

1.0 Site Details: Maerdy Mill

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Gross Head:	3.00 m				Head Loss	10.0 %							
Design Flow:	0.200 m ³ /s				Turbine Flow Split:	100.0 %							
'Hands Off Flow'	0.500 m ³ /s				Bypass Flow Split:	0.0 %							
% PE =	5	10	20	30	40	50	60	70	80	90	95	98	
Flow (m ³ /s)	7.700	5.520	3.440	2.450	1.820	1.380	1.060	0.810	0.570	0.370	0.280	0.220	
Head (m)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	

2.0 Turbine Matches: Maerdy Mill

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Selected Turbine Type: Overshot Waterwheel

Selected Turbine System: Overshot Waterwheel (HM)

3.0 Design Summary: Maerdy Mill

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System Type:	Overshot Waterwheel	Design Flow:	0.200 m ³ /s
Power:	3.63 kW	Net Head:	2.70 m
Energy Capture:	24,937 kWh (365 days)	CO ₂ Saving:	13.14 tonnes

4.0 System Details: Maerdy Mill

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4.1 Turbine

Name:	Overshot Waterwheel (HM)	
Manufacturer:	Hydromatch	
	Minimum	Peak
Flow:	0.020 m ³ /s	0.200 m ³ /s
Turbine Power:	0.28 kW	4.24 kW
Efficiency:		80 %
Site Adjustment Factor	1.000	

4.2 Drive

Name:	Standard Gear and Belt Drive Unit
Manufacturer:	Hydromatch
Efficiency:	92 %

4.3 Generator

Name:	IG 7.5 kW	
Manufacturer:	Hydromatch	
	Minimum	Peak
Power:	0.17 kW	3.63 kW
Efficiency:		94.1 %

4.4 Controller

Name:	Waterwheel control unit
Manufacturer:	Hydromatch
Efficiency:	99 %

4.5 Intake

Name:	No intake screen
Manufacturer:	Hydromatch



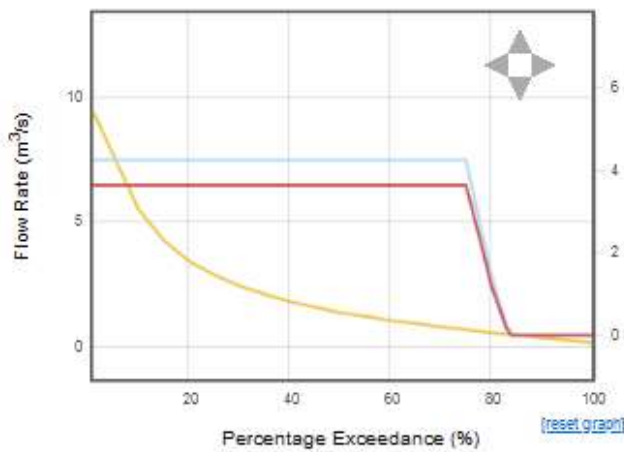
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Further information available at hydromatch.com/machinery

5.0 Operation Details: Maerdy Mill

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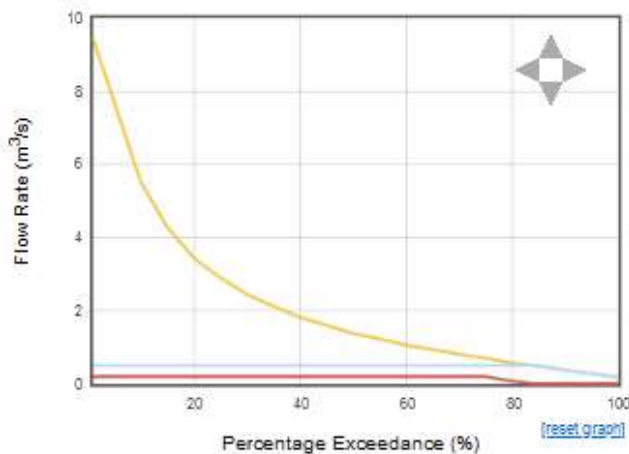
5.1 Operation Graph



■ Total Flow (m³/s)
■ Turbine Power (kW)
■ Electrical Power (kW)

Operation	Days	(%)
Design	274	75
Variable	29	8
Shutdown	62	17

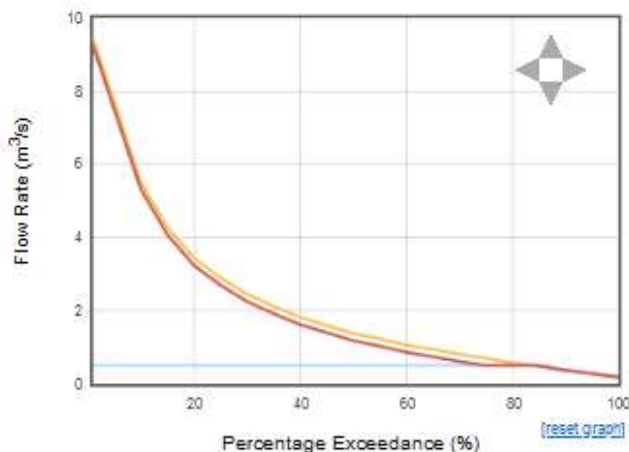
5.2 Turbine Flows



■ Total Flow (m³/s)
■ 'Hands off' Flow (m³/s)
■ Turbine Flow (m³/s)

Max Inst. Flow	0.200 m³/s
Hourly Abstraction (Vol)	720 m³
Daily Abstraction (Vol)	17,280 m³
Annual Abstraction (Vol)	4,958,721 m³

5.3 Bypass Flows



■ Total Flow (m³/s)
■ 'Hands off' Flow (m³/s)
■ Total Bypass Flow (m³/s)

'Hands off' Flow	0.500 m³/s
Turbine flow split	100.0 %
Bypass flow split	0.0 %

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6.0 Operation Details: Maerdy Mill

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Percentage Exceedance (%)	Total Flow (m ³ /s)	'Hands off' Flow (m ³ /s)	Total Bypass Flow (m ³ /s)	Head (Net) (m)	Turbine Flow (m ³ /s)	Turbine Efficiency (%)	System Efficiency (%)	Power (Electrical) (kW)	Energy Capture (kWh)
5	7.700	0.500	7.500	2.70	0.200	80.0	68.5	3.63	1,590
10	5.520	0.500	5.320	2.70	0.200	80.0	68.5	3.63	1,590
15	4.280	0.500	4.080	2.70	0.200	80.0	68.5	3.63	1,590
20	3.440	0.500	3.240	2.70	0.200	80.0	68.5	3.63	1,590
25	2.900	0.500	2.700	2.70	0.200	80.0	68.5	3.63	1,590
30	2.450	0.500	2.250	2.70	0.200	80.0	68.5	3.63	1,590
35	2.120	0.500	1.920	2.70	0.200	80.0	68.5	3.63	1,590
40	1.820	0.500	1.620	2.70	0.200	80.0	68.5	3.63	1,590
45	1.600	0.500	1.400	2.70	0.200	80.0	68.5	3.63	1,590
50	1.380	0.500	1.180	2.70	0.200	80.0	68.5	3.63	1,590
55	1.230	0.500	1.030	2.70	0.200	80.0	68.5	3.63	1,590
60	1.060	0.500	0.860	2.70	0.200	80.0	68.5	3.63	1,590
65	0.940	0.500	0.740	2.70	0.200	80.0	68.5	3.63	1,590
70	0.810	0.500	0.610	2.70	0.200	80.0	68.5	3.63	1,590
75	0.700	0.500	0.500	2.70	0.200	80.0	68.5	3.63	1,590
80	0.570	0.500	0.500	2.70	0.070	78.5	65.1	1.21	962
85	0.490	0.500	0.490	2.70	0.000	0.0	0.0	0.00	136
90	0.370	0.500	0.370	2.70	0.000	0.0	0.0	0.00	0
95	0.280	0.500	0.280	2.70	0.000	0.0	0.0	0.00	0
100	0.180	0.500	0.180	2.70	0.000	0.0	0.0	0.00	0