	Vendor 177	Sawmill	Pine	12/27/2011 3:03:00 PM	С	1.92	8.35	30.36	12.67	7.85	4.82	0.00	74.37	54.13

Analyze : Distribution Charts

C Distribution Charts										
Start										
01/01/2011	🛛 🖉 🖻 🚑 📢 📿 🛛	. 🗉 🙆 🖌								
End										
12/31/2011	80 —									
Demo Paper Company 🔹	75 — 70 —									
Demo Pulp Mill 🔻	65 —									
Pine 🔻	60 — 55 —									
Supplier & Machine Center -	50						\rightarrow			
Supply Type 🔻	45 — 40 —						$\backslash \rangle$			
Product Form	35				-/					
Suppliers	30 — 25 —									
Concerns v	20 —									
💞 Reload Chart	15				-			~	•	
② Latest 6 Samples	5-							×		
Print Mode	0	*								
					- Target	Average				
		Pan (Fines)	3mm (Pins)	2mm	4mm	8mm	10mm	CQI	1	
	TARGET	0.5	1.5	15	63	10	10	90+]	
	AVERAGE	1.00	5.36	29.26	48.24	7.30	6.26	78.51		

Note : The chart shown above reflects the values of 2754 samples.

Analyze : Trend Charts



Analyze : \$ / Ton Calculation

Supplier Info		Processing Fee Info	
Name	Demo Supplier 126	Year	2012
Supply Type	Purchased	Conversion Efficiency	86.00 %
Product Form	Roundwood	Processing Fee	\$4.01
🎒 🛛 Go to Company Mana	gement	Update Processing Fees	Q View Calcs
Monthly Cost-per-Ton	Calculation		
Purchased Chips	Total Cost =	Roundwood Tonnage * Price per Ton	CE = Chip Equivalent
	CE Tons = CE \$ / Ton =	Roundwood Tonnage * Conversion Efficiency Total Cost ÷ CE Tons	
	Automatical Concercio		

Analyze : Fiber-Model

(Black Box)

Demo	Paper Company	-	Demo Pulp Mill 👻	Species 👻	New Black Box	
Selec	t a Paper Com	ipany	Select a Pulp Mill	Select a Species	Edit Black Box	
Paper Company	Pulp Mill	Species	Description			
Demo Paper Company	Demo Pulp Mill	Hardwood	Demo Pulp Mill - Hardwood			
Demo Paper Company	Demo Pulp Mill	Pine	Demo Pulp Mill - Pine			
Demo Paper Company	Demo Pulp Mill	Pine	Demo Pulp Mill - Pine			
Demo Paper Company	Demo Pulp Mill	Hardwood	Demo Pulp Mill - Hardwood			
Demo Paper Company	Demo Pulp Mill	Hardwood	Demo Pulp Mill - Hardwood			
Demo Paper Company	Demo Pulp Mill	Pine	Demo Pulp Mill - Pine			

C Black Box Input

р 0.00 🚖 КАРРА	70.00 🚔 YIELD		52.12		Si	Save		
	F1	F2	F3	F4	F5	F6		
Chip Specs (Max) (%)	0.5	1.5	15	Unlimited	10	10		
Pulp Yield	13.03	26.06	44.302	52.12	48.9928	47.9504		
Default Relative Yield (Thickness Fractions)	0.25	0.5	0.85	1	0.94	0.92		
Loss/Gain Through CTS (%)	80	70	10	2	5	5		
Value of Chips in Excess of Specs (%)	83	83	83		100	100		

Analyze : Fiber-Model

(Black Box - Continued)



Analyze : Fiber-Model (HW)

(Sample & Financial Data)

		Delivered \$ Va	lues I	Relative to Baselin	e			
Delivered Monthly Chip Deliveries to Mill (Green Tons)	Delivered Monthly Screened Out Fiber	Digester Mon Pulp Yield F	thly iber I Sain	Delivered Monthly Fiber Value Gain	Cumulative Fiber Savings	Period	S Ending	upplier Effective Chip Price
						E	Baseline	
720,000	\$0		\$0	\$0		\$0 Ani	nualized	
720,000	\$3,021,509	\$202,	114	\$2,819,395	\$2,819,3	95	Target	\$43.92
60,000		70%						
60,000		1070						
60,000		60%				$- \wedge$		
60,000		contention (Con						
60,000		50% -					-	
60,000						$1 \sim$		
60,000		40% -						
60,000		30%						
60,000		50%						
60,000		20%						
60,000								
00,000		10% -					<u> </u>	
				10 million 10 million				
		0% -	Fi	ines Pins	2mm	4mm	8mm	10mm
	-Marginal (Cost	0	.8% 2.0%	3.9%	44.2%	24.1%	6 25.1%
	Supplier A	verage 2006	0	.8% 2.0%	3.9%	44.2%	24.1%	6 25.1%
	Target Pro	ofile	0	.5% 1.5%	15.0%	63.0%	10.0%	6 10.0%

Analyze : Fiber-Model

(Sample & Financial Data)

C 2012 Fiber Model :	Demo Paper Comp	any - De	emo Pulp	Mill - Ha	rdwood	- Demo	Supplier	126						
Supplier Data	Supplier (Calcs)) 📹	Supplier	Graph	🌱 Pulp	Mill Da	ta 🎲	Pulp Mi	ill (Calcs)	📹 Pulp Mi	ll Graph	🧐 Coml	bined Fiber	r Sa ଏ ▶
Period Ending	Fines	Pins	Thins	Accepts	Thick	Over	CQI	Bark	Moisture	CE Tonnage	\$/Ton	Proc. Fee	Fuel %	Fuel Value
Baseline	2.4%	6.8%	38.5%	49.3%	2.6%	0.5%		0.7%	50%	63000	\$23.27		100	\$10.00
Annualized	2.18%	4.57%	14.81%	60.16%	10.17%	8.11%	92.50%	0.73%	49.32%	730,873.00	\$37.70	\$4.01	100.00%	\$20.52
Target	0.5%	1.5%	15%	63%	10%	10%	90%	2%	46.52%	60,906.15	\$37.70		100.00%	\$20.52
January	2.97%	5.83%	15.73%	57.05%	10.54%	7.88%	89.93%	0.70%	50.00%	73,615.37	\$39.27	\$4.01	100.00%	\$21.01
February	3.02%	5.73%	17. <mark>4</mark> 5%	55. 7 9%	10.56%	7.44%	88.23%	0.70%	50.00%	64,511.48	\$38.31	\$4.01	100.00%	\$20.90
March	2.32%	4.64%	15.09%	59.53%	9.88%	8.53%	92.95%	1.00%	50.00%	76,694.71	\$38.70	\$4.01	100.00%	\$20.69
April	2.21%	4.49%	15.00%	62.35%	9.10%	6.84%	93.27%	0.70%	50.00%	30,787.25	\$36.90	\$4.01	100.00%	\$20.49
Мау	1.66%	4.16%	14.99%	61.62%	9.60%	7.98%	94.18%	0.70%	50.00%	71,730.91	\$36.68	\$4.01	100.00%	\$20.63
June	1.85%	4.30%	14.06%	60.48%	9.97%	9.34%	93.85%	0.70%	50.00%	53, 149. 59	\$36.57	\$4.01	100.00%	\$20.51
July	1.58%	3.74%	13.14%	61.08%	10.58%	9.88%	94.09%	0.70%	41.80%	66,514.39	\$37.89	\$4.01	100.00%	\$23.37
August	1.95%	4.28%	15.03%	61.62%	9.20%	7.92%	93.74%	0.70%	50.00%	60,376.20	\$36.70	\$4.01	100.00%	\$20.31
September	1.83%	4.22%	15.45%	62.17%	9.31%	7.02%	93.50%	0.70%	50.00%	51,223.05	\$36.26	\$4.01	100.00%	\$19.67
October	2.30%	4.59%	13 <mark>.8</mark> 8%	60.58%	10.92%	7.73%	92.19%	0.70%	50.00%	61,990.15	\$37.54	\$4.01	100.00%	\$19.51
November	2.39%	4.75%	15.25%	60.36%	10.04%	7.22%	92.58%	0.70%	50.00%	65,036.91	\$38.66	\$4.01	100.00%	\$19.82
December	2.02%	4.06%	12.62%	59.32%	12.40%	9.58%	91.53%	0.70%	50.00%	55,243.85	\$38.89	\$4.01	100.00%	\$19.28

Analyze : Fiber-Model

(Graph : Target / Baseline / Realized)

C 2012 Fiber Mode	el : Demo Paper Compar	ny - Demo Pulp Mill - H	ardwood - Demo Su	pplier 126		
🌱 Supplier Data	🌼 Supplier (Calcs)	📹 Supplier Graph	🌱 Pulp Mill Data	🔅 Pulp Mill (Calcs)	Pulp Mill Graph	🤏 Combined Fiber Sa 4
🛛 💣 🖻 🍜 🔇) 😰 - 🖪 - 📃 🖗 🛛	<mark>/ .</mark> 🖀				
85			i.		r.	
80						
70						
60						<u> </u>
55						
45	6					<u> </u>
35	22 22		/			
25						
15					\mathcal{H}	
5						4
0	FINES	PINS	2-4mm	4-8mm	8-10mm	>10mm

--- Target --- Baseline --- Demo Supplier 126

	Fines	Pins (0mm -	Thins (2mm -	Accepts (4mm	Thick (8mm -	Over Thick
BASELINE	3.1%	8.1%	37.4%	46.4%	4.2%	0.8%
AVERAGE	0.79%	3.10%	15.64%	63.70%	10.23%	6.55%
TARGET	0.5%	1.5%	15%	63%	10%	10%

Analyze : Fiber-Model (SLFR)

(Real-Time : Updated with every new sample taken)

Senior Level Fin	ancial Report																	- 6 2
Demo Paper Compa	ny 🔻 Demo I	Pulp Mill	✓ Hardwood	▼ Ye	ear-to-Date 🔻 2012	Show Report												
Supplier	Weight %	CQI	Delivered Tonnage	Processing Fee	Delivered Chip Cost/Ton	Supplier Effective Chip Price	Target - Screened Out Fiber	Target - Digester Yield		Target - Gain	Realized - Screened Out Fiber	Realized - Digester Yield		Realized - Gain	FM Screened Out Fiber to Target	FM Digester Yield to Target		FM Gain to Target
TOTAL	100%	91.00 %	931,458.86		\$37.34	\$38.47	\$2,236,766.89	\$3,714,600.20	\$5,951,367.07	\$6.28	\$1,232,350.98	\$3,583,520.37	\$4,815,871.30	\$5.15	\$1,004,415.86	\$131,079.84	\$1,135,495.76	\$1.13
Demo Supplier 126	78.47%	93.08%	730,873.86	\$4.01	\$37.70	\$38.29	\$2,053,477.02	\$3,434,973.15	\$5,488,450.17	\$7.51	\$1,382,775.96	\$3,673,387.92	\$5,056,163.88	\$6.92	\$670,701.06	(\$238,414.77)	\$432,286.29	\$0.59
Demo Supplier 38	3.15%	83.90%	29,342.02	\$1.50	\$37.89	\$41.29	\$8,571.24	\$15,311.01	\$23,882.26	\$0.81	(\$43,248.45)	(\$26,454.95)	(\$69,703.39)	(\$2.59)	\$51,819.69	\$41,765.96	\$93,585.65	\$3.40
Demo Supplier 65	2.47%	82.40%	23,002.68	\$1.50	\$35.27	\$39.45	\$2,374.18	\$6,039.64	\$8,413.82	\$0.37	(\$44,672.03)	(\$42,654.56)	(\$87,326.60)	(\$3.82)	\$47,046.21	\$48,694.20	\$95,740.42	\$4.18
Demo Supplier 124	1.67%	82.74%	15,599.99	\$1.50	\$37.50	\$40.82	\$7,986.32	(\$7,597.51)	\$388.81	\$0.02	(\$16,386.29)	(\$34,883.83)	(\$51,270.12)	(\$3.30)	\$24,372.61	\$27,286.32	\$51,658.93	\$3.32
Demo Supplier 23	1.38%	79.00%	12,834.22	\$1.50	\$35.44	\$38.80	\$13,053.65	\$28,765.34	\$41,818.99	\$3.26	(\$7,994.43)	\$6,554.64	(\$1,439.78)	(\$0.10)	\$21,048.08	\$22,210.70	\$43,258.78	\$3.36
Demo Supplier 104	1.36%	80.69%	12,669.04	\$1.50	\$47.73	\$53.06	\$17,898.01	(\$46,642.33)	(\$28,744.33)	(\$1.13)	(\$19,062.69)	(\$52,931.32)	(\$71,994.01)	(\$6.46)	\$36,960.69	\$6,288.99	\$43,249.68	\$5.32
Demo Supplier 67	1.28%	87.71%	11,892.09	\$1.50	\$50.84	\$53.51	\$48,440.40	\$115,941.67	\$164,382.07	\$5.76	\$8,119.15	\$26,458.12	\$34,577.26	\$3.08	\$40,321.25	\$89,483.55	\$129,804.80	\$2.68
Demo Supplier 62	1.20%	90.49%	11,204.03	\$1.50	\$35.95	\$37.59	\$17,044.50	\$28,847.18	\$45,891.69	\$3.75	\$5,032.59	\$18,556.36	\$23,588.95	\$2.12	\$12,011.92	\$10,290.82	\$22,302.74	\$1.64
Demo Supplier 94	1.00%	89.99%	9,292.38	\$1.50	\$38.12	\$39.29	\$2,124.64	\$41,561.80	\$43,686.43	\$4.70	(\$3,432.75)	\$35,033.15	\$31,600.40	\$3.53	\$5,557.39	\$6,528.65	\$12,086.04	\$1.17
Demo Supplier 24	0.95%	86.05%	8,882.50	\$1.50	\$35.41	\$36.90	\$8,435.73	\$11,399.83	\$19,835.57	\$2.23	(\$339.65)	\$8,772.38	\$8,432.74	\$0.74	\$8,775.38	\$2,627.45	\$11,402.83	\$1.49
Demo Supplier 6	0.83%	75.59%	7,751.08	\$1.50	\$21.50	\$23.83	\$4,208.94	\$18,743.74	\$22,952.68	\$2.96	\$94.91	\$5,261.44	\$5,356.34	\$0.63	\$4,114.03	\$13,482.31	\$17,596.34	\$2.33
Demo Supplier 96	0.79%	86.93%	7,314.07	\$1.50	\$35.95	\$39.09	\$5,072.71	\$1,592.99	\$6,665.70	\$0.84	(\$5,222.53)	(\$11,413.59)	(\$16,636.13)	(\$2.30)	\$10,295.24	\$13,006.58	\$23,301.83	\$3.14
Demo Supplier 75	0.73%	82.10%	6,810.19	\$1.50	\$21.50	\$23.26	\$3,036.25	\$11,595.82	\$14,632.06	\$2.15	(\$1,239.61)	\$3,857.61	\$2,618.00	\$ 0.39	\$4,275.85	\$7,738.21	\$12,014.06	\$1.76
Demo Supplier 70	0.64%	67.19%	5,974.15	\$1.50	\$34.38	\$42.95	\$1,460.57	(\$1,231.76)	\$228.82	\$0.04	(\$18,816.41)	(\$30,752.86)	(\$49,569.27)	(\$8.54)	\$20,276.98	\$29,521.10	\$49,798.08	\$8.57
Demo Supplier 108	0.58%	85.95%	5,406.70	\$1.50	\$33.50	\$35.15	\$4,767.72	\$5,695.08	\$10,462.80	\$1.94	\$1,934.44	(\$425.51)	\$1,508.92	\$0.29	\$2,833.28	\$6,120.59	\$8,953.87	\$1.65
Demo Supplier 25	0.50%	85.79%	4,696.62	\$1.50	\$21.30	\$22.68	\$1,036.84	\$1,707.95	\$2,744.79	\$0.58	(\$3,065.14)	(\$633.22)	(\$3,698.36)	(\$0.79)	\$4,101.98	\$2,341.17	\$6,443.15	\$1.38
Demo Supplier 85	0.50%	78.25%	4,658.86	\$1.50	\$34.97	\$38.88	\$10,019.07	\$21,078.78	\$31,097.85	\$6.67	\$4,068.52	\$8,448.51	\$12,517.03	\$2.77	\$5,950.55	\$12,630.26	\$18,580.82	\$3.91
Demo Supplier 47	0.48%	84.51%	4,450.11	\$1.50	\$37.16	\$40.53	\$3,221.48	\$1,334.15	\$4,555.64	\$0.94	(\$4,971.28)	(\$8,599.20)	(\$13,570.48)	(\$2.43)	\$8,192.76	\$9,933.36	\$18,126.12	\$3.37
Demo Supplier 86	0.38%	84.96%	3,507.22	\$1.50	\$28.50	\$30.33	\$2,778.35	\$9,162.14	\$11,940.49	\$3.12	\$451.03	\$4,632.97	\$5,084.00	\$1.30	\$2,327.32	\$4,529.17	\$6,856.49	\$1.83
Demo Supplier 54	0.36%	88.59%	3,313.12	\$1.50	\$35.50	\$37.01	\$1,131.64	\$163.29	\$1,294.93	\$0.39	(\$973.20)	(\$1,553.62)	(\$2,526.82)	(\$1.12)	\$2,104.84	\$1,716.91	\$3,821.76	\$1.51
Demo Supplier 118	0.34%	76.28%	3,207.71	\$1.50	\$23.40	\$26.06	\$2,625.98	\$9,742.70	\$12,368.67	\$3.86	\$26.13	\$2,384.44	\$2,410.57	\$1.19	\$2,599.84	\$7,358.26	\$9,958.11	\$2.66
Demo Supplier 69	0.24%	88.75%	2,267.00	\$1.50	\$38.06	\$39.85	\$3,227.24	\$3,934.24	\$7,161.48	\$2.11	\$468.43	\$570.42	\$1,038.85	\$0.32	\$2,758.81	\$3,363.82	\$6,122.63	\$1.79
Demo Supplier 7	0.23%	88.26%	2,134.66	\$1.50	\$36.50	\$37.62	\$4,343.36	\$22.64	\$4,366.00	\$1.19	(\$23.96)	\$78.40	\$54.44	\$0.08	\$4,367.31	(\$55.75)	\$4,311.56	\$1.12
Demo Supplier 64	0.18%	82.19%	1,677.40	\$1.50	\$22.65	\$24.98	\$254.75	\$647.43	\$902.18	\$0.54	(\$803.26)	(\$457.95)	(\$1,261.21)	(\$1.79)	\$1,058.00	\$1,105.38	\$2,163.39	\$2.33
Demo Supplier 13	0.15%	91.69%	1,385.44	\$1.50	\$42.50	\$43.64	\$9,082.74	(\$619.76)	\$8,462.97	\$1.02	(\$217.47)	\$17.65	(\$199.81)	(\$0.13)	\$9,300.20	(\$637.42)	\$8,662.78	\$1.14
Demo Supplier 68	0.09%	86.35%	836.49	\$1.50	\$31.00	\$32.50	\$759.74	\$1,284.66	\$2,044.40	\$2.04	\$29.97	\$366.85	\$396.82	\$0.53	\$729.77	\$917.81	\$1,647.58	\$1.50
Dama Sunnliar 50	0 030%	78 57%	205 53	¢1 50	eon 50	673 SO	¢06.06	¢207.52	6303 50	¢0.62	(\$143 46)	(e116 50)	/2750 071	(62 20)	6770 57	\$374 N3	6563 55	63 NN

Analyze : LIVE Weekly Reports

(Real-Time : Updated with every new sample taken)

	port Date	12/30/2011 ···································	\bigcirc			
Get Reports De	mo Pulp Mill		View Selected			
Report Type	Species	Supplier	CQI Rank	CQI Average	Samples (10d 6w 1y)] F
Customer	Pine					
Manager	Pine					C
Supplier	Pine	Demo Supplier 66	1	89.68	Samples (4 14 181)	
Supplier	Pine	Demo Supplier 98	2	87.07	Samples (27 150 857)	h
Supplier	Pine	Demo Supplier 49	3	83.10	Samples (7 16 77)	-
Supplier	Pine	Demo Supplier 12	4	79.97	Samples (8 20 205)	3
Supplier	Pine	Demo Supplier 62	5	79.79	Samples (1 7 162)	C
Supplier	Pine	Demo Supplier 38	6	67.03	Samples (2 3 7)	-
Supplier	Pine	Demo Supplier 72			Samples (0 6 62)	
Machine Cente	er Pine	Demo Supplier 15	1	89.25	Samples (20 82 585)	
Machine Cente	er Pine	Demo Supplier 98	2	88.94	Samples (6 30 149)	
Machine Cente	er Pine	Demo Supplier 12	3	80.07	Samples (6 15 31)	



Analyze : Online Features

(Available to Division, Pulp Mill, Managers, and Suppliers)



🚜 Network Connection : Online 🛛 🔗 14:55

Please note that user permissions are set by division.

(Work with suppliers to take corrective action)



(Work with suppliers to take corrective action)



(Work with suppliers to take corrective action)



(Work with suppliers to take corrective action)

_ 🗆 🗙 The Virtual Chip Doctor 0 112" Carthage Bed-Knife Installation 1.Insure that the three (3) machined surfaces (bottom, back and end) have not been damaged and are to specification. Bed-knife should be parallel and within .002 on al dim. 6.020 2. Insure if usinf re-built bed-knife that the shape is according to a Carthage supplied pattern. Return to

Main Viewer

Sustainability : Reporting

- Make chip quality data, fiber model, and equipment set-up advice available to all supply points
- Make Gradex/Rader database electronically available
- Establish timely reports that will be sent to suppliers and managers that will track their chip quality improvement over time

Sustainability : Reporting

Make equipment set-up advice available to all supply points

				SHIFT PRO	DUCTION DA	TA		
	wk/ending 1/7/13	: 1/13/2013 1/8/13	Tonnage Req 1/9/13	uired Pino 1/10/13	16,000	Hardwood	16,000	
Smarin	Monday	Tuesday	1 LiModporder	st Shift 6:00AM	to 2:00PM			
spann	Monday	Tuesday	weunesuay	Thursday	Filday	Saturday	Sunday	
Pine Chips	0	52	0	0	0	0	0	
Hardwood Chips	1,722	1,312	0	0	0	0	0	
Fuel Pine	0	6	0	0	0	C	0	
Fuel Hdwd	206	157	0	0	0	0	0	
		T	21	d Shift 2:00PM :	to 10:00PM			
Specie	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
Pine Chips	1,225	968	0	0	0	0	0	
Hardwood Chips	620	1,045	0	0	0	0	0	
Fuel Pine	147	116	0	0	0	0	0	
Fuel Hdwd	74	125	0	0	0	0	0	
			31	d Shift 10:00PM	to 6:00AM	1		
Specie	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
Pine Chips	1,832	2,425	0	0	0	0	0	
Hardwood Chips	0	0	0	0	0	0	0	
Fuel Pine	219	291	0	0	0	0	0	
Fuel Howd	0	0	0	0	0	0	0	
Total Fuel						•		
Fuel Pine	366	413	0	0	0	0	0	
Fuel Hdwd	280	282	0	0	0	0	0	
Total Chips		r	1	·····				
Pine	3,057	3,445	0	0	0	0	0	
Hardwood	2,342	2,357	0	0	0	0	0	
Daily Total	5,399	5,802	0	0	0	0	0	
Duration Total	4	Pine Chips	6,502	Hardwood Chips	4,699	Wk Chips Total	11.201	
Running Total	TOF WYDEK:	Pine Fuel	779	Handwood Eval	562	Hilk Errol Total	1 3/1	
NI-		Dises	0.400	Line days of the	44.004	1 WK PGA TOTAL	1,041	
NE	ed to Run:	Pine:	9,498	Hardwood:	11,301	Total	20,799	
Bedknife Change	ed on		1/6/2013					
Bedknife Tonnag	e		11,201	Previou	s Week's Bed	knife Tonnage:	0	
SALE TAND IN				Date Bark He	ng Anvil Last C	hanged/Flipped:	8/19/2012	
2				Prev. Week	's Bark Hog A	unvil Tonnage:	19,447	
Number of card b	oreakers insta	lled	10		Bark Hog	Anvil Tonnage:	20,788	
Horizontal Anvil (Changed on		1/6/2013	Comments:				
Horizontal Anvil 1	Fonnage	•	11,201	- Prev	ious Week's A	- Anvil Tonnage:	0	
Fixed Card Break	ker installed:		yes	(Yes/No)		10		
Knife Data:			blue		6.249	angle	33	
Counterknife data	a:			width (inches)	1.75	(degrees)	52	
Sliver Slot Cutter	s:		4/25/2012		1 085 325	Previous	1.074 194	
Upper Horizontal	Anvil:	Changed on:	7/10/2011	Tonnage:	352,726	Week's	341,525	
Boit on Wipers:			4/25/2012		1,085,325	Tonnage:	1.074.124	

Sustainability : Customer (Pulp Mill) Reports

(Sent weekly or generated in real-time inside Chip MACS)







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Demo Paper Company - Demo Pulp Mill

Pine Chips

Customer's Report - 10 Days Through : 12/30/2011

Supplier	Fines	Pins	Thins (2- 4mm)	Accepts (4- Beam)	Thick (8- 10mm)	Over Thick (>10mm)	Bark	MC	CQI	Fraction	Bark	Moisture
Target	< 0.5	<15	< 15	> 63	< 10	< 10	<1%	< 50 %	> 90	Samples	Samples	Samples
Purchased - 10 Days	2.6.%	4.8.%	19.7.%	54.5 %	9.2 %	9.2 %	0.9 %	53.5 %	84.6	49	49	11
Purchased - MTD	2.2.86	4.6.%	17.2 %	55.7 %	10.8 %	9.5 %	0.8 %	53.6 %	87.0	169	169	35
Purchased - 4 Weeks	2.2 %	4.6 %	17.1 %	55.7 %	10.8 %	9.6 %	0.8 %	53.5.55	87.0	159	159	33
Purchased - YTD	2.3 %	4.5.56	18.4 %	54.7 %	10.6.%	9.5 %	0.9 %	52,5 %	85.0	1849	1848	507
Purchased - 1 Year	2.3.%	4.5.56	18.4 %	54.7.%	10.6 %	9.5 %	0.9 %	52.5 %	85.0	1851	1850	508
Digester - 10 Days	1.1.%	2.6 %	15.3.96	56.2.%	12.3 %	12.6 %	1.0 %	51.6 %	89.2	20	20	9
Digester - MTD	1.2 %	3.3 %	17.0 %	56.9 %	11.2 %	10.5 %	1.0 %	52.3 %	90.3	56	56	26
Disester - 4 Weeks	1.2.%	3.3 %	16.8 %	56.7 %	11.3 %	10.6 %	1.0 %	52.3 %	90.2	52	52	24
Digester - YTD	1.2.%	3.1 %	16.1 %	56.0 %	12.1 %	11.5 %	0.8 %	51.7 %	89.1	585	585	277
Digester - 1 Year	1.2.%	3.1 %	16.1 %	\$6.0 %	12.3 %	11.5 %	0.8 %	51,7.%	89.1	585	585	277
Combined - 10 Days	2.6.%	4.8.%	19.7 %	54.5 %	9.2 %	9.2 %	0.9 %	53.5 %	84.6	49	49	11
Combined - MTD	2.2.%	4.6 %	17.2 %	55.7 %	10.8 %	9.5 %	0.8 %	53.6 %	87.0	169	169	35
Combined - 4 Weeks	2.2.%	4.6 %	17.1 %	55.7 %	10.8.%	9.6 %	0.8 %	53.5 %	87.0	159	1.59	33
Combined - YTD	2.3 %	4.5.%	18.4 %	54.7 %	10.6 %	9.5 %	0.9 %	52.5 %	85.0	1852	1851	509
Combined - 1 Year	2.3.56	4.5 %	18.4 %	54.7 %	10.6 %	9.5 %	0.9 %	52.5.%	85.0	1854	1853	510
Demo Supplier 98 - 10 Days	2.0.%	4.8 %	15.5 %	53.6 %	12.3 %	11.9 %	0.9 %	56.4.%	87.1	27	27	3
Demo Supplier 98 - MTD	1.9.%	43.56	14.7 %	55.8 %	12.6 %	10,7 %	0.8 %	55.0 %	\$8.7	120	120	19
Demo Supplier 98 - 4 Weeks	1.8 %	4.3.%	14.7 %	55.7 %	12.6 %	10.8 %	0.8 %	54.8 %	88.6	116	116	17
Demo Supplier 98 - YTD	1.6.%	3.7 %	13.6 %	55.5 %	14.0 %	11.5 %	0.7 %	52.9 %	87.4	855	854	222
Demo Supplier 98 - 1 Year	1.6 %	3.8 %.	13.7.%	55.5 %	14.0 %	11.5 %.	0.7 %	52.9 %	87.4	857	856	223

Sustainability : Manager Reports

(Sent weekly or generated in real-time inside Chip MACS)



Supplier	Fines	Pins	Thins (2- 4mm)	Accepts (4- Smm)	Thick (8- 10mm)	Over Thick (>10mm)	# Samples	CQI	Moisture	Bark	YTD Samples	YTD CQI
Target	<0.5	<15	<15	> 63	< 10	< 10	N/A.	> 90	< 50.%	<1%	N/A	N/A
Purchased	2.6 %	4.8 %	19:7 %	54.5 %	9.2 %	9.2 %	49	84.6	53.5 %	0.9 %	1849	85.0
Digester	1.1 %	2.6 %	15.3 %	56.2 %	12.1 %	12.6 %	20	89.2	51.6 %	1.0 %	585	89.I
Combined	2.6 %	4.8 %	19.7 55	54.5 %	9.2 %	9.2 %	49	84.6	53.5 %	0.9 %	1852	85.0
Thomas Complian 00	10.8	10.00	18 5 80	£4.0 ML	19 0 40	11.71.01	20	1 70	40.4.41	0.0.80	50.08	972

Sustainability : Manager Reports (Continued)

(Sent weekly or generated in real-time inside Chip MACS)

Page 2 of 4		Pine Chips											
		Manager's Report - 10 Days Through : 12/30/2011											
Supplier	Fines	Pins	Thins (2- 4mm)	Accepts (4- 8mm)	Thick (8- 10mm)	Over Thick (>10mm)	# Samples	CQI	Moisture	Bark	YTD Samples	YTD CQI	
Target	< 0.5	<1.5	< 15	> 63	< 10	< 10	NA	> 90	< 50 %	<1%	N/A	NA	
Demo Supplier 12	4.8 %	5.3 %	24.8.%	54.1 %	6.7 %	4.2.56	14	80.0	53.8 %	0.7.%	236	75.4	
Demo Supplier 15	1.1.%	2.6 %	15.3 %	56.2 %	12.1 %	12.6 %	20	89.2	51.6 %	1.0 %	587	89.1	
Demo Supplier 38	2.9 %	8.4 %	36.6 %	43.0 %	3.3 %	5.7%	2	67.0	51.5 %	0.9 %	7	73.0	
Demo Supplier 49	2.3 %	4.8 %	24.9 %	60.5 %	4.0 %	3.6 %	7	83.1	50.5 %	1.2 %	77	85.5	
Demo Supplier 62	0.1 %	5.4 %	24.8 %	23.5 78	4.5 %	0.8 %	1	79.8	32.9 %	0.3 %	162	84.1	
Demo Supplier 98	1946	16%	152.55	54.0 %	12.6 %	11.3%	33	89.7 87.4	52.8 % 56.5 %	0.8 %	1004	84.2 87.6	
Page 3 of 4			De	e <mark>mo Pap</mark> ager's Re	er Com	pany - I Weeks Tl	Demo Pul	lp Mill 2/30/20	11		P	ine Chips	
Supplier	Fines	Pins	Thins (2-	Accepts (4-	Thick (8-	Over Thick	# Samples	CQI	Moisture	Bark	YTD Samples	YTD CQI	
Target	<05	<15	< 15	> 63	< 10	< 10	N/A	> 90	< 50.9%	<1%	N/A	N/A	
Demo Supplier 11	1.2 %	5.5 %	19.3 %	60.0 %	7.0 %	6.9 %	2	88.9	48.9 %	0.8 %	2	88.9	
Demo Supplier 12	5.3 %	5.4 96	25.0 %	53.5 %	6.1 %	4.6.94	24	79.3	53.4 %	0.8 %	236	75.4	
Demo Supplier 15	1.2 %	3.3 %	16.8 %	56,7.%	11.3 %	10.6 %	52	90.2	52.3 %	1.0 %	587	89.1	
Demo Supplier 38	29%	8.4 %	36.6 %	43.0.%	3.3 %	5.7 %	2	67.0	51.5 %	0.9 %	7	73.0	
Demo Supplier 49	2.0 %	4.8 %	24.3 %	59.5 %	4.5.%	4.4 %	11	83.5	49.9 %	1.1 %	77	85.5	
Demo Supplier 62	4.5 %	6.0 %	22.0 %	53.7 %	6.7 %	7.2 %	4	82.6	52.4 %	0.7 %	162	84.1	
Demo Supplier bo	2.3 76	2.0 %	18.4 79	23.2 %	3.5.74	9.8.7%		80.9	32.0 76	1.1.76	181	84.2	
Demo Supplier 98	1.8 %	43%	14.6 %	55.8 %	12.7 %	10.7 %	129	88.7	55.1 %	0.8 %	1004	87.6	
Page 4 of 4			De Ma	emo Pape nager's R	er Com	pany - I Year Th	Demo Pul rough : 12	lp Mill /30/201	1		P	ine Chips	
kapplier	Fines	Pins	Thins (2-	Accepts (4-	Thick (8-	Over Thick			10.000	Bark	YTD Samples		
and the second			4mm)	Smm)	10mm)	(>10mm)	# Samples	CQI	Moisture	A.M.M.		YTD CQI	
arget	< 0.5	<15	4mm) < 15	8mm) > 63	10mm) < 10	(>10mm) < 10	# Samples N/A	> 90	< 50 %	<1%	N/A	YTD CQI N/A	
argel Jenio Supplier 9	< 0.5 0.8 %	<15 2.0 %	4mm) < 15 13.3 %	8mm) > 63 55.0 %	10mm) < 10 14.5 %	(>10mm) < 10 [4.5 %	# Samples N/A 71	CQI > 90 87.5	< 50 % 50.5 %	<1%	N/A 71	N/A 87.5	
arset Semo Supplier 9 Semo Supplier 11	<0.5 0.8 % 1.2 %	<15 20% 55%	4mm) < 15 13.3 % 19.3 %	8mm) > 63 55.0 % 60.0 %	10mm) < 10 14.5 % 7.0 %	(>10mm) < 10 (4.5 % 6.9 %	# Samples N/A 71 2	CQI > 90 87.5 88.9	< 50 % 50.5 % 48.9 %	<1% 0.8% 0.8%	NVA 71 2	N/A 87.5 88.9	
aneel Jenso Supplier 9 Jenso Supplier 11 Jenso Supplier 12	<05 0.8% 1.2% 5.1%	<15 20% 55% 57%	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 %	8mm) > 63 55.0 % 60.0 % 49.9 %	10mm) < 10 14.5 % 7.0 % 5.4 %	(>10mm) < 10 [4.5.% 6.9 % 5.4 %	# Samples N/A 71 2 236 557	CQI > 90 87.5 88.9 75.4 80.1	< 50 % 50.5 % 48.9 % 51.9 %	<1% 0.8% 0.8% 0.7%	NUA 71 2 236	N/A 87.5 88.9 75.4 89.1	
arneri Jenno Supplier 9 Jenno Supplier 11 Jenno Supplier 12 Jenno Supplier 15 Jenno Supplier 18	<0.5 0.8 % 1.2 % 5.1 % 1.1 %	<15 20% 55% 57% 30% 63%	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 % 23.3 %	8mm) > 63 55.0 % 60.0 % 49.9 % 56.0 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 %	(>10mm) < 10 (4.5% 6.9% 5.4% (1.5% 5.6%	# Samples N/A 71 2 236 587 39	CQI > 90 87.5 88.9 75.4 89.1 83.3	Mostart < 50 % 50.5 % 48.9 % 51.9 % 51.8 % \$1.7 %	<1% 0.8% 0.8% 0.7% 0.8%	N/A 71 2 236 587 39	N/A 87.5 88.9 75.4 89.1 83.3	
arget Jemo Supplier 9 Jemo Supplier 11 Jemo Supplier 12 Jemo Supplier 15 Jemo Supplier 18 Jemo Supplier 28	< 0.5 0.8 % 1.2 % 5.1 % 1.1 % 2.8 %	<15 20% 55% 57% 30% 63% 58%	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 %	8mm) > 63 55.0 % 60.0 % 49.9 % 56.0 % 56.5 % 56.5 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 %	(>10mm) <10 [4.5 % 6.9 % 5.4 % [1.5 % 5.6 % 7.1 %	# Samples N/A 71 2 236 587 39 57	CQI > 90 87.5 88.9 75.4 89.1 83.3 84.2	Mostiget < 50 % 50.5 % 48.9 % 51.9 % 51.8 % 53.7 % 63.3 %	<1% 0.8% 0.8% 0.7% 0.8% 1.8%	N/A 71 2 236 587 39 57	VID CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2	
arset tenso Supplier 9 tenso Supplier 11 tenso Supplier 12 tenso Supplier 18 tenso Supplier 18 tenso Supplier 28 tenso Supplier 28	< 0.5 0.8 % 1.2 % 5.1 % 1.1 % 2.8 % 2.4 % 2.9 %	<15 20% 55% 57% 30% 63% 58% 58%	4mm) × 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 %	8mm) > 63 55.0 % 60.0 % 49.9 % 56.0 % 56.5 % 56.4 % 53.0 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 %	(>10mm) < 10 [4.5 % 6.9 % 5.4 % 11.5 % 5.6 % 7.1 % 9.3 %	# Samples N/A 71 2 236 587 39 57 53	CQ8 = 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5	Mostlier 50.5 % 50.5 % 48.9 % 51.9 % 51.8 % 53.7 % 53.3 % 53.3 % 53.3 %	<1% 0.8% 0.8% 0.7% 0.8% 1.8% 1.2% 1.6%	NUA 71 2 236 587 39 57 53	VID CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5	
anget kenso Sapplier 9 benso Sapplier 11 benso Sapplier 12 benso Sapplier 18 benso Sapplier 18 benso Sapplier 38 benso Sapplier 38 benso Sapplier 38	<pre>< 0.5 0.8 % 1.2 % 5.1 % 1.1 % 2.8 % 2.4 % 2.9 % 2.7 %</pre>	< 1.5 2.0 % 5.5 % 5.7 % 3.0 % 6.3 % 5.8 % 5.9 % 7.6 %	4mm) × 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 19.1 %	8mm) > 63 55.0 % 60.0 % 49.9 % 56.0 % 56.5 % 56.4 % 53.9 % 47.2 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.5 % 5.1 %	(>10mm) < 10 14.5 % 6.9 % 5.4 % 11.5 % 5.6 % 7.1 % 9.3 % 5.9 %	# Samples N/A 71 2 236 587 39 57 57 53 7	CQ6 > 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0	Mostlier 50.5 % 50.5 % 48.9 % 51.8 % 51.8 % 53.7 % 53.3 % 53.3 % 51.3 %	<1% 0.8% 0.8% 0.7% 0.8% 1.8% 1.2% 1.5% 1.4%	NUA 71 2 236 587 39 57 53 7	VID CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0	
arget enno Sapplier 9 enno Sapplier 11 enno Sapplier 12 enno Sapplier 18 enno Sapplier 18 enno Sapplier 28 enno Sapplier 38 enno Sapplier 43	< 0.5 0.8 % 1.2 % 5.1 % 2.8 % 2.4 % 2.9 % 2.7 % 2.1 %	<15 20% 55% 57% 63% 63% 58% 58% 76% 48%	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 19.1 % 31.5 % 20.5 %	Smm) > 63 55.0 % 60.0 % 49.9 % 56.0 % 56.5 % 56.4 % 53.9 % 47.2 % 57.8 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 % 5.1 % 7.4 %	(>10mm) < 10 [4.5.% 6.9.% 5.4.% 11.5.% 5.6.% 7.1.% 9.3.% 5.9.% 7.4.%	# Samples NUA 71 2 236 587 39 57 53 7 97	CQ8 > 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2	Mostlier 50.5 % 50.5 % 51.9 % 51.8 % 53.3 % 53.3 % 53.3 % 51.3 % 52.8 %	<1% 0.8% 0.8% 0.7% 0.8% 1.8% 1.6% 1.6% 1.4% 1.1%	NUA 71 2 236 587 39 57 53 7 97	YTD CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2	
arget enno Sapplier 9 enno Sapplier 12 enno Sapplier 15 enno Sapplier 18 enno Sapplier 18 enno Sapplier 28 enno Sapplier 38 enno Sapplier 43 enno Sapplier 49	< 0.5 0.8 % 1.2 % 5.1 % 1.1 % 2.8 % 2.4 % 2.9 % 2.7 % 2.1 % 2.1 %	x 15 20 % 5.5 % 5.7 % 3.0 % 6.3 % 5.8 % 5.9 % 76 % 4.8 % 5.2 %	4mit) < 15 13.3 % 19.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 31.5 % 20.5 % 21.8 %	Security > 63 55:0 % 60:0 % 49:9 % 56:5 % 56:5 % 56:4 % 53:9 % 47:2 % 57:8 % 57:8 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 % 5.1 % 7.4 % 6.5 %	(>10mm) < 10 [4.5.% 6.9.% 5.6.% 7.1.% 9.3.% 5.9.% 7.4.% 6.5.%	# Samples N/A 71 2 236 587 39 57 53 7 53 7 97 77	CQ8 > 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5	Mostlere 50.5 % 51.9 % 51.8 % 53.3 % 53.3 % 51.3 % 51.3 % 52.8 % 52.7 %	13% 0.8 % 0.8 % 0.8 % 0.8 % 1.8 % 1.2 % 1.6 % 1.4 % 1.2 %	N/A 71 2 236 587 39 57 53 7 53 7 97 77	YTD CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5	
annet Henno Sapplier 9 Henno Sapplier 11 Henno Sapplier 12 Henno Sapplier 15 Henno Sapplier 18 Henno Sapplier 34 Henno Sapplier 34 Henno Sapplier 43 Henno Sapplier 49 Henno Sapplier 52	<pre>< 0.5 0.8 % 1.2 % 5.1 % 2.4 % 2.9 % 2.7 % 2.7 % 2.7 % 2.2 % 0.4 %</pre>	< 15 2.0 % 5.5 % 5.7 % 5.0 % 6.3 % 5.8 % 7.6 % 4.8 % 5.8 %	4mm) < 15 13.3 % 19.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 31.5 % 20.5 % 21.8 % 42.7 %	8mm) > 63 55,0 % 60,0 % 49,9 % 56,0 % 56,6 % 56,4 % 53,9 % 47,2 % 57,7 % 45,7 %	10mm) < 10 14.5 % 7.0 % 5.4 % 6.4 % 7.3 % 8.9 % 5.1 % 7.4 % 6.5 % 2.5 %	(>10mm) < 10 [4.5% 6.9% 5.4% 11.5% 5.6% 9.3% 5.9% 7.4% 6.5% 2.9%	# Samples N/A 71 2 236 587 39 57 53 7 97 77 1	CQ8 > 90 87.5 88.9 75.4 80.1 83.3 84.2 85.5 73.0 87.2 85.5 66.1	Moosture < 50 % 50.5 % 51.9 % 51.8 % 53.3 % 53.3 % 51.3 % 51.3 % 52.7 % 51.4 %	1 % 3 % 0.8 % 0.8 % 0.8 % 1.8 % 1.2 % 1.6 % 1.4 % 1.1 % 1.1 % 1.1 %	N/A 71 2 236 587 39 57 53 7 97 77 77 1	YID CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5 66.1	
araet teno Sapplier 9 teno Sapplier 11 teno Sapplier 12 teno Sapplier 15 teno Sapplier 18 teno Sapplier 28 teno Sapplier 34 teno Sapplier 43 teno Sapplier 43 teno Sapplier 42 teno Sapplier 52	<pre>< 0.5 0.8 % 1.2 % 5.1 % 2.4 % 2.9 % 2.7 % 2.7 % 2.2 % 0.4 % 3.2 %</pre>	< 15 2.0.% 5.5.% 5.7.% 5.0.% 6.3.% 5.8.% 5.8.% 5.8.% 5.8.% 5.8.% 4.8.%	4mit) < 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 31.5 % 20.5 % 21.8 % 42.7 % 22.7 %	8 mmi) > 63 55,0.9% 60.0.% 49,9.% 56,0.% 56,4.% 57,8.% 57,8.% 57,8.% 57,7.% 55,2.%	10mm) <10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 % 5.1 % 7.4 % 6.5 % 6.5 % 6.8 %	(>10mm) < 10 [4.5 % 6.9 % 5.4 % 11.5 % 5.6 % 7.1 % 9.3 % 7.4 % 6.5 % 2.9 % 7.2 %	# Samples NUA 71 2 236 587 39 57 53 57 53 57 57 57 57 77 77 1 1 162	CQ8 > 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5 66.1 84.1	Moostare < 50.5 % 50.5 % 48.9 % 51.9 % 51.8 % 53.3 % 53.3 % 53.3 % 51.3 % 52.8 % 52.6 % 	1 % 0.8 % 0.8 % 0.8 % 0.8 % 1.2 % 1.6 % 1.4 % 1.1 % 1.2 % 1.1 % 1.2 % 1.1 % 0.7 %	N/A 71 2 236 597 39 57 53 7 97 77 1 1 62	YTD CQI N/A 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5 66.1 84.1	
annet Benno Sapplier 9 benno Sapplier 11 benno Sapplier 12 benno Sapplier 15 benno Sapplier 18 benno Sapplier 34 benno Sapplier 34 benno Sapplier 43 benno Sapplier 49 benno Sapplier 49 benno Sapplier 66	< 0.5 0.8 % 1.2 % 5.1 % 2.8 % 2.4 % 2.9 % 2.7 % 2.1 % 2.2 % 0.4 % 3.2 % 3.2 %	×15 2.0% 5.5% 5.7% 6.3% 5.8% 5.8% 5.8% 5.8% 5.8% 5.2% 5.8% 5.2% 5.8% 5.2% 5.8% 5.2%	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 19.1 % 20.5 % 21.8 % 42.7 % 22.7 % 20.6 %	Semit) > 63 55.0 % 60.0 % 49.9 % 56.0 % 56.6 % 56.4 % 53.9 % 47.2 % 57.7 % 45.7 % 55.7 % 55.2 % 52.3 %	10mm) < 10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 % 5.1 % 5.5 % 2.5 % 2.5 % 6.8 % 9.2 %	(>10mm) < 10 [4,5 % 6,9 % 5,4 % 11,5 % 5,6 % 7,1 % 9,3 % 5,9 % 5,9 % 2,9 % 2,9 % 2,9 % 10,0 %	# Samples NVA 71 2 236 587 39 57 53 7 53 7 97 97 77 1 1 162 181	CQ8 > 90 87.5 88.9 75.4 89.1 83.3 84.2 85.5 73.0 87.2 85.5 66.1 84.1 84.2	Moostare < 50 % 50 % 48.9 % 51.9 % 51.8 % 53.7 % 53.3 % 51.3 % 51.3 % 52.7 % 51.4 % 50.6 % 52.2 % 	1 3% 0.8 % 0.8 % 0.8 % 0.8 % 0.8 % 1.2 % 1.6 % 1.4 % 1.2 % 1.1 % 1.2 % 1.1 % 1.2 % 1.1 % 1.2 % 1.1 % 1.2 % 1.4 %	N/A 71 2 236 587 39 57 53 7 97 77 1 162 181	YTD CQI N/A 87,5 88,9 75,4 89,1 83,3 84,2 85,5 73,0 87,2 85,5 66,1 84,1 84,2	
Target Target Denno Sapplier 9 Denno Sapplier 11 Denno Sapplier 12 Denno Sapplier 18 Denno Sapplier 18 Denno Sapplier 18 Denno Sapplier 34 Denno Sapplier 49 Denno Sapplier 49 Denno Sapplier 52 Denno Sapplier 66 Denno Sapplier 72	< 0.5 0.8 % 1.2 % 5.1 % 1.1 % 2.8 % 2.4 % 2.9 % 2.7 % 2.7 % 2.7 % 2.7 % 2.7 % 2.7 % 2.7 % 2.7 % 2.5 % 2.0 %	15 2.0 % 5.5 % 5.7 % 6.3 % 5.8 % 7.6 % 4.8 % 5.8 % 5.8 % 6.8 %	4mm) < 15 13.3 % 19.3 % 28.4 % 16.1 % 22.3 % 21.1 % 21.5 % 20.5 % 42.7 % 22.7 % 22.6 % 20.6 %	8 cmm) > 63 55.0 % 60.0 % 56.0 % 56.6 % 56.4 % 53.9 % 57.7 % 45.7 % 55.2 % 45.7 % 55.2 % 51.9 %	10mm) <10 14.5 % 7.0 % 5.4 % 12.1 % 6.4 % 7.3 % 8.9 % 5.1 % 7.4 % 6.5 % 2.5 % 6.8 % 9.2 % 6.7 %	(>10mm) < 10 14.5% 6.9% 5.4% 7.1% 9.3% 5.5% 7.4% 6.5% 2.9% 7.2% 10.0% 6.3% 2.9% 7.2% 10.0% 6.3% 1.5% 10.0% 1	# Samples N/A 71 2 2366 587 39 57 53 7 7 97 77 1 1 862 181 62	CQI > 90 87.5 88.9 75.4 80.1 83.3 84.2 85.5 66.1 84.1 84.2 79.5	Moostare < 50 %	1.1% 0.8 % 0.8 % 0.8 % 0.8 % 1.2 % 1.6 % 1.4 % 1.1 % 1.2 % 1.1 % 1.2 % 1.1 % 1.2 % 1.1 % 1.2 %	N/A 71 2 236 587 39 57 53 7 97 7 97 77 1 162 181 62	YTD CQ1 N/A 87,5 88,9 75,4 89,1 83,3 84,2 85,5 73,0 87,2 85,5 66,1 84,1 84,1 84,2 79,5	

Sustainability : Supplier Reports

(Sent weekly or generated in real-time inside Chip MACS)

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Demo Paper Company - Demo Pulp Mill (Demo Supplier 98)

Pine Chips

CQI Rank : #2 of 6

Supplier Report as of : 12/30/2011



Dear Supplier,

Attached you will find your chip quality report for the previous week. We appreciate your immediate attention to any chip quality problems. With your help we can maintain and improve our global market presence and be a stable chip market for you. We appreciate your continued efforts in our focus to provide our customers with a high quality fiber resource for their production requirements. As always, if you have any questions please do not hesitate to call your Demo Paper Company contact.

Your Demo Pulp Mill Contact(s) :

CQI = 100 - Fines - Pins - (Excess of Thins (2-4mm) above 15) - (Excess of Thick (8-10mm) + Over Thick (>10mm) above 20)

Data Disclaimer:

This Report is based upon information supplied by your organization to Chip MACS TM and is presumed correct. Please report any and all data discrepancies immediately so that actions may be taken to correct them. While Chip MACS TM and its employees make every effort to provide accurate data, no representation is made by us as to the fitness for use or correctness of the data provided. Please exercise proper care in the interpretation of this data. This information is considered Proprietary and Confidential to the organization providing the data. As such, you should be extremely careful to provide it only to authorized parties with the permission of your organization. This information is provided from a copyrighted program of Chip MACS TM. Any unauthorized use or reproduction of the information provided by this program is expressly prohibited under the laws of the United States and other countries.

Sustainability : Supplier Reports (Continued)

(Sent weekly or generated in real-time inside Chip MACS)



Sustainability : Supplier Reports (Continued)

(Sent weekly or generated in real-time inside Chip MACS)

Page 3 of 3			Demo Pa	per Compa (Demo Su	ny - Demo pplier 98)	Pulp Mill			Pine Chip
			Su	pplier Report :	as of : 12/30	/2011			
	Fines	Pins	Thins (2- 4mm)	Accepts (4- 8mm)	Thick (8- 10mm)	Over Thick (>10mm)	CQI	Moisture	Bark
Target	< 0.5	< 1.5	< 15	> 63	< 10	< 10	> 90	< 50 %	<1%
YTD Avg	1.63 %	3.75 %	13.63 %	55.47 %	14.05 %	11.47 %	87.41	52.92 %	0.74 %
10 Day Avg	1.97 %	4.76 %	15.51 %	53.58 %	12.30 %	11.88 %	\$7.07	56.40 %	0.85 %
			Sampl	les (10 Day Pe	riod) - 27 Sa	ample(s)			
Date	Fines	Pins	Thins (2- 4mm)	Accepts (4- 8mm)	Thick (8- 10mm)	Over Thick (>10mm)	CQI	Moisture	Bark
12/20/11 12:00	1.41 %	3.92 %	12.99 %	51.14 %	11.96 %	18.58 %	84.13	0.00 %	0.66 %
12/29/11 13:00	1.90 %	5.26 %	16.01 %	53.44 %	12.17 %	11.22 %	88.44	0.00 %	0.46 %
12/20/11 14:00	1.77 %	5.44 %	17.72 %	58.14 %	10.77 %	6.16 %	90.07	0.00 %	0.62 %
12/20/11 15:00	1.85 %	4.68 %	14.37 %	56.52 %	15.35 %	7.22 %	90.89	0.00 %	0.77 %
12/20/11 16:00	1.83 %	4.99 %	17.08 %	56.35 %	10.52 %	9.23 %	91.10	0.00 %	1.14 %
12/20/11 17:00	1.08 %	2.55 %	14.13 %	53.75 %	16.84 %	11.65 %	87.88	0.00 %	1.20 %
12/20/11 18:00	1.55 %	3.68 %	14.44 %	57.58 %	12.51 %	10.24 %	92.02	0.00 %	1.48 %
12/20/11 19:00	2.35 %	3.11 %	11.74 %	53.23 %	18.92 %	10.65 %	84.97	0.00 %	1.27 %
12/20/11 20:00	1.85 %	4.24 %	18.35 %	56.31 %	11.75 %	7.51 %	90.56	0.00 %	0.78 %
12/21/11 10:00	2.78 %	5.75 %	15.63 %	48.31 %	14.64 %	12.89 %	\$3.31	0.00 %	1.55 %
12/21/11 16:00	2.25 %	5.01 %	13.81 %	48.84 %	9.27 %	20.82 %	82.65	0.00 %	0.78 %
12/21/11 17:00	1.14 %	3.33 %	12.30 %	56.72 %	10.62 %	15.89 %	89.02	0.00 %	0.75 %
12/21/11 21:00	2.32 %	6.40 %	15.41 %	52.29 %	12.34 %	11.23 %	87.29	0.00 %	0.30 %
12/22/11 08:00	1.49 %	3.62 %	14.43 %	55.23 %	12.85 %	12.38 %	89.65	0.00 %	1.16 %
12/22/11 16:00	2.64 %	4.84 %	15.75 %	54.76 %	10.04 %	11.98 %	89.76	0.00 %	0.65 %
12/22/11 19:00	2.87 %	3.61 %	16.94 %	59.79 %	9.20 %	7.59 %	91.58	0.00 %	0.80 %
12/27/11 07:00	1.96 %	5.76 %	17.28 %	47.35 %	7.94 %	19.71 %	82.35	57.40 %	1.10 %
12/27/11 11:00	2.40 %	6.63 %	19.41 %	53.60 %	9.55 %	8.42 %	86.57	0.00 %	0.96 %
12/27/11 11:01	1.80 %	6.36 %	17.93 %	51.54 %	12.72 %	9.65 %	86.54	0.00 %	0.77 %
12/28/11 08:00	2.77 %	7.26 %	17.14 %	45.29 %	10.12 %	17.42 %	80.29	56.00 %	0.70 %
12/28/11 10:30	2.18 %	6.52 %	16.65 %	48.32 %	9.94 %	16.39 %	83.32	0.00 %	0.98 %
12/28/11 14:00	1.15 %	2.70 %	10.81 %	52.22 %	18.15 %	14.96 %	\$3.04	0.00 %	0.44 %
12/28/11 17:00	1.98 %	4.75 %	14.02 %	39.25 %	20.00 %	20.00 %	73.27	0.00 %	0.81 %
12/29/11 07:00	2.75 %	5.16 %	15.42 %	51.94 %	13.41 %	11.32 %	86.94	55.80 %	0.79 %
12/29/11 10:00	1.57 %	4.77 %	17.50 %	65.28 %	5.97 %	4.91 %	91.16	0.00 %	0.45 %
12/29/11 14 10	2.00 %	4.97 %	17.57 %	59.70 %	10.84 %	4.90 %	90.45	0.00 %	0.61 %
12/29/11 20:00	1.45 %	3.26 %	14.02 %	59.75 %	13.70 %	7.82 %	93.77	0.00 %	1.00 %

Sustainability : Quality Alerts

4/5/06

Company



********* Quality Alert *********

Page 1 of 3

Dear Supplier,

Attached you will find a specific chip quality recommendation for a recent chip quality issue at your facility. We appreciate your immediate attention to any chip quality problems. With your help our pulpmill can maintain and improve our global market presence and be a stable chip market for you.

We appreciate your continued efforts in our focus to provide our customers with a high quality fiber resource for their production requirements. As always, if you have any questions please do not hesitate to call your Forest Resources contact.

Forest Resources

Other contact person(s)

Data Disclaimer:

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Sustainability : Quality Alerts (Continued)





Observed Chip Quality Issues

- Thin chips
- Excessive pins and thins
- Broken chips
- Feathered or compression damaged ends
- · Chip length and thickness not to specification (less than 6mm, less than 15/16")

Due to the recent chip quality data changes observed in TVCD =, we recommend that the following action be taken immediately:

Sustainability : Quality Alerts (Continued)

Ref. Chipper Knives and Chippers (Symmer, setting)

- Insure you have the most aggressive knife angle possible that still gives you the required knife life (running time)
 - o 29-1/2 degrees
- 2 Clamp mounted knives
 - Increase from Summer settings?) knife width 0.100 to 0.150...this will increase the "D" dimension 0.050 to 0.75 (see diagram below)
 - Reset horizontal and vertical anvil
 - Check to see if there are any gaps or holes in the spout (before horizontal anvi) to chipper disc interface which would allow for oversized chips to pass.



- Insure feedplate and wall behind feedplate are not worn
- If you have a top discharge chipper you should already be running the raininum # of fans/paddles that you need to get the chips to the chip cyclon e and screen
- Remember only remove enough cardbreakers, or fans/paddles so you keep the disk in balance
- 3. Repair all obstructions in chip path

Ref. Cantors (Summer setting) 1,... the following recommendation should be followed after testing of the machine center (Cantors) and the problem is found here

- Insure you have the most aggressive knife angle possible that still gives you the required knife life (running time)
- Consider slowing down the cantor heads approximately 10% or speeding up infled speed to offset the current chip distribution
- 3. Repair all obstructions in chip path



3

Sustainability : Safety Alerts



Chip MACSTM

Measure, Analyze, Corrective Action, Sustainability

Safety Alert

Event

One of._____ Woodyard chippers was damaged recently when a segment separated from the disc while chipping.

Observation

This event has occurred at other facilities in the past and a review of the chipper disc after the incident indicates that at least 2 of the 4 bolts that hold the segments on the disc had been broken or cracked for awhile.

Possible Causes;

- Over torqueing (max torque for a Carthage is 120 ft-lbs, check your user manual for exact specifications) of clamp bolts rolls front of segment causing the knives to "pack"
 - o The operators typically then will loosen the segments to remove the knife
 - Since the segment study are pre-stressed material the above action can weaken the study and they are suspect to failure
- · Additionally studs will be found to have broken periodically
 - o The segment should be removed
 - And all studs should be replaced and the segment reinstalled
- · Additionally it has been found that the disc pocket wear liners have not been installed correctly
 - The liner is installed too far forward (towards the knife) causing the knife clamp not to retract fully
 - This causes the knives to remove extremely hard or not at all...and operators typically loosen the segments to remove the knives



Notes Disc/Part Preparation 1. Use air grinder w/T twisted wire brush to clean disc and all parts 2. Spray "Brake Clean" and WD 40 to remove stain and othe bruidup 3. "Draw file" disc and all parts and mating surfaces with 8" smooth cut mill bastard file 4. Insure there are "NO" high spots on any mating surfaces

Sustainability : Safety Alerts (Continued)



Pocket Liner

Pocket Liner Interference



Action

Chippers should be regularly inspected for broken or missing studs/bolts. Appropriate repairs or replacements should be made before the chipper is returned to service the <u>first time</u> deficiencies are found. Spare parts inventory should be adequate to insure timely repairs and safe operations.

Best Practic

Have (1 or 2) spare segments at chipper for replacement with new studs already in them to minimize downtime when any of the above occurs