Scenario 3

Electrical Power Production & Recycled Thermal Energy

Microwave Pyrolysis-Mass Balance

At 8% MC Wet Basis

Mass Balance	Lbs/hr	MC
Chips @ Drier Infeed	21,645	30%
Water (Evaporated at Drier)	5,175	
Chips @ Drier Outfeed	16,469.6	8%
Water (Post Drier)	1,317.6	
Chips @ Bone Dry	15,152.0	

			Percent of Total Dry Solids Weight	Percent of Post Dryer Water
Char (Bone Dry Char Fraction)	5,606.2		37.0%	
Char @ 3%MC_wb	5,779.6	3%		
Char (Water Fraction)	173.4			**13.2%**
Tar			0.0%	
Vinegar (Non Water Fraction)	0.0		0.0%	
Vinegar (Total)	-			
Vinegar (Water Fraction)	0.0			**0.0%**
Dry Gas	9,545.8		63.0%	
Gas (To Be Combusted)	10,689.9	11%		
Gas (Water)	1,144.2			**86.8%**

Thermal Pyrolysis-Mass Balance

At 20% MC Wet Basis

Mass Balance	Lbs/hr	MC
Chips @ Drier Infeed	19,696.0	30%
Water (Evaporated at Drier)	756.0	
Chips @ Drier Outfeed	18,940.0	20%
Water (Post Drier)	3,788.0	
Chips @ BD	15,152.0	

			Percent of Total Dry Solids Weight	Percent of Post Dryer Water
Char (Bone Dry Char Fraction)	5,454.7		36.0%	
Char @ 6%MC_wb	5,802.9	6%		
Char (Water Fraction)	348.2			**9.2%**
Tar			0.0%	
Vinegar (Non Water Fraction)	-		0.0%	
Vinegar (Total)	-			
Vinegar (Water Fraction)	-			**0.0%**
Dry Gas	9,697.3		64.0%	
Gas (To Be Combusted)	13,137.1	26%		
Gas (Water)	3,439.8			**90.8%**

Microwave Pyrolysis-Energy Content

At 8% MC Wet Basis

Energy Content	Lbs/hr	Btu/lb	MMBtu/hr
Chips @ Bone Dry	15,152.0	8,140	123.34
Char (Bone Dry Char Fraction)	5,606.2	12,000	67.27
Condensation Losses	173.4	1,500	**0.26**
Vinegar + Tar (Non Water Fraction)	0.0	6,400	0.00
Condensation Losses	0.0	1,500	**0.00**
Gas (Total Energy Content)	9,545.8	5,850	55.84
Ambient Losses (% of Total)	4%		**4.93**
			123.38

Thermal Pyrolysis-Energy Content

At 20% MC Wet Basis

Energy Content	Lbs/hr	Btu/lb	MMBtu/hr
Chips @ BD	15,152.0	8,140	123.34
Char (Bone Dry Char Fraction)	5,454.7	12,000	65.46
Condensation Losses	348.2	1,500	**0.52**
Vinegar + Tar (Non Water Fraction)	0.0	6,400	0.00
Condensation Losses	0.0	1,500	**0.00**
Gas (Total Energy Content)	9,697.3	5,925	57.46
Ambient Losses	6%		**7.40**
			123.44

Microwave Pyrolysis-Energy Balance

At 8% MC Wet Basis

Energy Source	**Energy Flow (MMBtu/hr)**
Natural Gas (Total)	-
To Drier	-
To Pyrolysis	-
Pyrolysis Volatiles (Total)	61
To Drier	-
To Pyrolysis	-
To Therm. Oil/ ORC	34
Excess Heat	27

Thermal Pyrolysis-Energy Balance

At 20% MC Wet Basis

Energy Source	**Energy Flow (MMBtu/hr)**
Natural Gas (Total)	-
To Drier	-
To Pyrolysis	-
Pyrolysis Volatiles (Total)	65
To Drier	-
To Pyrolysis	19
To Therm. Oil/ ORC	34
Excess Heat	12