

Assumption Test Evaluation with OilPure to Minimize Oil Contamination for Rolling Oil in Z-Mill.

SAMPLE LOCATION	A	B	C	D	E	F	G	H
Contamination Weight in Milligram per Liter	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)

DATE	01 DEC '90							
	02 DEC '90							
	03 DEC '90	200	800	200	60	60	40	80
	04 DEC '90	320	962	1711	2648	90	110	110
	05 DEC '90							
ASSUMPTION 1	06 DEC '90	2217	1600	1263	140	800	271	80
	07 DEC '90	1973	1473	1428	1225	60	60	30
	08 DEC '90	1042	965	2021	1244	1920	637	100
	09 DEC '90							
	10 DEC '90							
	11 DEC '90	1307	1000	1892	683	2051	1217	200

	12 DEC '90	290	1572	1057	1681	1681	1422	70
	13 DEC '90	1333	70	1090	60	1293	1340	140
	14 DEC '90	70	60	2000	1524	140	1613	130
ASSUMPTION 2	15 DEC '90							
	16 DEC '90							
	17 DEC '90	270	30	1288	150	30	40	40
	18 DEC '90	1333	2057	1666	2218	90	1400	60
	19 DEC '90	974	250	130	1952	1454	1133	825

	20 DEC '90							
	21 DEC '90							
	22 DEC '90							
	23 DEC '90							
	24 DEC '90							
	25 DEC '90							
ASSUMPTION 3	26 DEC '90	40	30	40	20	40	30	60
	27 DEC '90	50	110	40	60	40	20	190
	28 DEC '90	0	0			30	20	20
	29 DEC '90							
	30 DEC '90							
	31 DEC '90							
	01 JAN '91							
	02 JAN '91	0	30	20	10	20	20	40
	03 JAN '91	20	12	20	41	34	31	55

Three Test Assumptions were made in order to evaluate the best OilPure machines location that gets the least amount of contamination in the rolling oil. The maximum requirement of contamination is 40 mg /liter. Assumption 3 proved to be the best solution to bring total oil contamination down to the minimal. The oil contamination uses Gravemetric Method that measures solid particulate less than 0.8 micron on the test paper. The amount of solid particulate is scaled in one liter of oil passing through this 0.8 micron test paper.

BRUSH WELLMAN INC.
 P.O. Box 973
 READING, PA 19603
 (610) 562-2211

JOB R81 MILL OIL FILTRATION
 SHEET NO. _____ OF _____
 CALCULATED BY _____ DATE 5-31-96
 CHECKED BY _____ DATE _____
 SCALE _____

Vichai,

Attached is information that I have gathered concerning the replacement of the R81 4 HIGH Mill D.E. Powder oil filtration

Please review the cost summary info and see if any additional items come to mind.

Thank You

Frank Delesare

TO:

Oilpure Technologies Inc
 FAX 816-241-0067

(5) pages total being Faxed

Operating Costs EXISTING

① Annual Filter Cleaning - DE Filter

Burkhardt Mechanical - Clean Filter => \$ 5,600
 Flex tubes @ 8²⁰ each x 20 tubes => 164
 Other materials => 500
 Clean dirty tubes 1 man x 8 hr/day x 2 day x \$50/hr => 800
 ① TOTAL => \$7,064

② System Maintenance throughout year

Replacement Valve Cost 31 x \$50 ea => \$1,500
 Replace air operated valves (Burk) => 1,950
 Valve repair (Burk) => 750
 Clean out sludge side tank
 12 times x 2 men x 8 hours x \$35/hr (Production) => 6,720
 Repair pump (maintenance) => 500
 ② TOTAL => \$11,420

③ Operating cost throughout year

- Material Cost

Guardian Cartridge Filter @ \$12 ea
 15 filter/mo x 12 mo x \$12/filter => \$ 2,160
 DE Powder \$50/50# bag
 3 bag/mo x 12 mo x 50# / bag => 1800
 Material TOTAL => \$ 3,960

- Labor Cost

① Dump dirty filter 1 hr x \$35/hr x 12 times/yr => \$ 420
 ② Add DE Powder & precoat 1 hr x \$35/hr x 12 times/yr => 420
 ③ Change Cartridge filter 1 hr x \$35/hr x 12 times/yr => 420
 Labor TOTAL => \$ 1,260
 ③ TOTAL => \$5,220

④ Equipment downtime seen.

Annual cleaning - 4 dump x 24 hr/day => 96 HR
 System Maintenance yearly 8 dump x 8 hr/day => 64 HR
 B-ABC Operating Cost 3 hrs/event x 12 event/Yr => 36 HR

TOTAL DT HR/YEAR => 196 HR

BRUSH WELLMAN INC.

P.O. Box 973
READING, PA 19603
(610) 562-2211JOB R81 Oil Filter 137
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE 5-13-96
CHECKED BY _____ DATE _____
SCALE _____ pg 2

OPERATING COST - NEW

① Annual Filter cleaning
NONE REQUIRED① TOTAL => Φ

② Yearly maintenance

Repair MB-150
Other parts\$1,000
100② TOTAL => $\$1,100$

③ Operating cost throughout year

- Material Cost

MB-150 Prepacks @ \$350 ea

- 3 Prepacks / mo x 12 mo / yr x \$350 / prepack => \$12,600

Guardian Filters @ \$12 each

30 filter / yr x \$12 / filter (one change) =>

360

Bag filter @ \$23 ea

24 filter / change x 12 change / yr x \$23 / filter =>

6,624

Material TOTAL => \$19,584

- Labor Cost

Change MB-150 filters - 4 man-hr / change x 12 change / yr x \$50 / man-hr => \$2,400

Change Guardian filters - 2 man-hr / change x 1 change / yr x \$35 / man-hr => 70

Change bag filter - 2 man-hr / change x 12 change / yr x \$35 / man-hr => 840

Labor TOTAL \$3,310

④ Equipment Downtime seen

NONE required

③ TOTAL => $\$22,894$ => Φ

PBI OIL FILTER 137

5/31/96

Pg 4

DISPOSAL COSTS

	<u>PER DRUM</u>
Drum	\$ 14
LINER	4
LABOR, 1 min. hr x \$ 35 / min hr	35
Disposal rate	120
Transport cost	30
Paper work (estimate)	10
	<u><u>\$ 213.00</u></u>
TOTAL Drum disposal cost	

Without downtime Cost Contribution

$$\text{Payback } \textcircled{1} = \frac{\$ 58,000}{\$ 40,816 - \$ 25,272} = \frac{58,000}{15,544} = 3.73 \text{ years}$$

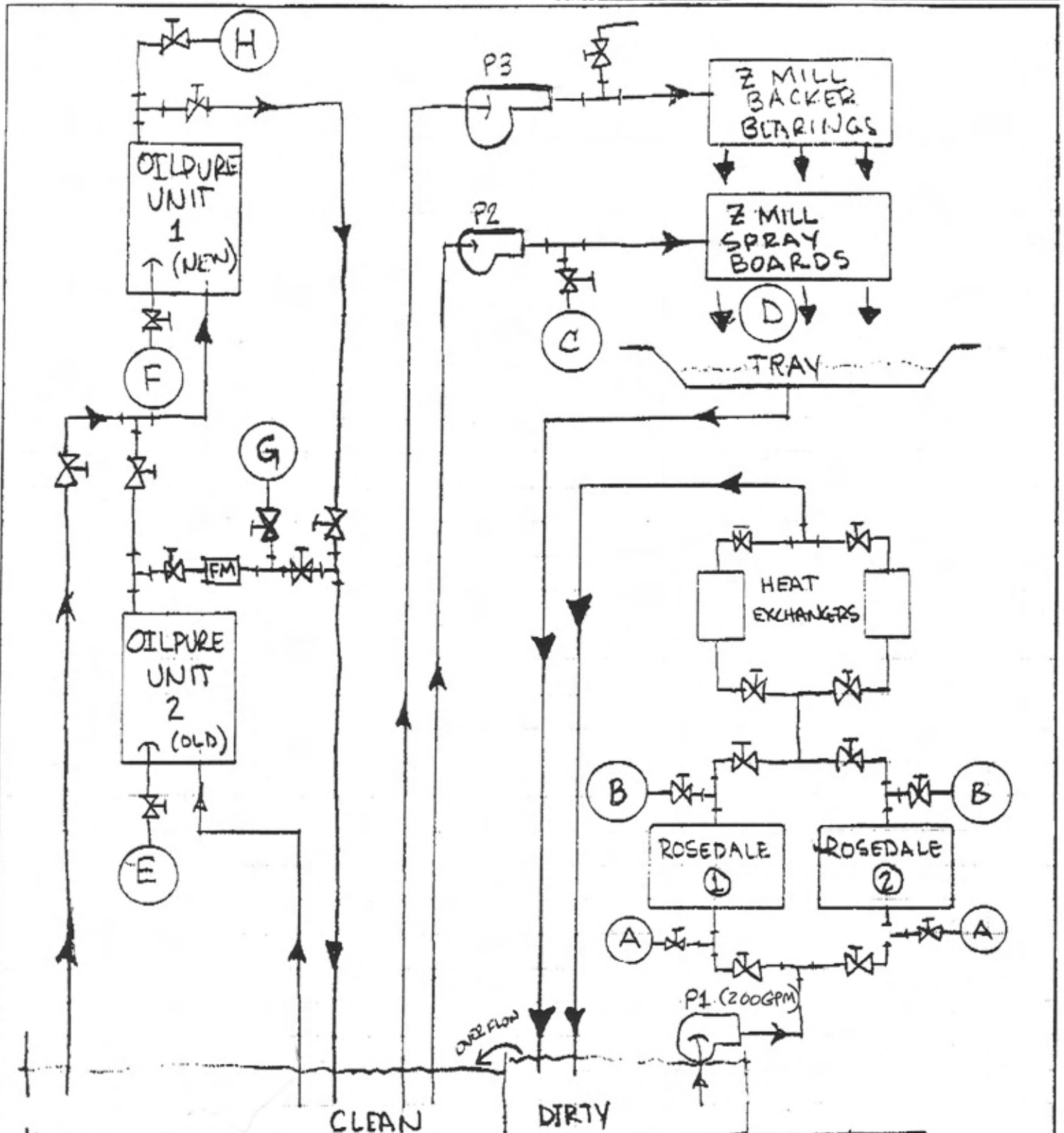
$$\text{Payback } \textcircled{2} = \frac{\$ 79,000}{\$ 15,544} = 5.08 \text{ years.}$$

$$\frac{\text{Sales}}{24 \times 365} \times \text{downtime (hr)} = \text{Saving}$$

BRUSH WELLMAN INC.

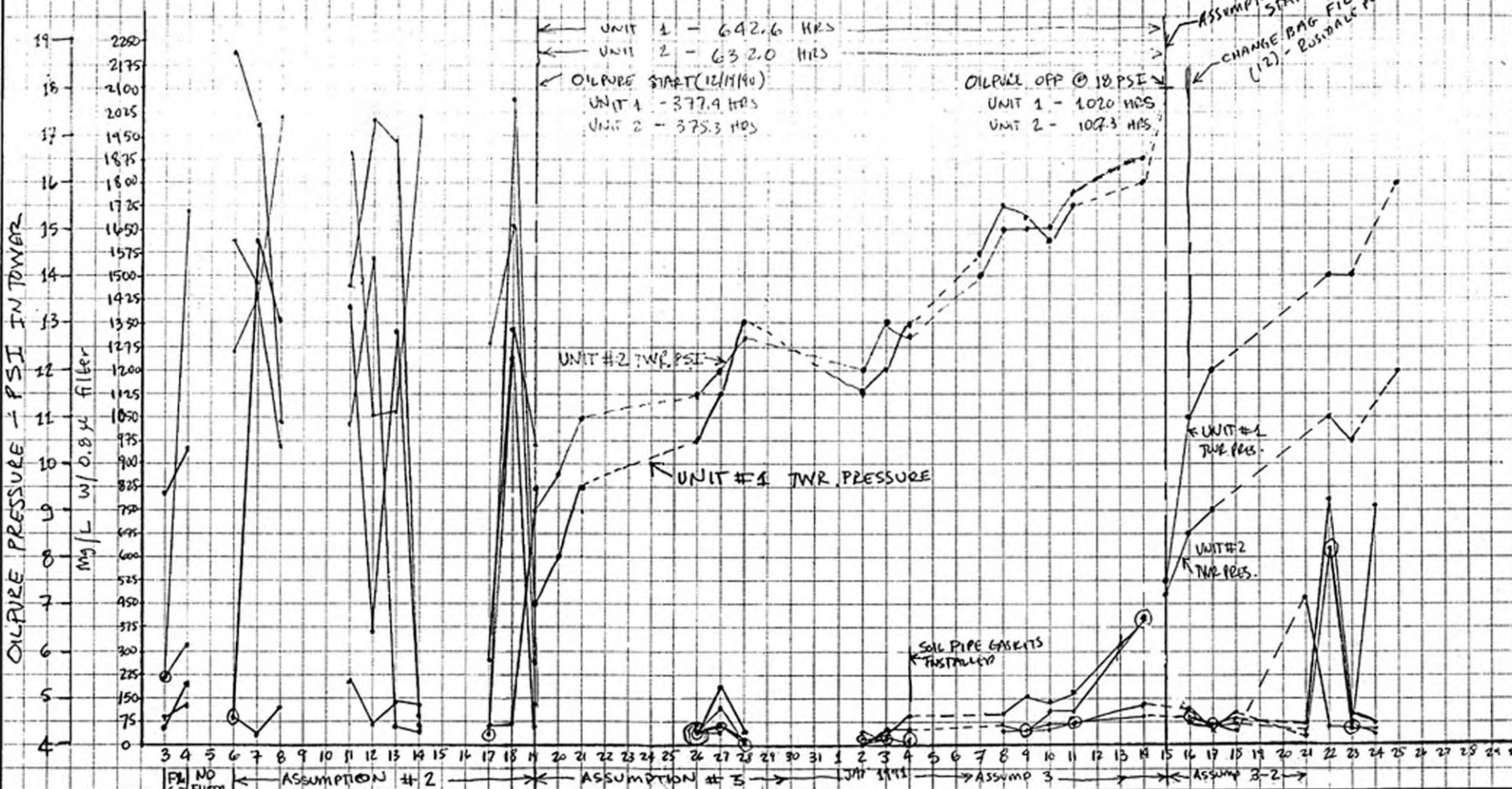
Alloy Division
P.O. Box 973
READING, PA 19603
(215) 562-2211

SHEET NO. 1 OF 1
CALCULATED BY F. DECESARE DATE 1/9/91
CHECKED BY _____ DATE _____
SCALE NONE



SAMPLE PORT	A	B	C	D	E	F	G	H
ASSUMPTION 1	A	B	C	D	E	F	G	H
ASSUMPTION 2	A	B	CC	D	EE	H	FF	GG
ASSUMPTION 3	A	B	CCC	D	EEE	FFF	GGG	H

ROSA MILL OIL SAMPLE EVALUATION



BRUSH WELLMAN INC.
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ADDED
 145 GAL
 Z8 A OIL

