

Allegato E

## Campo Prove – Prove di Portata

E1 – Prova di Pompaggio a Gradini

E2 – Prova di Pompaggio a Portata Costante

**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

**Dati prova di pompaggio**

Data: 15 Ottobre 2008

Ora inizio: 14.00

Condizioni meteo: cielo sereno, T aria = 25°C

Pompaggio in PW1

Monitoraggio in PW1

Gradino	Portata (m <sup>3</sup> /h)	Istante inizio gradino (min)
1	28,46	0,12
2	51,60	46,07
3	79,50	91,35
4	102,00	136,00
Risalita	0,00	207,90

**Tabulato della prova**

Tempo (hh:mm:ss)	Tempo (min)	Soggiacenza h (m da b.t.)	Abbassamento piezometrico s <sub>w</sub> (m)	Inizio gradino (numero gradino)
00:00:00	0,00	37,12	0,00	
00:00:07	0,12	37,70	37,70	1
00:00:57	0,95	37,84	37,84	
00:02:19	2,32	37,84	37,84	
00:02:57	2,95	37,84	37,84	
00:03:42	3,70	37,84	37,84	
00:04:40	4,67	37,85	37,85	
00:06:10	6,17	37,85	37,85	
00:07:28	7,47	37,85	37,85	
00:09:11	9,18	37,85	37,85	
00:10:52	10,87	37,85	37,85	
00:12:44	12,73	37,85	37,85	
00:15:34	15,57	37,85	37,85	
00:19:54	19,90	37,85	37,85	
00:22:24	22,40	37,85	37,85	
00:26:17	26,28	37,85	37,85	
00:32:45	32,75	37,85	37,85	
00:44:41	44,68	37,85	37,85	
00:46:04	46,07	37,86	37,86	2
00:46:32	46,53	38,30	38,30	
00:46:51	46,85	38,40	38,40	
00:46:57	46,95	38,44	38,44	
00:47:10	47,17	38,44	38,44	
00:47:25	47,42	38,44	38,44	
00:47:38	47,63	38,45	38,45	
00:47:51	47,85	38,46	38,46	

**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

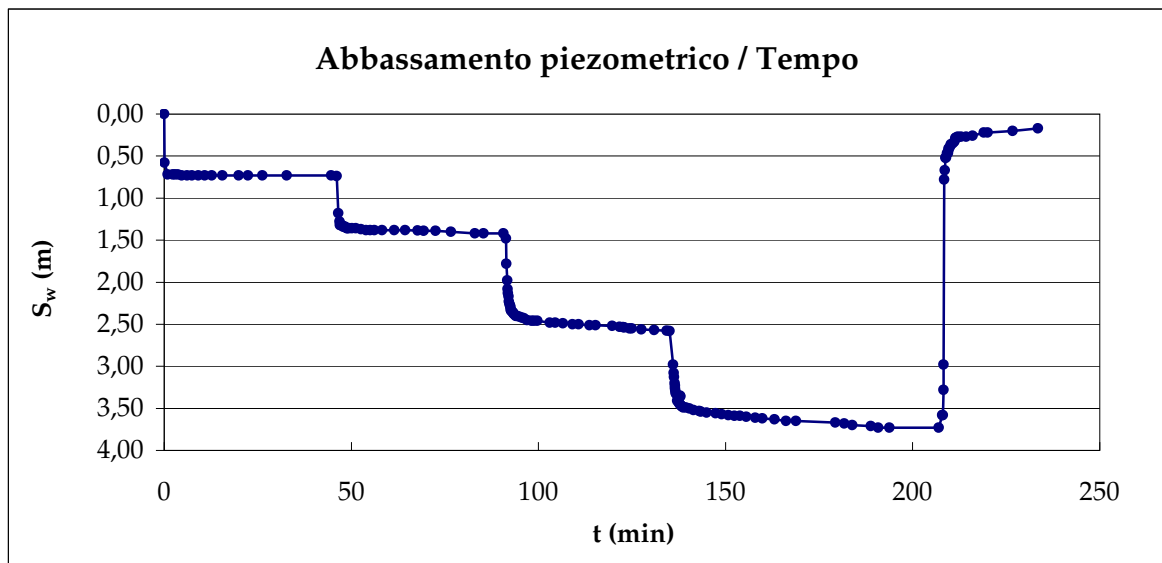
00:48:03	48,05	38,46	38,46	
00:48:19	48,32	38,46	38,46	
00:48:35	48,58	38,47	38,47	
00:48:48	48,80	38,48	38,48	
00:49:01	49,02	38,48	38,48	
00:49:26	49,43	38,48	38,48	
00:50:12	50,20	38,48	38,48	
00:51:14	51,23	38,48	38,48	
00:52:36	52,60	38,49	38,49	
00:53:57	53,95	38,50	38,50	
00:55:06	55,10	38,50	38,50	
00:56:14	56,23	38,50	38,50	
00:58:14	58,23	38,50	38,50	
01:01:30	61,50	38,50	38,50	
01:04:25	64,42	38,50	38,50	
01:07:46	67,77	38,51	38,51	
01:09:20	69,33	38,51	38,51	
01:12:30	72,50	38,51	38,51	
01:16:40	76,67	38,52	38,52	
01:23:03	83,05	38,54	38,54	
01:25:23	85,38	38,54	38,54	
01:30:39	90,65	38,54	38,54	
01:31:21	91,35	38,60	38,60	3
01:31:26	91,43	38,90	38,90	
01:31:43	91,72	39,10	39,10	
01:31:48	91,80	39,20	39,20	
01:31:54	91,90	39,25	39,25	
01:32:00	92,00	39,29	39,29	
01:32:08	92,13	39,35	39,35	
01:32:15	92,25	39,38	39,38	
01:32:25	92,42	39,40	39,40	
01:32:30	92,50	39,42	39,42	
01:32:37	92,62	39,45	39,45	
01:32:45	92,75	39,46	39,46	
01:32:59	92,98	39,47	39,47	
01:33:15	93,25	39,48	39,48	
01:33:21	93,35	39,49	39,49	
01:33:31	93,52	39,50	39,50	
01:33:44	93,73	39,51	39,51	
01:33:58	93,97	39,52	39,52	
01:34:17	94,28	39,52	39,52	
01:34:51	94,85	39,53	39,53	
01:35:30	95,50	39,54	39,54	
01:36:07	96,12	39,55	39,55	
01:36:57	96,95	39,57	39,57	
01:38:09	98,15	39,58	39,58	
01:38:52	98,87	39,58	39,58	
01:39:42	99,70	39,58	39,58	
01:43:02	103,03	39,60	39,60	
01:44:30	104,50	39,60	39,60	
01:46:34	106,57	39,61	39,61	

**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

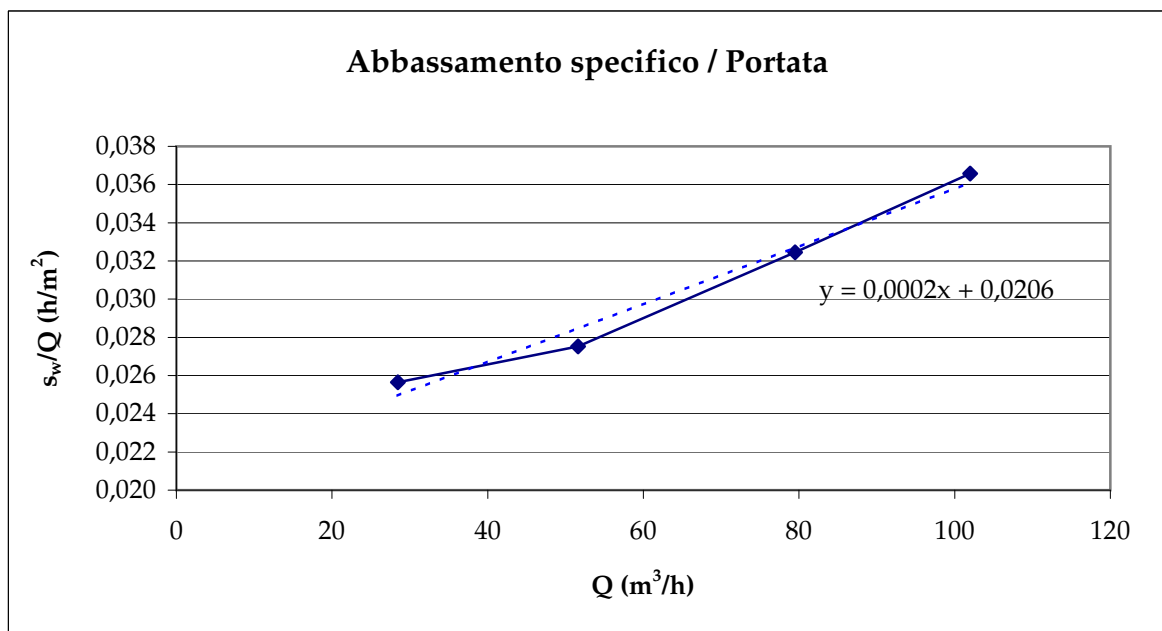
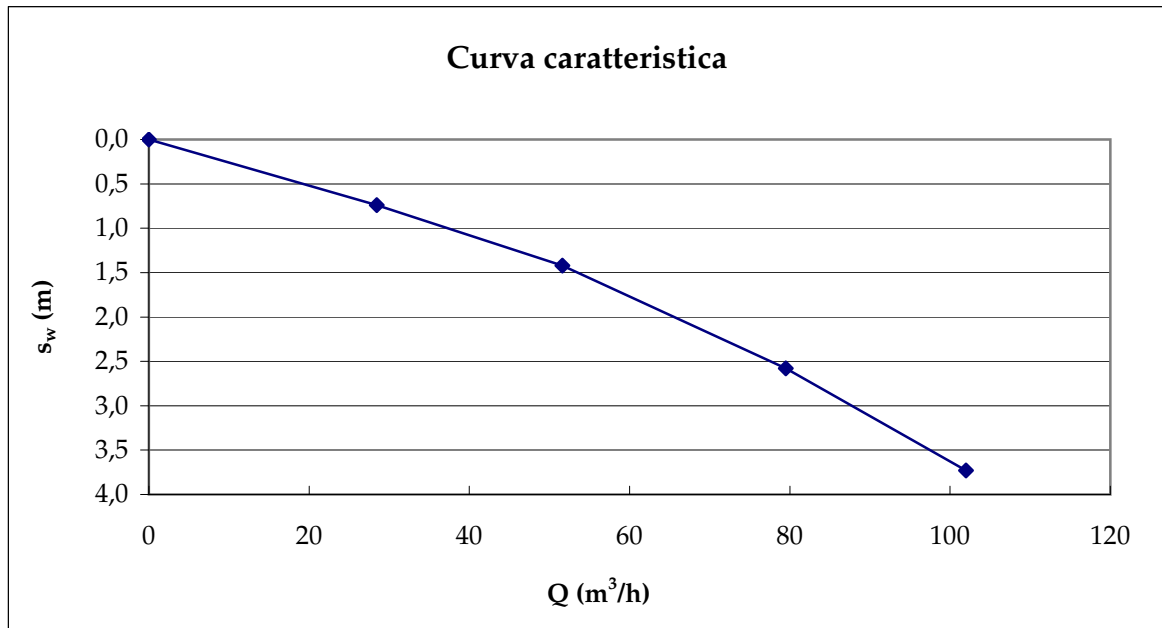
01:49:10	109,17	39,62	39,62	
01:50:45	110,75	39,62	39,62	
01:53:42	113,70	39,63	39,63	
01:55:20	115,33	39,63	39,63	
01:59:46	119,77	39,64	39,64	
02:01:41	121,68	39,65	39,65	
02:02:40	122,67	39,66	39,66	
02:02:59	122,98	39,66	39,66	
02:04:21	124,35	39,67	39,67	
02:04:59	124,98	39,67	39,67	
02:07:31	127,52	39,68	39,68	
02:10:55	130,92	39,69	39,69	
02:14:16	134,27	39,70	39,70	
02:15:01	135,02	39,70	39,70	
02:16:00	136,00	40,10	40,10	4
02:16:10	136,17	40,20	40,20	
02:16:17	136,28	40,25	40,25	
02:16:23	136,38	40,32	40,32	
02:16:28	136,47	40,35	40,35	
02:16:32	136,53	40,38	40,38	
02:16:36	136,60	40,41	40,41	
02:16:43	136,72	40,44	40,44	
02:16:49	136,82	40,45	40,45	
02:17:51	137,85	40,47	40,47	
02:17:57	137,95	40,48	40,48	
02:17:06	137,10	40,53	40,53	
02:17:24	137,40	40,54	40,54	
02:17:36	137,60	40,56	40,56	
02:17:47	137,78	40,57	40,57	
02:17:57	137,95	40,58	40,58	
02:18:12	138,20	40,59	40,59	
02:18:24	138,40	40,60	40,60	
02:18:44	138,73	40,61	40,61	
02:19:24	139,40	40,61	40,61	
02:20:21	140,35	40,62	40,62	
02:21:30	141,50	40,64	40,64	
02:22:58	142,97	40,65	40,65	
02:23:27	143,45	40,66	40,66	
02:24:58	144,97	40,67	40,67	
02:27:22	147,37	40,68	40,68	
02:28:59	148,98	40,69	40,69	
02:30:49	150,82	40,70	40,70	
02:32:24	152,40	40,71	40,71	
02:33:51	153,85	40,71	40,71	
02:35:36	155,60	40,72	40,72	
02:37:57	157,95	40,73	40,73	
02:39:49	159,82	40,74	40,74	
02:43:04	163,07	40,75	40,75	
02:46:09	166,15	40,77	40,77	
02:48:51	168,85	40,77	40,77	
02:59:20	179,33	40,79	40,79	

**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

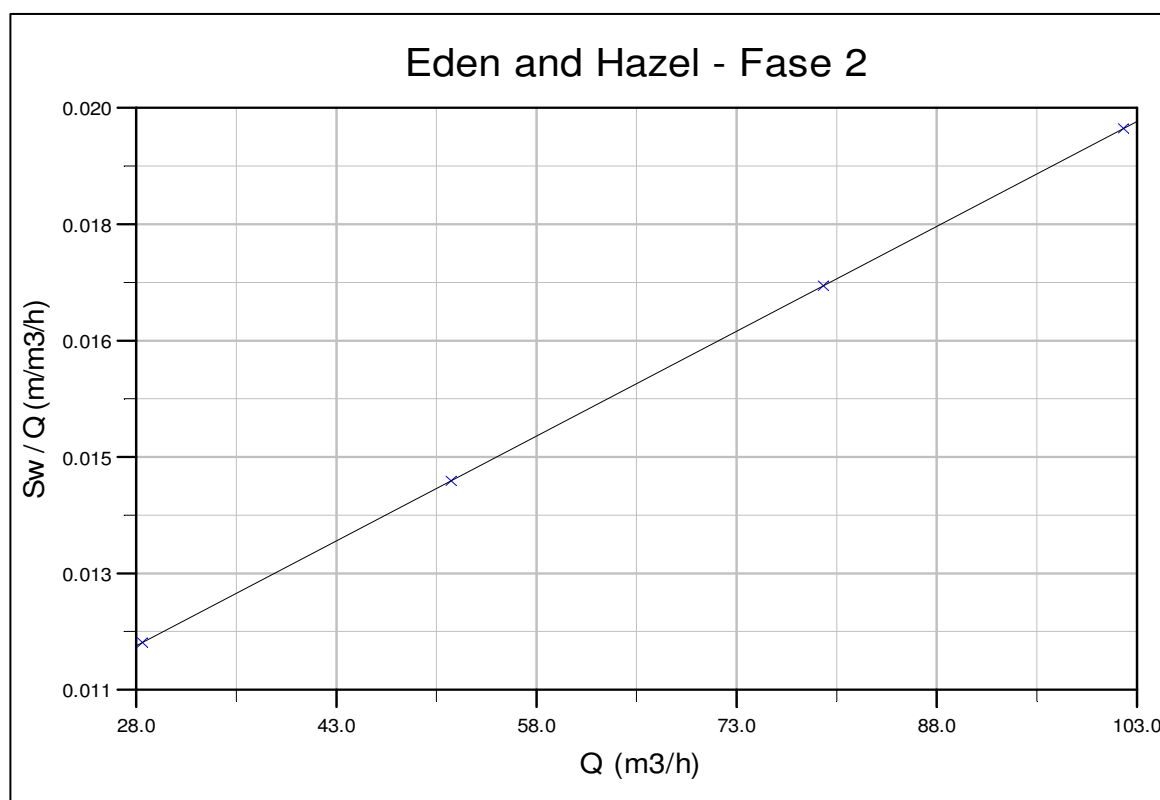
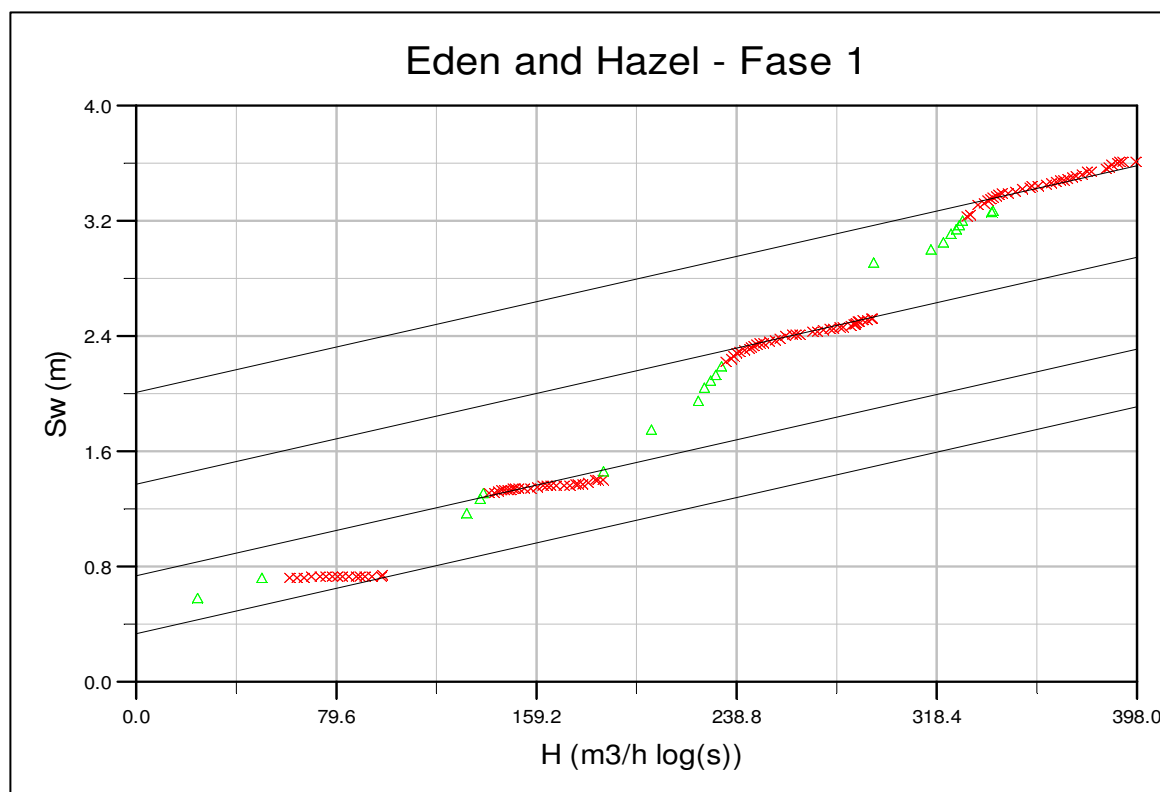
03:01:47	181,78	40,80	40,80	
03:03:54	183,90	40,82	40,82	
03:08:52	188,87	40,83	40,83	
03:10:51	190,85	40,85	40,85	
03:13:50	193,83	40,85	40,85	
03:27:01	207,02	40,85	40,85	
03:27:54	207,90	40,70	40,70	Risalita
03:28:05	208,08	40,70	40,70	
03:28:14	208,23	40,40	40,40	
03:28:18	208,30	40,10	40,10	
03:28:27	208,45	37,90	37,90	
03:28:34	208,57	37,79	37,79	
03:28:44	208,73	37,64	37,64	
03:28:58	208,97	37,64	37,64	
03:29:10	209,17	37,59	37,59	
03:29:27	209,45	37,59	37,59	
03:29:40	209,67	37,55	37,55	
03:29:40	209,67	37,53	37,53	
03:30:01	210,02	37,51	37,51	
03:30:13	210,22	37,48	37,48	
03:30:46	210,77	37,47	37,47	
03:31:11	211,18	37,45	37,45	
03:31:27	211,45	37,41	37,41	
03:31:37	211,62	37,40	37,40	
03:32:00	212,00	37,40	37,40	
03:32:07	212,12	37,39	37,39	
03:32:58	212,97	37,39	37,39	
03:34:20	214,33	37,39	37,39	
03:36:04	216,07	37,38	37,38	
03:39:00	219,00	37,34	37,34	
03:40:04	220,07	37,34	37,34	
03:46:46	226,77	37,32	37,32	
03:53:29	233,48	37,29	37,29	

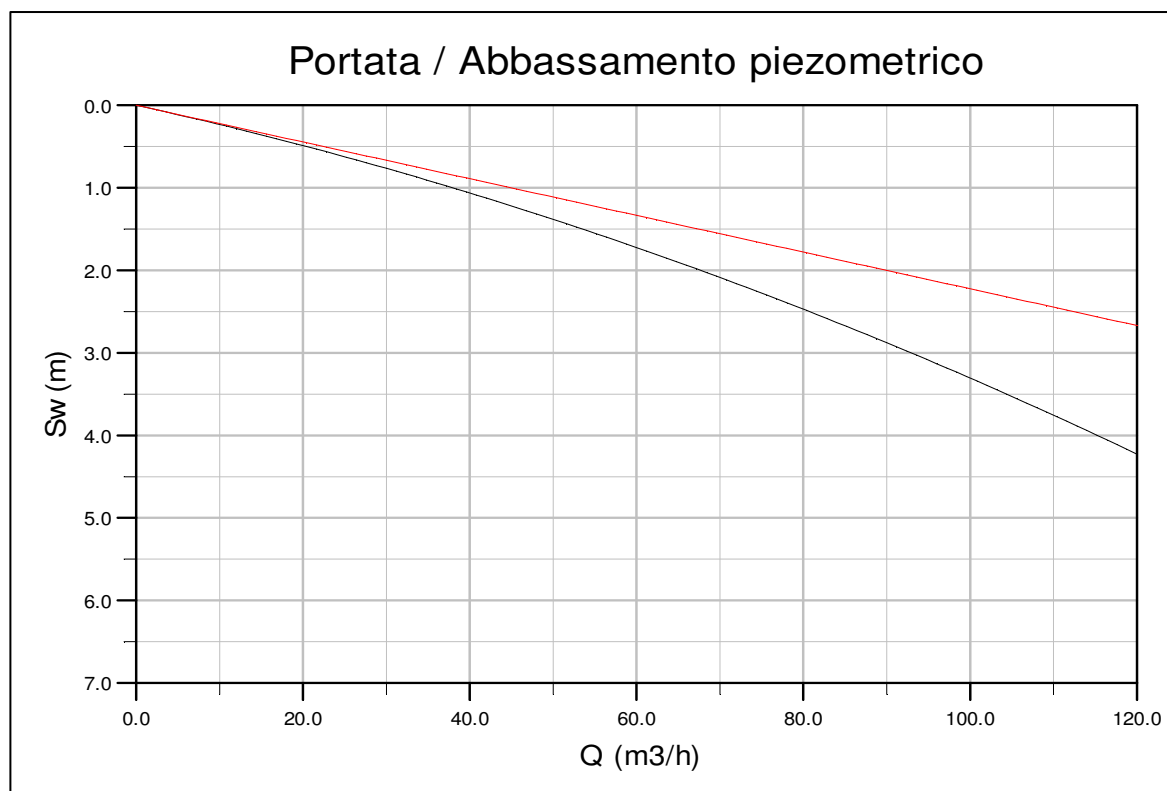
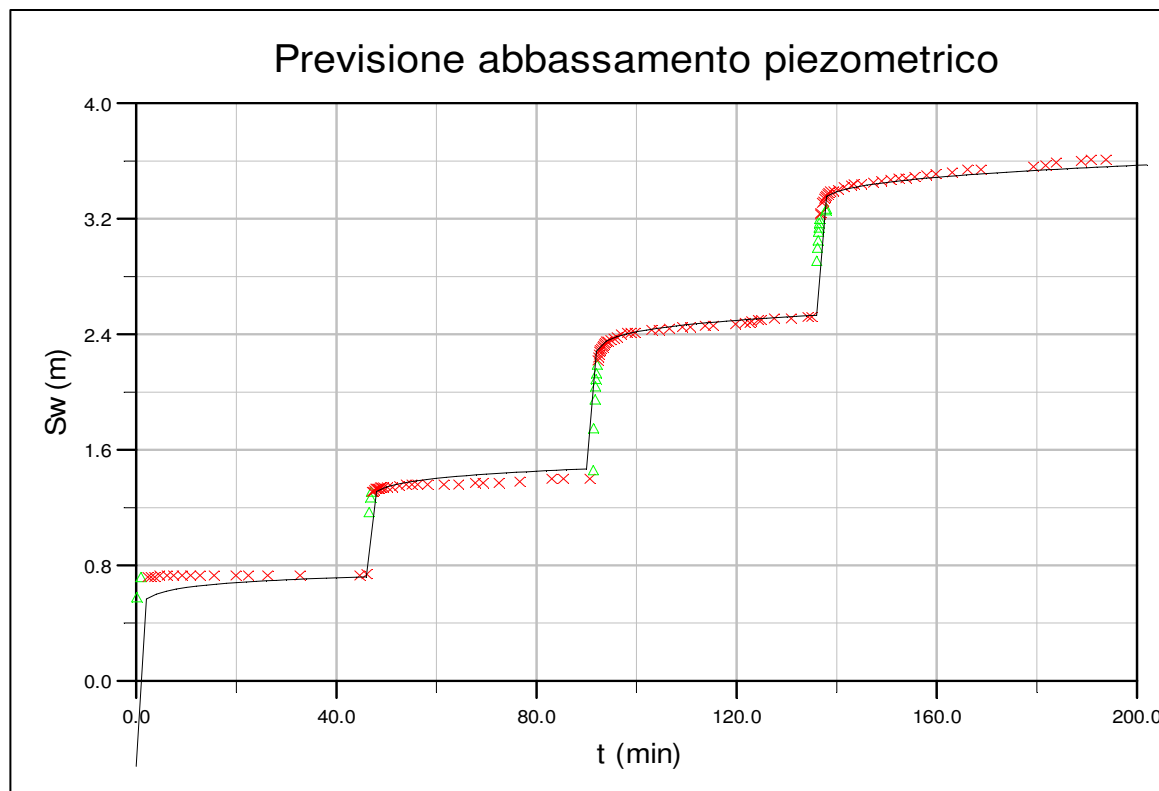


Metodo di Jacob



Metodo di Eden & Hazel

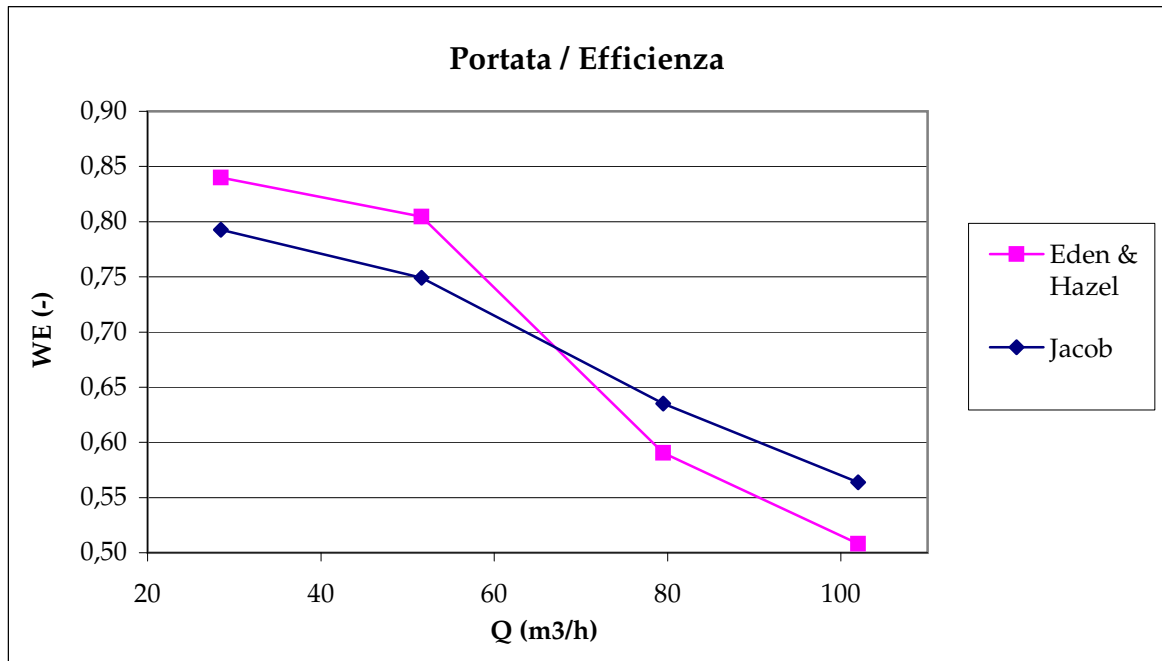






Polo Chimico Multisocietario di Castellanza - Olgiate Olona (VA)  
Progetto di MISO - Matrice Acqua di Falda

Confronto efficienza calcolata con i due metodi



**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

**Dati prova di pompaggio**

Data: 16-19 Ottobre 2008

Ora inizio: 11.36

Condizioni meteo: cielo poco nuvoloso, T media aria = 25°C

Pompaggio in:

PW1 Q= 108,12 m<sup>3</sup>/h

Monitoraggio in:

MW21 d= 21 m

MW1bis d= 12 m

**Tabulato prova MW21**

Tempo (hh:mm:ss)	Tempo (min)	Soggiacenza h (m da b.t.)	Abbassamento piezometrico s <sub>w</sub> (m)
0.00.00	0,00	35,40	0,00
0.03.20	3,40	35,55	35,55
0.04.20	4,40	35,56	35,56
0.05.30	5,57	35,58	35,58
0.06.30	6,57	35,58	35,58
0.07.20	7,40	35,59	35,59
0.08.45	8,82	35,60	35,60
0.10.50	10,90	35,61	35,61
0.14.00	14,07	35,62	35,62
0.18.20	18,40	35,63	35,63
0.22.30	22,57	35,64	35,64
0.28.40	28,73	35,65	35,65
0.33.15	33,32	35,66	35,66
0.39.20	39,40	35,67	35,67
0.46.10	46,23	35,68	35,68
0.56.30	56,57	35,70	35,70
1.08.20	68,40	35,72	35,72
1.21.00	81,07	35,73	35,73
1.29.00	89,07	35,74	35,74
1.38.00	98,07	35,75	35,75
1.48.00	108,07	35,76	35,76
3.30.00	210,07	35,83	35,83
4.24.00	264,07	35,87	35,87
4.55.00	295,07	35,89	35,89
5.40.00	340,07	35,91	35,91
22.24.00	1344,07	36,17	36,17
0.20.00	1460,07	36,19	36,19
2.30.00	1590,07	36,20	36,20
4.40.00	1720,07	36,21	36,21
5.30.00	1770,07	36,22	36,22
0.30.00	2910,07	36,31	36,31

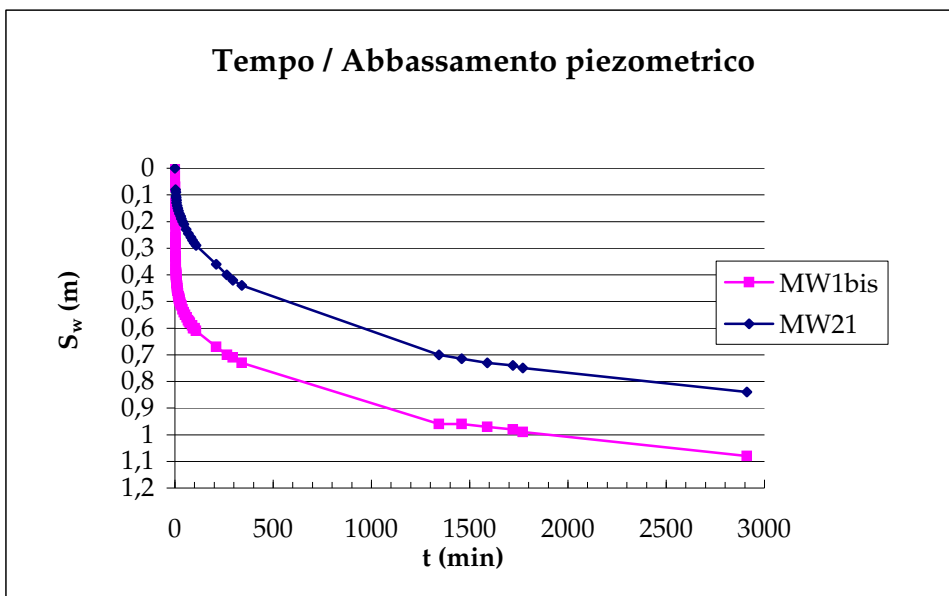
**Polo Chimico Multisocietario di Castellanza - Olgiate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

**Tabulato prova MW1 bis**

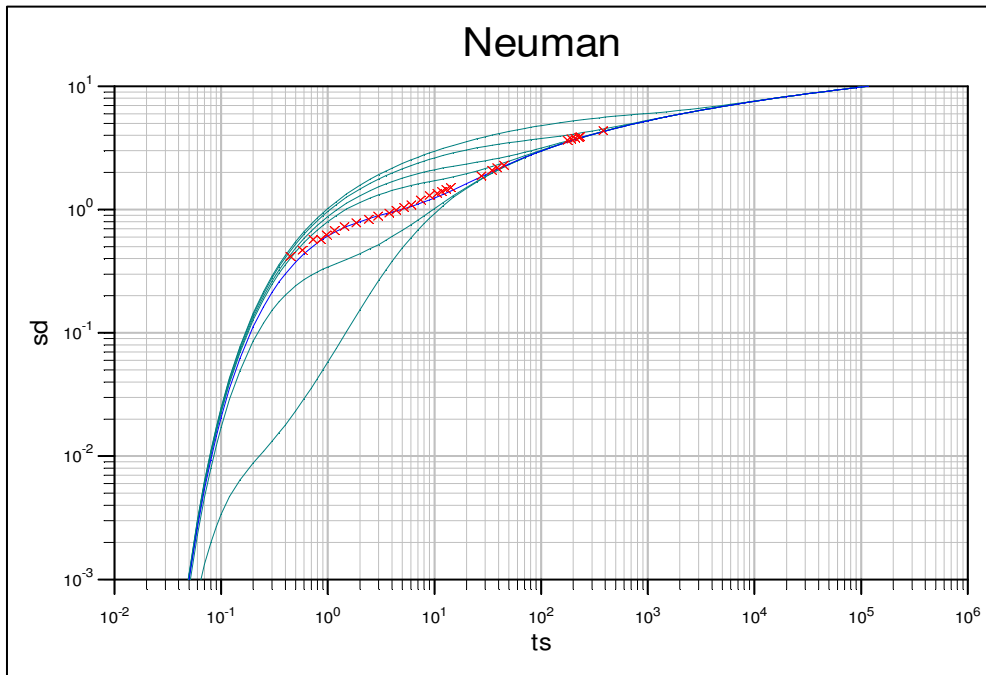
Tempo (hh:mm:ss)	Tempo (min)	Soggiacenza h (m da b.t.)	Abbassamento piezometrico $s_w$ (m)
0.00.00	0,00	35,47	0,00
0.00.21	0,42	35,50	35,50
0.00.41	0,75	35,51	35,51
0.00.56	1,00	35,54	35,54
0.01.17	1,35	35,60	35,60
0.01.27	1,52	35,62	35,62
0.01.36	1,67	35,64	35,64
0.01.46	1,83	35,65	35,65
0.01.57	2,02	35,67	35,67
0.02.09	2,22	35,68	35,68
0.02.26	2,50	35,71	35,71
0.02.36	2,67	35,73	35,73
0.02.45	2,82	35,75	35,75
0.02.55	2,98	35,75	35,75
0.03.08	3,20	35,76	35,76
0.03.21	3,42	35,77	35,77
0.03.31	3,58	35,80	35,80
0.03.41	3,75	35,80	35,80
0.03.53	3,95	35,80	35,80
0.04.12	4,27	35,81	35,81
0.04.26	4,50	35,82	35,82
0.04.48	4,87	35,83	35,83
0.05.04	5,13	35,84	35,84
0.05.15	5,32	35,85	35,85
0.05.33	5,62	35,85	35,85
0.05.41	5,75	35,86	35,86
0.05.54	5,97	35,87	35,87
0.06.04	6,13	35,87	35,87
0.06.22	6,43	35,87	35,87
0.06.40	6,73	35,88	35,88
0.06.52	6,93	35,88	35,88
0.07.19	7,38	35,89	35,89
0.07.40	7,73	35,89	35,89
0.08.07	8,18	35,90	35,90
0.08.18	8,37	35,90	35,90
0.08.59	9,05	35,90	35,90
0.09.12	9,27	35,90	35,90
0.09.44	9,80	35,91	35,91
0.10.55	10,98	35,91	35,91
0.11.28	11,53	35,92	35,92
0.11.52	11,93	35,92	35,92
0.12.11	12,25	35,92	35,92
0.13.05	13,15	35,93	35,93
0.14.03	14,12	35,93	35,93

**Polo Chimico Multisocietario di Castellanza - Olgate Olona (VA)**  
**Progetto di MISO - Matrice Acqua di Falda**

0.16.42	16,77	35,94	35,94
0.18.03	18,12	35,95	35,95
0.19.11	19,25	35,95	35,95
0.20.43	20,78	35,96	35,96
0.21.18	21,37	35,96	35,96
0.22.17	22,35	35,96	35,96
0.23.44	23,80	35,97	35,97
0.25.04	25,13	35,97	35,97
0.27.19	27,38	35,98	35,98
0.29.42	29,77	35,98	35,98
0.34.16	34,33	35,99	35,99
0.38.46	38,83	36,00	36,00
0.45.13	45,28	36,01	36,01
0.51.29	51,55	36,02	36,02
1.00.35	60,65	36,03	36,03
1.06.55	66,98	36,04	36,04
1.12.17	72,35	36,05	36,05
1.16.56	77,00	36,05	36,05
1.27.17	87,35	36,06	36,06
1.32.26	92,50	36,07	36,07
1.40.34	100,63	36,07	36,07
1.46.42	106,77	36,08	36,08
3.30.00	210,07	36,14	36,14
4.25.00	265,07	36,17	36,17
4.54.00	294,07	36,18	36,18
5.40.00	340,07	36,20	36,20
22.24.00	1344,07	36,43	36,43
0.20.00	1460,07	36,43	36,43
2.30.00	1590,07	36,44	36,44
4.40.00	1720,07	36,45	36,45
5.30.00	1770,07	36,46	36,46
0.30.00	2910,07	36,55	36,55



Metodo di Neuman - MW21



Metodo di Neuman - MW1 bis

