

REFERENCES

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1. SURFACE MINES

Item	Site	Mined Mineral	Reserves [mill. tons]	Thickness of Seam [m]	Thickness of Over- burden [m]	Over- burden vs. Mined Mineral Ratio	Production [mill. tons/ year]	Over- burden Removal [mill. m ³ /year]
1	2	3	4	5	6	7	8	9
1	Adamów Lignite Surface Mine POLAND	lignite	90.0	6.5	43.0	6.6:1	1.6	14.7
2	Bełchatów POLAND	lignite	1,200.0	55.0	140.0	2.5:1	38.5	105.0
3	Bogdałów Lignite Surface Mine POLAND	lignite	13.0	7.0	33.0	4.8:1	1.2	6.0
4	Konin Lignite Surface Mine Józwin Pit POLAND	lignite	65.0	8.3	48.0	5.2:1	2.5	13.0
5	Konin Lignite Surface Mine Kazimierz Pit POLAND	lignite	31.0	7.0	47.0	7.8:1	2.1	16.5
6	Konin Lignite Surface Mine Lubstów Pit POLAND	lignite	134.0	30.0	60.0	2:1	5.0	12.0
7	Konin Lignite Surface Mine Pątnów Pit POLAND	lignite	66.0	9.5	47.0	5.5:1	3.0	16.5
8	Sieniawa Lignite Surface Mine POLAND	lignite	103.0	10.0	0-100	4.75:1	0.04	0.19
9	Turów Lignite Surface Mine POLAND	lignite	760.0	38.0	139.0	3.6:1	27.7	36.5-81.2
10	Konin Lignite Surface Mine Władysławów Pit POLAND	lignite	32.0	8.3	21.6	2.6:1	1.4	3.3
11	Konin Lignite Surface Mine Kozmin Pit POLAND	lignite	29.7	5.6	35.4	6.3:1	1.0	6.0
12	Bełchatów Lignite Surface Mine Szczerców Pit POLAND	lignite	730.0	55.0	130.0	2.4:1	12.0	60.0
13	Babina POLAND	lignite	142.0	10.0	10-100	1:1-10:1	2.0	18.0
14	Konin Lignite Surface Mine Drzewce Pit POLAND	lignite	21.5	7.0	31.0	4.4:1	1.5	9.0
15	Legnica Lignite Surface Mine POLAND	lignite	2,504.0	21.0	160.0	7.6:1	27.0	191.4
16	Trzcianka	lignite	142.0	4.4	36.0	8.2:1	3.0	30.0

	POLAND							
17	Mosty POLAND	lignite	175.4	10.0	76.0	7.6:1	3.5	35.0
18	Gubin POLAND	lignite	282.7	10.0	69.0	7.2:1	5.5	45.0
19	Hai Zhou CHINA	hard coal	61.0	40.0	90.0	2.1:1	4.3	15.0
20	Nichahom INDIA	lignite	8.9	6.5	88.0	16.1:1	0.2	4.5
21	Drmno YUGOSLAVIA	lignite	220.0	7-22	20-80	3:1	7.0	47.0
22	Lakhra PAKISTAN	hard coal	83.0	1-3	20-50	15:1-20:1	0.8	17.5

1	2	3	4	5	6	7	8	9
23	Tamnava YUGOSLAVIA	lignite	607.0	18.0	48.0	2.7:1	17.1	38.0
24	Belacevac Dobre Selo YUGOSLAVIA	lignite	235.0	20-65	105	1.5:1	17.8	35.0
25	Kolubara YUGOSLAVIA	lignite	99.0	10-25	35-55	1.8:1	2.4	3.1-7.5
26	Zivojno YUGOSLAVIA	lignite	32.0	10.0	90.0	9:1	2.0	19.0-28.0
27	Adiyaman-Golbasi TURKEY	lignite	53.0	3.9-87.0	4.0-74.0	2:1-25:1	2.35	3.0-19.0
28	Karacahisar TURKEY	lignite	86.0	1.0-34.0	–	–	1.5	–
29	Andrzej-Żarów POLAND	kaolin	4.4	17.6	7.8	0.8:1	0.2	0.1
30	Kalno-Żarów POLAND	kaolin	14.0	16.5	24.0	3.5:1	0.2	0.7
31	Rusko-Jaroszów POLAND	refractory clays	22.0	11.5	16.0	1.8:1	0.3	0.9
32	Obora POLAND	backfilling sands	38.9	45.0	0.5	–	3.2	0.3
33	Sucha Góra POLAND	backfilling sands	75.6	24.6	1.9	0.08:1	3.4	0.4
34	Chrostnik POLAND	backfilling sands	108.0	16.2	1.3	0.1:1	4.0	0.3
35	Kuźnica Warężyńska POLAND	backfilling sands	105.0	27.0	0.5	–	5.0	–
36	Bór POLAND	backfilling sands	100.0	24.0	0.5	–	2.0	–
37	Siarsza-Misiury POLAND	backfilling sands	70.0	20.0	0.5	–	2.0	–
38	Kotłarnia POLAND	backfilling sands	590.0	23.0	0.5	–	4.0	–
39	Szczakowa POLAND	backfilling sands	1,100.0	40.0	0.3	–	12.0	–
40	Belchatów Lignite Surface Mine POLAND	peat	1.5	1.0	–	–	0.4	–
41	Kłęzany POLAND	sandstone	80.0	110.0	20.0	0.3:1	1.8	0.4
42	Krzeniów POLAND	basalt	80.0	75.0	3.0	–	3.0	0.12
43	Pagórki Wschodnie POLAND	granite	1.0	40.0	2.0	–	0.09	0.007
44	Sucha Góra POLAND	dolomite	53.1	51.5	9.2	0.2:1	1.2	9.1-0.3
45	Wojńów	sands, gravels	2.3	8.4	0.6	–	0.23	–

	POLAND							
46	Rakowice POLAND	sands, gravels	33.8	18.0	1.4	0.1:1	2.2	0.1
47	Konin Lignite Surface Mine Kazimierz North Pit POLAND	lignite	87.2	7.9	53.8	6.8 : 1	3.5	22.7
48	Dęby Szlacheckie Lignite Surface Mine Izbica Kujawska POLAND	lignite	92.0	7.3	70.0	12.6 : 1	3.3	43.0

1	2	3	4	5	6	7	8	9
49	Piaski POLAND	lignite	136.4	6.7	48.0	7.3 : 1	4.5	35.0
50	Przewoźniki POLAND	sands, gravels	10.2	15.0	2.0	7.2 : 1	0.33	0.04
51	Józwin II-field B POLAND	lignite	96.3	6.6	54.9	8.3:1	3.3	26.0
52	Guźnia I POLAND	sands, gravels	9.7	17.5	0.8	0.04:1	0.3	—
53	Elgiszewo VII POLAND	sands, gravels	0.4	3.6	0.7	0.18:1	0.15	—
54	Skoki II - Dąb Mały POLAND	sands, gravels	10.7	6.3	0.2	0.02:1	0.6	—
55	Drzewce POLAND	lignite	39.9	6.8	33.3	3.8:1	2.3	7.5
56	Tomiszewice POLAND	lignite	41.0	7.0	40	5.7:1	2.6	20.5
57	Bełchatów Lignite Surface Mine Szczerców Field POLAND	lignite	634.6	55.3	129.1	3.81:1	36.5 max	141.4 max
58	Bełchatów Lignite Surface Mine Bełchatów Pit	lignite	366,7	52,4	145,2	3,28:1	39,0	120,4
59	Konin Lignite Surface Mine O/Lubstów	lignite	25,2	24	60	2,7:1	2,52	10,0
60	KWB Konin Ościszowo	lignite	43,8	5,1	55,5	10,9:1	2,4	25,2
61	Neyveli Lignite Corporation Barsingsar Lignite Mine INDIE	lignite	55.5	16	70	4.2:1	2.1	9.1

2. DEEP DRAINAGE

Item	Site	Mining depth [m]	No. of aquifers	Underground water inflow [m ³ /min]	Dewatering system	Number of equipment in operation [pcs.]	Volume of pumped water [mill./m ³ /year]	Water-logging index [m ³ /1t of lignite]	Number of observation wells [pcs.]	Year of completion
1	2	3	4	5	6	7	8	9	10	11
1	Adamów POLAND	50	3	45	wells	56	29	10,5	66	up to 2020
2	Koźmin POLAND	60	3	120	wells	90	18	12,0	153	up to 2020
3	Władysławów POLAND	30	3	60	wells	40	15	10,3	64	up to 2016
4	Bełchatów POLAND	200-280	3	282	wells	300	146	5,4	826	up to 2017
5	Szczerców POLAND	270	3	240	wells	320	126	8,6	702	up to 2032
6	Józwin II A POLAND	40-75	3	15	wells	20	7.8	10,0	60	up to 2005
7	Józwin II B POLAND	40-80	3	45	wells	93	24	11,0	40	up to 2020
8	Kazimierz Płn. POLAND	50-80	3	15	wells	25	7.8	8.0	78	up to 2012
9	Lubstów POLAND	40-150	3	26	wells	70	14	4,2	60	up to 2009
10	Drzewce * POLAND	40-70	3	25	wells	51	13	–	45	
11	Turów POLAND	225-310	3	35	wells	61	18	0.8	160	up to 2040
12	Drmno YUGOSLAVIA	85	3	50-70	wells, screen	207 2600	21	3.0	165	

3. SURFACE DRAINAGE

Item	Investor	Surface water in flow [m ³ /min]	Capacity of pumping stations [m ³ /min]	Length of pipelines [km]	Length of channels [km]	Length of regulated river [km]	Area of sedimentation ponds [ha]
1	2	3	4	5	6	7	8
1	Bełchatów, POLAND	160-200	280-350	32-40	23	49	36
2	Turów, POLAND	300-320	450-480	11,5	10	15	15
3	Lubstów, POLAND	43-51	65-77	25	22,7	14,3	16,5
4	Józwin, POLAND	80-100	76-95	13,5	23,0	9,5	10,1
5	Kazimierz, POLAND	22-51	30-75	8,2	11	22,3	11
6	Adamów, POLAND	15-35	30-55	6,8	3,8	10,3	12
7	Władysławów, POLAND	15-25	25-40	4,6	4,8	11,5	11
8	Koźmin, POLAND	10-35	15-50	12,6	3,4	6,8	10
9	Drmno, YUGOSLAVIA	55-81	80-130	5	31	3,5	–
10	Szczerców, POLAND	40	60	1,5	4,5	23	35
11	Kotłarnia, POLAND	20-50	105	0,5	10	1	–
12	Drzewce, POLAND	19-70	25-72	16,0	6,5	–	9,7
13	Tomisławice, POLAND	12-52	16-68	17,0	38,0	7,4	6,0+5,1=11,1

4. MACHINERY. EQUIPMENT AND CONVEYORS

BUCKET WHEEL EXCAVATORS

Item	Site	Type	Year of Construction	Capacity [m ³ /h]	Digging Radius [m]	Loading Radius [m]
1	2	3	4	5	6	7
1	Turów. Lignite Surface Mine POLAND	KWK-1400	1980	4000	38	45
2	Konin. Lignite Surface Mine POLAND	KWK-1500s	1985	4200	38	63
3	Jaroszów. Refractories Works POLAND	KWK-315	1985	1000	11.5	20
4	Borynia. Hard Coal Mine POLAND	KWK-315/500	1987	900	11.5	20
5	Adamów. Lignite Surface Mine POLAND	KWK-1500s	1988	4200	38	63
6	Zofiówka. Hard Coal Mine POLAND	KWK-315/500	1988	900	11.2	20
7	Turów. Lignite Surface Mine POLAND	KWK-1500s	1991	4200	38	63
8	Turów. Lignite Surface Mine POLAND	KWK-1500s	1991	4200	38	63
9	Dadri. Power Plant INDIA	ŁWKG-250s.10	1992	750	10	17
10	Turów. Lignite Surface Mine POLAND	KWK 1500s	1993	4200	38	63
11	Adamów. Lignite Surface Mine POLAND	KWK 1500s	1995	4200	38	63
12	Konin. Lignite Surface Mine POLAND	KWK 1800s	1995	6300	25	35
13	Neyveli Lignite Corporation Ltd INDIA	BWE 700I	2000/2002	3400	31.4	35
14	Neyveli Lignite Corporation Ltd INDIA	BWE 700I	2000/2002	3400	31.4	35
15	Konin. Lignite Surface Mine POLAND	Rs 400 Retrofit	2002/2003	1160	25	23

SPREADERS

Item	Site	Type	Year of Construction	Capacity [m ³ /h]	Spreading Radius [m]	Loading Radius [m]
1	2	3	4	5	6	7
1	Turów. Lignite Surface Mine POLAND	ZGOT-2500	1967	2500	50	–
2	Jaroszów. Refractory Works POLAND	ZGOT- 1000/500.9/25	1978	1900	25	9
3	Jaroszów. Refractory Works POLAND	ZGOT- 1000/500.9/25	1978	1900	25	9
4	Yatagan. Power Station TURKEY	ZGOT- 1000/500.9/25	1979	600	25	9
5	Yatagan. Power Plant TURKEY	ZGOT- 1000/500.9/25	1979	600	25	9
6	Yeniköy. Power Plant TURKEY	ZGOT- 1000/500.9/25	1984	600	25	9
7	Borynia. Hard Coal Mine POLAND	ZGOT- 1000/500.9/25	1985	800	25	9
8	Zofiówka. Hard Coal Mine POLAND	ZGOT- 1000/500.9/25	1985	600	25	9
9	Adamów. Lignite Surface Mine POLAND	ZGOT-8000	1989	8800	100	75
10	Opatovice Power Plant CZECHO-SLOVAKIA	ZGOT.1100.35	1991	1100	35	40
11	Bogdanka. Hard Coal Mine POLAND	ZGOT-1100.35	1991	1100	35	18

1	2	3	4	5	6	7
12	Dadri, Power Plant INDIA	ZGOT-3000.35	1992	3000	35	25
13	Bełchatów, Lignite Surface Mine POLAND	ZS-4800	1993	4800	2 x 35	tripper
14	Bełchatów, Power Plant POLAND	ZS-350.18	1994	450	18	tripper
15	Bełchatów, Lignite Surface Mine POLAND	ZGOT-5500	1996-98	5500	42	36
16	Konin, Lignite Surface Mine POLAND	ZGOT-12500c	1995 – basic engineering	12500	75	90
17	Turów Lignite Surface Mine POLAND	ZGOT-11500	1997-99	11500	100	80
18	Neyveli Lignite Corporation Ltd INDIA – 2 pcs.	SPREADER 4420.61	2000/2001	4420	61	43.8
19	Konin Lignite Surface Mine POLAND	A2RsB-5000.67 retrofit	2001/2003	6500	67	75.3
20	Turów Lignite Surface Mine POLAND	ZGOT-11500	2005/2007	11500	100	80
21	Konin, Lignite Surface Mine POLAND	A2RsB-8800.100 retrofit	2006/2007	8800	110	80

RECLAIMERS

BRIDGE AND BUCKET WHEEL RECLAIMERS

Item	Site	Type	Years of Construction	Capacity (t/h)	Bridge Span (m)	Material Handled
1	2	3	4	5	6	7
1	Siewierz Limestone Quarry POLAND	ŁS-63.25	1993	200	25	dolomite
2	Belchatów Power Plant POLAND	ŁSD-63.25	1994	300	25	limestone
3	Mallavika Steelworks INDIA	ŁSD-63.23	1996	400	23	iron ore
4	Redi Steelworks INDIA	ŁSD-63.23	1996	400	23	iron ore
5	Manica II Power Plant BULGARIA	ŁKS-1250.12	1997	2000	12	lignite
6	Bhilai Steel Plant INDIA	BWR-250.28	1998	800	28	iron ore. dolomite
7	Oswal Cheicals & Fertilizers Ltd. INDIA	ŁZP – 270.40	1998/99	270	40	fertilizers
8	Belchatow Power Plant POLAND	ŁSD-63.25 retrofit	2005	500	25	limestone

PORTAL SCRAPER RECLAIMERS

Item	Site	Type	Year of Construction	Capacity (t/h)	Span (m)	Material Handled
1	2	3	4	5	6	7
1	Opole Power Plant POLAND	ŁZP-200.31	1995	200	31	gypsum
2	Jaworzno III Power Plant POLAND	ŁZP-200.34	1995	200	34	gypsum
3	Łaziska Power Plant POLAND	Eurosilo	1998	45/300 9500 m ³	diameter 25	gypsum
4	Kozienice Power Plant POLAND	ŁZP-100.20	200/2001	100	20	gypsum

STACKER-RECLAIMERS

Item	Site	Type	Year of Construction	Capacity Reclaiming/ Stacking [m ³ /h]	Reclaiming Radius	Material Handled
1	2	3	4	5	6	7
1	Bobov Dol Power Plant BULGARIA	ŁZKS-500.28	1972	1100/1450	28	hard coal
2	Kozienice Power Plant POLAND	ŁZKS-500.28/35	1972	1100/1450	35	hard coal
3	Świnoujście Harbour POLAND	ŁZKS-500.28	1972	1100/1450	28	hard coal
4	Kozienice Power Plant POLAND	ŁZKS-500.28/35	1973	1100/1450	35	hard coal
5	Świnoujście Harbour POLAND	ŁZKS-500.28	1973	1100/1450	28	hard coal
6	Gdańsk North Harbour POLAND	ŁZKS-1000.35.1/40	1973	2500/3200	31.5	hard coal
7	Gdańsk North Harbour POLAND	ŁZKS-1000.31.5/40	1974	2500/3200	31.5	hard coal
8	Gdańsk North Harbour POLAND	ŁZKS-1000.31.5/40	1974	2500/3200	31.5	hard coal
9	Tuncbilek Power Plant TURKEY	ŁZKS-250.25/31.5	1974	600/1000	31.5	hard coal
10	Zdzieszowice Coking Plant POLAND	ŁZKS-500.22	1974	1100/1450	22	hard coal
11	Zdzieszowice Coking Plant POLAND	ŁZKS-500.25/31.5	1975	1100/1450	22	hard coal
12	Tuncbilek Power Plant TURKEY	ŁZKS-100.16/20	1975	600/1000	31.5	hard coal
13	Kraków Heat and Power Generating Plant POLAND	ŁZKS-100.16/20	1975	600/1000	31.5	hard coal
14	Strzelce Opolskie Cement Plant POLAND	ŁZKS-100.16/20	1975	270/420	20	hard coal
15	Strzelce Opolskie Cement Plant POLAND	ŁZKS-100.16/20	1975	270/420	20	hard coal
16	Bieruń Mine POLAND	ŁZKS-500.25/31.5	1976	1250/2000	31.5	hard coal
17	Tuzla Power Plant YUGOSLAVIA	ŁZKS-100.16/20	1976	270/420	20	hard coal
18	Tuzla Power Plant YUGOSLAVIA	ŁZKS-100.16/20	1976	270/420	20	hard coal
19	Góraźdze Cement Plant POLAND	ŁZKS-100.16/20	1976	270/420	20	hard coal
20	Góraźdze Cement Plant POLAND	ŁZKS-100.16/20	1976	270/420	20	hard coal
21	Thierbach Power Plant GERMANY	ŁZKS-500/250.40	1977	1250/2000	40	hard coal
22	Ożarów Cement Plant POLAND	ŁZKS-100/63.13/20	1977	270/420	20	hard coal
23	Ożarów Cement Plant POLAND	ŁZKS-100/63.13/20	1977	270/420	20	hard coal

1	2	3	4	5	6	7
24	Chorzów Heat and Power Generating Plant POLAND	ŁZKS-100/63.13/20	1977	270/420	20	hard coal
25	Kwidzyń Cellulose Factory POLAND	ŁZKS-100/63.13/20	1977	270/420	20	hard coal
26	Zdzieszowice Coking Plant POLAND	ŁZKS-100/63.13/20	1977	270/420	20	hard coal
27	Będzin Power Plant POLAND	ŁZKS-100/63.15/20	1977	270/420	16	hard coal
28	Tuncbilek Power Plant TURKEY	ŁZKS-250.25/31.5	1966	600/1000	31.5	hard coal
29	Kozienice Power Plant POLAND	ŁZKS-250.25/31.5	1977	1250/2000	31.5	hard coal
30	Kozienice Power Plant POLAND	ŁZKS-250.25/31.5	1978	1250/2000	25	hard coal
31	Czechowice Heat and Power Generating Plant POLAND	ŁZKS-100/63.13/20	1978	270/420	20	hard coal
32	Kwidzyń Cellulose Factory POLAND	ŁZKS-100/63.13/20	1978	270/420	20	hard coal
33	Będzin Heat and Power Generating Plant POLAND	ŁZKS-100/63.13/20	1978	270/420	20	hard coal
34	Świnoujście Harbour POLAND	ŁZKS-500.28	1978	1100/1450	28	hard coal
35	Połaniec Power Plant POLAND	ŁZKS- 500/250.31.5/40	1978	1250/2000	40	hard coal
36	Yatagan Power Plant TURKEY	ŁZKS-250.25/31.5	1978	1250/2000	31.5	hard coal
37	Zdzieszowice Coking Plant POLAND	ŁZKS-250.25/31.5	1978	1250/2000	25	hard coal
38	Katowice Steelworks POLAND	ŁZKS- 500/250.31.5/40	1979	1250/2000	31.5	hard coal
39	Yatagan Power Plant TURKEY	ŁZKS-250.25/31.5	1979	1250/2000	31.5	hard coal
40	Yatagan Power Plant TURKEY	ŁZKS-250.25/31.5	1979	1250/2000	31.5	hard coal
41	Katowice Heat and Power Generating Plant POLAND	ŁZKS- 250/125.25/31.5	1979	800/1250	31.5	hard coal
42	Gdańsk North Harbour POLAND	ŁZKS- 1000/500.51.5/40R	1979	3200/4000	31.5	hard coal
43	Prunerov Power Plant CZECHO-SLOVAKIA	ŁZKS- 1000/500.51.5/40	1979	2500/3200	31.5	hard coal
44	Gdańsk North Harbour POLAND	ŁZKS- 1000/500.51.5/40	1980	2500/3200	40	hard coal
45	Prunerov Power Plant CZECHO-SLOVAKIA	ŁZKS- 1000/500.51.5/40	1980	2500/3200	40	hard coal
46	Prunerov Power Plant CZECHO-SLOVAKIA	ŁZKS- 1000/500.51.5/40	1980	2500/3200	40	hard coal
47	Katowice Steelworks POLAND	ŁZKS- 1000/500.51.5/40	1981	1250/2000	31.5	hard coal
48	Połaniec Power Plant POLAND	ŁZKS- 1000/500.51.5/40	1981	1250/2000	31.5	hard coal

1	2	3	4	5	6	7
49	Bełchatów Mine POLAND	ŁZKS-1600.33.5	1981	3000/6400	33.5	lignite
50	Boris-Kidric Power Plant POLAND	ŁZKS-125/63.16/20	1981	370/800	20	hard coal
51	Bełchatów Mine POLAND	ŁZKS-1600.33.5	1982	3000/6400	33.5	lignite
52	Bełchatów Power Plant POLAND	ŁZKS-1600.33.5	1983	3000/6400	33.5	lignite
53	Toruń Heat and Power Generating Plant POLAND	ŁZKS-250.25/31.5	1983	800/1250	31.5	hard coal
54	Yeniköy Power Plant TURKEY	ŁZKS-500.25/31.5	1983	1250/2000	31.5	lignite
55	Yeniköy Power Plant TURKEY	ŁZKS-500.25/31.5	1983	1250/2000	31.5	lignite
56	Yeniköy Power Plant TURKEY	ŁZKS-500.25/31.5	1984	1250/2000	25	lignite
57	Tychy Power Plant POLAND	ŁZKS-125.16/20	1984	370/800	20	lignite
58	Zgierz Dye-Industry Works POLAND	ŁZKS-125.16/20	1984	370/800	20	hard coal
59	Zgierz Dye-Industry Works POLAND	ŁZKS-125.16/20	1984	370/800	20	hard coal
60	Stalowa Wola Power Plant POLAND	ŁZKS-500.25/31.5	1984	800/1250	31.5	hard coal
61	Rzeszów Jeat and Power Generating Plant POLAND	ŁZKS-125.16/20	1985	370/800	20	hard coal
62	Opole Heat and Power Generating Plant POLAND	ŁZKS-125.16/20	1985	370/800	20	hard coal
63	Bełchatów Mine POLAND	ŁZKS-1600.33.5	1985	3000/6400	33.5	lignite
64	Katowice Steelworks POLAND	ŁZKS-500.31.5/40R	1986	2500/4000	31.5	iron ore
65	Świnoujście North Harbour POLAND	ŁZKS-1000.31.5	1986	2500/3200	31.5	hard coal
66	Czeczott Mine POLAND	ŁZSK-500.25/31.5	1987	1250/2000	31.5	hard coal
67	Gorlice Machineworks POLAND	ŁZKS-125.16/20	1987	370/800	20	hard coal
68	Katowice Steelworks POLAND	ŁZKS-500.31.5/40R	1987	2500/4000	31.5	iron ore
69	Grasim Steelworks INDIE	ŁZKS-250.40R	1991	750/750	40	iron ore
70	Kemorköy Power Plant TURKEY	ŁZKS-500.25/31.5	1989	1250/2000	25	lignite
71	Kemerköy Power Plant TURKEY	ŁZKS-500.254/31.5	1990	125/2000	25	lignite
72	Zdzieszowice Cocking Plant POLAND	ŁZKS-630.22	1992	1000/1300	22	hard coal

1	2	3	4	5	6	7
73	Fuller KCP Ltd Vizag INDIA	ŁZKS-250.31.5	1997/98	200/600	31.5	coke
74	Turów Power Plant POLAND	ŁZKS-125.16	1997/98	300/500	16	limestone
75	Paradip Port INDIA	ŁZKS-500.35	1999	3000/3000	35	iron ore
76	Kraków Heat/Power Generating Plant POLAND	ŁZKS-250.25/31.5 Retrofit	2001	1250/2000	31.5	hard coal
77	Haldia Port Calcutta INDIA	ŁZKS-500.28	1994/95	1500/1500	28	hard coal
78	Mallavika Steelworks INDIA	ŁZKS-125.22	1996	400/800	22	iron ore, manganese ore, coke
79	Paradip Port INDIA	SR-500.36	2006	3000/3000	36	iron ore
80	Neyveli Corporation Ltd INDIA	SR-1120.30	2006	3750/1850	30	lignite
81	Neyveli Corporation Ltd Barsingsar Mine INDIA	SR-500.30	2006	960/800	30	lignite

CRAWLER - MOUNTED CARRIERS

Item	Site	Type	Year of Construction	Load Capacity (kN)	Speed (m/min)	Number (pcs)
1	Bełchatów Lignite Surface Mine POLAND	TUR-500	1980-1992	7500	0 - 20	5
2	Bełchatów Lignite Surface Mine POLAND	TGS-500	1993	5000	7	1
3	Bełchatów Lignite Surface Mine POLAND	TRAB-60	1994/95	2 x 300	0 – 20	1
4	Neyveli Lignite Corp. Ltd INDIA	TC-2000	2000/2001	5800	0-30	1
5	Serbia EPS Kolubara	TC200Y	2004	4500	0-30	1
6	Bełchatów Lignite Surface Mine POLAND	TUR-600	2004	6000	0-30	5

BELT CONVEYORS

SURFACE MINES

Item	Site	Material Handled	Total Length	Number	Type	Capacity	Width of Conveyor Belt [mm]	Conveyor Belt Speed	Driving Power	Year of Construction
			[km]	[pcs]		[t/h]			[kW]	
1	2	3	4	5	6	7	8	9	10	11
1.	Turów POLAND	clays. sands	80.0	185	stationary shiftable stationary	19 000 7600 9500	2000 1600 1800	5.90 4.19 5.24	4x1000 2x300 4x630	1960-91
		lignite	25.0	45	stationary	3100	1400	5.24	1x800	1961-91
					stationary	3100	1400	5.24	1x500	1961-91
2	Adamów POLAND	clays. sands	16.0	40	shiftable	10 000	1800	5.24	2x599	1972-91
		lignite	25.0	45	shiftable	1700	1200	4.19	1x320	1970-91
			stationary	1700	1200	4.19	2x320	1963-91		
3	Kazimierz POLAND	clays. sands	17.0	12	shiftable	9350	1600	5.24	3x320	1966-91
					shiftable	5860	1600	5.25	2x320	1967-91
					shiftable	15 000	1800	5.75	4x630	1983-91
		lignite	2.5	5	shiftable	1440	1400	3.35	3x75	1964-91
4	Kolubara YUGOSLAVIA	clays. sands	21.3	30	shiftable	5900	1400	4.60	2x320	1965
		lignite	8.2	13	stationary	5900	1400	4.60	4x3200	1974
5	Kosovo. Dobro Selo. Belacevac I and II YUGOSLAVIA	clays. sands	20.1	28	shiftable	3000	1400	4.60	2x320	1968
		lignite	24.6	27	stationary	4500	1400	4.60	2x320	1965
stationary	700				1000	3.37	2x75	1966		
		stationary	1800	1200	5.24	2x320	1968			
6	Jarosłów POLAND	clays. sands	7.0	11	shiftable	725	800	2.50	2x40	1966-91
		refractory clays	16.0	22	shiftable	1500	1000	2.50	2x55	1967-91
			stationary	2400	1200	4.10	1x320	1969-91		
7	Machów POLAND	clays. sands	14.0	18	shiftable	15 000	1800	5.85	5x630	1968
		sulphur ore	4.0	10	stationary	2800	1400	3.15	5x100	1968
shiftable	2200				1400	3.35	2x75	1968		
8	Józwin POLAND	clays. sands	11.9	15	shiftable	15 000	1800	5.75	4x630	1968-91
					shiftable	7500	1600	5.24	4x320	1968-91
					shiftable	6500	1600	5.24	2x320	1969-91
		lignite	2.3	5	stationary	2000	1600	4.19	2x320	1970-91
9	Pałnów POLAND	clays. sands	11.9	15	stationary	11500	1800	5.75	4x630	1974-91
		lignite	2.3	5	shiftable	7500	1600	4.19	4x320	1974-91
shiftable	2000				1600	4.19	4x320	1974-91		
10	Caminau GERMANY	kaolin	2.0	14	stationary	500	800	1.90	1x22	1970-87
		clays. sands	1.6	6	shiftable				2x22	
stationary	500				800	1.90	1x37			
		shiftable						2x37		
11	Cirikovač YUGOSLAVIA	clays. sands	10.3	16	shiftable	3500	1200	4.19	2x320	1974
					stationary	5600	1400	4.50	3x320	1974
					shiftable	5600	1400	4.50	3x320	1974
12	Berzdorf GERMANY	clays. sands	15.5	24	shiftable	15 000	2000	5.24	6x630	1974-91
		lignite	5.0	4	shiftable	12 700	2000	4.60	5x630	1974-91
stationary	4800				1600	5.24	4x630	1974-90		
13	Bełchatów POLAND	clays. sands	40.0	50	shiftable	20 600	2250	5.20	4x1000	1975-91
					shiftable	20 600	2250	5.20	4x1000	
		lignite	50.0	50	stationary	20 600	2250	5.20	4x1000	1979-91
					shiftable	6400	1800	5.20	4x630	
		stationary			6400	1800	5.20	4x630		

1	2	3	4	5	6	7	8	9	10	11
14	Lubstów POLAND	clays. sands	15.0	16	shiftable shiftable stationary	15 000 9000 15 000	1800 1600 1800	5.75 5.24 5.75	4x630 4x320 4x630	1980-91 1980-91 1980-91
15	Dmno YUGOSLAVIA	clays. sands lignite	8.8 5.4	8 6	stationary shiftable stationary shiftable	11 000 3500	1800 1400 1400	5.20 4.60 4.60	4x630 4x315 4x315	1970-87 1985
16	Reichwalde GERMANY	clays. sands	6.2	5	shiftable	17 000	2000	6.0	2-4x1000	1985
17	Trojanovo BULGARIA	clays. sands	11.0	9	shiftable	18 000	2259	5.24	4x1000	1987
18	Jänschwalde GERMANY	legnite	7.0	9	stationary stationary shiftable	8000 3600 8000	2000 1600 2000	6.03 4.14 6.03	3x630 1x400 4x1000	1989
19	Turów Lignite Surface Mine POLAND	lignite	1.9	1	stationary curve- going.	6400	1800	5.24	3 x 630	1996
20	Syncrude Oil Sands Mine CANADA	oil sands	head station	1	shiftable	6300	1830	4.57	4 x 1000	1994
21	Belchatów Lignite Surface Mine POLAND	lignite. sands. clays	20	40	stationary	8000	1800 2250	5.24	2-4x 630. 1-4x1000	1994. 1995
22	El Abra CHILE	copper ore	drive stations. return stations. tensioni ng towers	3 3 3	stationary . portable	8620	1600 1800	5.67 5.04	4 x 1600 3 x 450	1995
23	Mae Moh THAILAND	lignite. overburden	drive stations. return stations	3	portable	13800	1600 1800	5.24	1 x 1000 2 x 1000 4 x 1000	1995
24	P.P.C. GREECE	lignite. overburden	drive stations. return stations	3 3	portable	18000	2400	5.24	4 x 1250	1996
25	P.P.C. GREECE	lignite. overburden	drive stations. return stations	3 5	stationary	3300	1200	5.24	4 x 430	1996
26	Neyveli Lignite Corp. INDIA	overburden	drive stations. return stations 6.0	2	shiftable	20000	2400	5.24	4 x 1250	1998/99

1	2	3	4	5	6	7	8	9	10	11
27	NMDC Bailadila INDIA	iron ore	0.5 0.8	2	down-hill	1800	1050	2.9	1 x 400 1 x 400	1998/99
28	Turów Lignite Surface Mine POLAND	overburden	~2.0	6	stationary. shiftable	20000 6400	2000 1800	5.90 5.24	2 x 630 4 x 630 2 x 320	1999
29	Neyveli Lignite Corp. INDIA	overburden	2x3.5	8	shiftable	6000	1600	4.20	4 x 350	2000
30	Bełchatów Lignite Surface Mine IV Ramp POLAND	lignite	28.27	30	stationary	8000 3500	1800	5.24	2x630 3x630 4x630	2001
			15.63	20	stationary	12500	2250	5.24	2x1000 3x1000 4x1000	2001
31	Bełchatów Lignite Surface Mine I KTZ Szczerców Open Pit POLAND	clay, sand	6.0	9	stationary shiftable	25000	2250	5.98	4x1000	2001
32	PPC GREECE	lignite	2x0,6	2	stationary	3150	1400	4,2	4x250	2001/02

1	2	3	4	5	6	7	8	9	10	11
33	Bełchatów Surface Lignite Mine ECS II Szczerców Open Pit	clay, sand	driving stations, return stations, distribut -ing stations	3	distributing	25000	2250	5,98	4x1000	2003/04
				3						
34	Serbia EPS Kolubara	clay, sand	6,0	4	shiftable	11000	2000	5,24	4x1000	2004
35	Bełchatów Lignite Surface Mine III ECS POLAND	Overburden	Drive station	4	shiftable	25000	2250	5,98	4x1000	2006
36	Bełchatów Lignite Surface Mine IV ECS Szczerców Open Pit POLAND	Overburden	6,0	6	Stationary shiftable	25000	2250	5,98	4x1250	Under constructi on

UNDERGROUND MINES

1	2	3	4	5	6	7	8	9	10	11
49	Victoria POLAND	sandstones shales	1.1.	6	stationary	300	1000	1.36	1x42	1962
50	Bernburg and Glückauf GERMANY	rock and potash salts	3.0	5	stationary	650	800	1.70	2x55	1971
51	T. Münzer GERMANY	potash salt	1.9	4	stationary	1200	1200	2.14	1x200	1973
52	Wesoła POLAND	hard coal	5.15	5	stationary stationary	400 960	1000 1200	1.70 2.10	2x1000 2x1000	1974 1973
53	Siersza POLAND	hard coal	3.5	6	stationary stationary	600 400	1000 1000	3.15 2.70	2x400 3x75	1974 1974
54	Rudna POLAND	copper ore	2.7	10	stationary stationary stationary reversible	3000 3000 3000 3000	1400 1400 1400 1400	2.50 2.50 2.50 2.50	2x320 2x320 1x160 1x160	1975 1975 1975 1975
55	Trzebieńka POLAND	zinc and lead ore	1.4	1	stationary	830	1000	3.67	2x500	1976

POWER PLANTS AND POWER/HEAT GENERATING PLANTS

1	2	3	4	5	6	7	8	9	10	11
56	Turów POLAND	clays. sands	5.9	23	stationary	2500	1400	3.35	2x160	1968-91
		lignite	2.2	54	stationary stationary	3400 1200	1600 1200	5.24 3.35	1x160 1x320	1970 1970
57	Deva ROMANIA	hard coal	2.4	13	stationary	1000	1200	2.60	1x75	1969
58	Prunero CZECHO- SLOVAKIA	lignite	3.4	15	stationary	1699 (800)	1600 1200	2.50 3.20	6x320 9x160 9x5.5	1976
59	Kawęczyn POLAND	finer	1.9	26	stationary	1300	1200 (600)	3.10	4x320 4x160 1x125 5x75 4x30 2x22	1977
60	Yatagan TURKEY	lignite	3.4	23	stationary	1200 1600	1400 1600	2.60 3.20	2x500 5x160 2x90 8x55 4x22 2x11 15x5.5	1978
61	Bełchatów POLAND	lignite	6.5	85	stationary shiftable	6400 3200	2250 1800	4.00 3.20	1x132 1x75 3x320 2x132 2x630	1978-80
62	Wrocław POLAND	hard coal	3.7	21	stationary shiftable	600	1000	2.00	1x15 1x22 1x30 1x45 1x75	1981-83

1	2	3	4	5	6	7	8	9	10	11
63	Stalowa Wola POLAND	hard coal	0.6	6	stationary	600	1000	2.40	1x110 1x75 1x55 3x45	1983
64	Włocławek III POLAND	gard coal	1.8	8	stationary	600	1000	2-2.50	2x200 1x110 2x75 1x37 1x30 1x22	1985
65	Bełchatów POLAND	fly-ash	8.6	32	stationary shiftable	300 3200	1200 1800	1.00 3.20	1x22 3x630 1x320	1985-90
66	Yeniköy TURKEY	lignite	10.6	51	stationary	800 1600 2600	1400 (2000)	2.50 3.20	6x320 4x250 2x160 10x132 3x75 22x55 14x22 3x11 32x5.5	1985
67	Pruszków II POLAND	fines	2.6	26	stationary	1300	1200	3.10	2x320 2x200 10x160 1x110 5x75 2x30 4x22	1986
68	Szczecin POLAND	fines	0.7	9	stationary	420	650 (800)	2.30	1x45 2x37 2x22 2x11 1x15	1988
69	Kemerköy TURKEY	lignite	12.4	41	stationary	1600 800	1600 (1400)	2.50 3.30	17x320 9x250 10x55 2x30 4x22 8x11 20x5.5	1989-91
70	Bełchatów Power Plant POLAND	gypsum	0.43	7	stationary. mobile	65 203 600	1000 1000	0.62 1.30 2.70	1 x 3 1 x 4 1 x 37 1 x 55	1993/ 1994
71	Opole Power Plant POLAND	gypsum	0.64	7	stationary. mobile	200	800 1000	1.30 1.36	1 x 22 1 x 7.5	1995
72	Bełchatów Power Plant POLAND	gypsum	1.0	4	stationary	100 200	800	1.30	1 x 55 1 x 37 1 x 22 1 x 45	1996
73	Schleenheim Power Plant GERMANY	lignite	0.5	6	stationary	2400	1400 1600	4.20	2 x 710 2 x 710 2 x 200 2 x 200 1 x 110 1 x 55	1997

1	2	3	4	5	6	7	8	9	10	11
74	Bełchatów Power Plant POLAND	limestone	3 x 6m	3	stationary, flat	150/ 300	1600	0.01/ 0.02	1 x 17/27	1998
75	Łaziska Power Plant POLAND	gypsum	0.1	7	stationary, mobile	22.5 45 300	650 800 1000	1.05 1.3	1 x 5.5 1 x 7.5 1 x 15 1 x 22	1999
76	Bełchatów Power Plant POLAND	gypsum	0.43	7	stationary, mobile	65 203 600	1000 1000	0.62 1.30 2.70	1 x 3 1 x 4 1 x 37 1 x 55	1993/ 1994
77	Opole Power Plant POLAND	gypsum	0.64	7	stationary, mobile	200	800 1000	1.30 1.36	1 x 22 1 x 7.5	1995
78	Bełchatów Power Plant POLAND	gypsum	1.0	4	stationary	100 200	800	1.30	1 x 55 1 x 37 1 x 22 1 x 45	1996
79	Schleenheim Power Plant GERMANY	lignite	0.5	6	stationary	2400	1400 1600	4.20	2 x 710 2 x 710 2 x 200 2 x 200 1 x 110 1 x 55	1997
80	Bełchatów Power Plant POLAND	limestone	3 x 6m	3	stationary, flat	150/ 300	1600	0.01/ 0.02	1 x 17/27	1998
81	Łaziska Power Plant POLAND	gypsum	0.1	7	stationary, mobile	22.5 45 300	650 800 1000	1.05 1.3	1 x 5.5 1 x 7.5 1 x 15 1 x 22	1999

OTHERS

1	2	3	4	5	6	7	8	9	10	11
82	„Farakka” irrigation canal INDIA	slimy-sandy soil	0.5	3	moving trans- versally	2000 2000	1000 1000	2.50 2.50	1x160 1x160	1968 1968
83	Sulphur stevedoring station in port of Gdańsk POLAND	crushed and granulated sulphur	1.8	7	stationary longitudinally	1500 750	1400 1000	1.60 1.60	2x100 1x22	1971 1971
84	North Port of „Gdańsk” POLAND	hard coal	4.9	31	stationary stationary	2000 2000	1400 1400	4.24 4.24	2x132 2x100	1974 1974

1	2	3	4	5	6	7	8	9	10	11
85	„Sobolewo” Aggregate Exploitation Workc POLAND	gravel	2.1	3	stationary shiftable	1600	1400	3.30	2x250 1x250	1950
86	„Morawica III” chrushed stone works POLAND	limestone	1.5	5	shiftable stationary	600 600	1000 1000	1.76 1.76	2x55 2x75	1975 1975
87	„Belapatrava” cement plant HUNGARY	limestone clay	2.8	1	stationary	750	1000	2.00 (0.24)	3x100	1979
88	„Katowice” ironworks POLAND	iron ore. hot sinters. coke and fine grained coke. limestone and dolomite	19.5	56	stationary stationary stationary stationary	2000 1100 1500 1500	1400 1400 1200 1200	2.10 2.10 2.10 2.10	2x160 1x160 2x160 2x55	1978

MOBILE BELT CONVEYORS

Item	Site	Type	Material Handled	Length (m)	Num- ber (pcs)	Capacity (m ³ /h)	Width of Conveyor Belt (mm)	Year of Cons- truction
1	2	3	4	5	6	7	8	9
89	Bełchatów Lignite Surface Mine POLAND	SPZ-1200	lignite	24	2	860	1200	1993
90	Dadri Power Plant INDIA	MC-1	ash	32	1	840	1200	1992
91	Chrudim Steelworks CZECH REPUBLIC	PSG-6600	hard coal	32 + 28	1	6500	1800	1990
92	Chrudim Steelworks CZECH REPUBLIC	PVP-4500	overburden	35 + 40	1	5500	1800	1990
93	Chrudim Steelworks CZECH REPUBLIC	PVZ-2500	overburden	45 +27	1	2500	1200	1990
94	Turów Power Plant POLAND	B 1200-40	lignite. coke. ash. bottom ash	22 + 18	1	1200	1200	1992
95	Konin Lignite Surface Mine POLAND	PSD 8000	sands. gravels. clays	28 + 48	-	12 500	2000	*)
96	Bełchatów Power Plant POLAND	gypsum	0.43	7	station- ary, mobile	65 203 600	1000 1000	0.62 1.30 2.70
97	Opole Power Plant POLAND	gypsum	0.64	7	station- ary, mobile	200	800 1000	1.30 1.36

1	2	3	4	5	6	7	8	9
98	Bełchatów Power Plant POLAND	gypsum	1.0	4	stationary	100 200	800	1.30
99	Schleenheim Power Plant GERMANY	lignite	0.5	6	stationary	2400	1400 1600	4.20
100	Bełchatów Power Plant POLAND	limestone	3 x 6m	3	stationary, flat	150/ 300	1600	0.01/ 0.02
101	Łaziska Power Plant POLAND	gypsum	0.1	7	stationary, mobile	22.5 45 300	650 800 1000	1.05 1.3
102	Bełchatów Power Plant POLAND	gypsum	0.43	7	stationary, mobile	65 203 600	1000 1000	0.62 1.30 2.70

*) 1995 - Basic Design

5. ELECTRICAL EQUIPMENT

SPREADERS. RECLAIMERS AND BUCKET WHEEL EXCAVATORS

Item	Site	Type	Manufacturer	Driving Power [MW]	Year of Construction
1	2	3	5	5	6
1	Welzow-Süd II GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1970
2	Berzdorf GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1971
3	Jänschwalde I GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1971
4	Profen GERMANY	SRs 2400 35/9.0 (2x630 kW)+VR+/-10m	Schwermaschinenbau Lauchhammerwerk	6.0	1971
5	Lupoala ROMANIA	SRs 1300 26/2.5.0(500 kW)+VR	Schwermaschinenbau Lauchhammerwerk	2.9	1972
6	Nochten I and II GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1972
7	Nochten III GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1973
8	Greifenhain GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1974
9	Welzow-Süd GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	6.6	1974
10	Jänschwalde II/III GERMANY	Es 3750 28-34/72-31x6030	Schwermaschinenbau Magdeburg-Buckau	6.6	1975
11	Belchatów POLAND	SRs 2000 30/6.0(2x500 kW)+VR	Schwermaschinenbau Lauchhammerwerk	5.2	1976
12	Ekibastus SOVIET UNION	SRs(K) 2000 28/3.0 (2x630 kW)	Schwermaschinenbau Lauchhammerwerk	3.8	1978
13	Delitsch GERMANY	Es 3150 28-34/27-31x4400	Schwermaschinenbau Magdeburg-Buckau	7.2	1978
14	Jänschwalde IV GERMANY	Es 3750 28-34/27-31x6030	Schwermaschinenbau Magdeburg-Buckau	6.6	1978
15	Kumertau GERMANY	SRs(K) 470 17/1.5.0(500 kW)	Schwermaschinenbau	1.1	1979
16	Turów POLAND	KWK-1400 (3x24)	FAMAGO-Zgorzelec	1.8	1980
17	Syerma CZECHO-SLOVAKIA	SRs 2000 28/33.0(2x630 kW)	Schwermaschinenbau Lauchhammerwerk	4.4	1980
18	Kazimierz POLAND	SRs 2000 28/3.0(2x630 kW)+VR+/-10 m	Schwermaschinenbau Lauchhammerwerk	4.2	1981
19	Reichwalde I GERMANY	Es 3750 28-34/27-31x6030	Schwermaschinenbau Magdeburg-Buckau	6.6	1982
20	Jänschwalde GERMANY	Ers 1120 20-14/17.5-22x1920	Schwermaschinenbau Magdeburg-Buckau	2.9	1983
21	Kansk-Atschinsk SOVIET UNION	VR 4000 (K) 132.10/10	Schwermaschinenbau Lauchhammerwerk	2.0	1984
22	Kansk-Atschinsk SOVIET UNION	SRs(K) 4000 36/2.5.0(3x630 kW)	Schwermaschinenbau Lauchhammerwerk	5.4	1984
23	Aleksandrija SOVIET UNION	Ers 1120 20-14/17.5-22x1920	Schwermaschinenbau Magdeburg-Buckau	2.9	1985
24	Reichwalde II GERMANY	Es 3750 28-34/27-31x6030	Schwermaschinenbau Magdeburg-Buckau	6.6	1985

1	2	3	5	5	6
25	Ekibastus IV SOVIET UNION	SRs(k) 2000 28/3.0 (2x630 kW)	Schwermaschinenbau Lauchhammerwerk	3.8	1986
26	Welzow-Süd GERMANY	SRs 2000 30/3.5.0(3X630 kW)	Schwermaschinenbau Lauchhammerwerk	3.6	1987
27	Trojanovo BULGARIA	SRs 5000 36/2.5.0 (3x630 kW)	Schwermaschinenbau Lauchhammerwerk	4.8	1989
28	Bełchatów POLAND	SchRs 630 15/1.5	Orenstein u. Koppel	1.3	1989
29	Trojanovo BULGARIA	VR 4000 132.10/10	Schwermaschinenbau Magdeburg-Buckau	2.9	1989
30	SOVIET UNION	Ers 1120 20-14/17.5-22x1920	Schwermaschinenbau Magdeburg-Buckau	5.3	1990
31	Turów. Lignite Surface Mine POLAND	ZGOT 6300 Spreader	Famago	1.63	1994
32	Bogdanka. Hard Coal Mine POLAND	ZGOT 1100.35 Spreader and Tripper Car	Famak	0.2	1994
33	Bełchatów Power Plant POLAND	ŁSD-63.25 Bridge Reclaimer (PLC controlled)	Famak	0.09	1994
34	Bełchatów Power Plant POLAND	ZS-350.18 Rail Mounted Spreader (PLC controlled)	Famak	0.05	1994
35	Opole Power Plant POLAND	ŁZP-200.31 Gantry Dragline Reclaimer (PLC controlled)	Famak	0.09	1997
36	Jaworzno III Power Plant POLAND	ŁZP-200.34 Gantry Dragline Reclaimer (PLC controlled)	Famak	0.09	1996
37	Konin. Lignite Surface Mine POLAND	KWK 1800c Bucket Wheel Excavator (PLC controlled)	—	3.15	*)
38	Konin. Lignite Surface Mine POLAND	ZGOT-1250c Spreader (PLC controlled)	—	5.20	*)
39	Bełchatów. Lignite Surface Mine POLAND	ZGOT-5500.42 Spreader (PLC controlled)	Bełchatów Lignite Surface Mine Famago	1.15	1998

1	2	3	5	5	6
40	Marica Power Plant BULGARIA	ŁKS-1250.12 Rail Mounted Reclaimer (PLC controlled)	FAMAK	0.25	1997
41	Turów Power Plant POLAND	ŁZKS 125.16 Stacker-Reclaimer	—	—	1997 design
42	Kozienice Power Plant POLAND	Scraper Reclaimer	—	—	2000 design
43	Turów Surface Lignite Mine POLAND	A2RsB 5000 Spreader retrofit	—	—	2001 design
44	Konin Lignite Mine POLAND	Rs400 Excavator displacement	—	—	2002 design
45	Bełchatów Surface Lignite Mine POLAND	Rar Materials Field ECS Complex I	Bełchatów Surface Lignite Mine POLAND	4 x 0.63	2002 construction
46	Turów Surface Lignite Mine POLAND	Conveyor with Dynamic Braking	Turów Surface Lignite Mine POLAND	2 x 0.63	2003 construction
47	Bełchatów Power Plant POLAND	Extension of Limestone Handling System	—	—	2003 construction
48	Kolubara Lignite Mine SERBIA	Belt conveyors with drive units equipped with inverters Tripper Car Loading Table	---	4x1.0	2006
49	Konin, Lignite Surface Mine POLAND	Spreader A2RsB5000M retrofit	-	-	2006
50	Belchatow Power Plant POLAND	Belt Conveyors – 3 Nos. retrofit	-	-	2006
51	Konin, Lignite Surface Mine Dzewce Pit POLAND	Lignite Loading Station retrofit	-	-	2006
52	Bełchatów Surface Lignite Mine POLAND	Belt Conveyor System	-	4x1.25	2006

*) 1995 - Basic Design

SPECIAL CONVEYOR CONTROL/DRIVE SYSTEMS

Item	Site	Type	Manufacturer	Driving Power (MW)	Year of Construction
1	Turów. Lignite Surface Mine POLAND	stepped speed control (cascade)	Elektromontaż Wrocław	1.26+1.89+2.5+2+3+4=12.67	1992
2	Konin. Lignite Surface Mine (Lubstów Pit) POLAND	dynamic braking (PLC controlled)	Konin. Lignite Surface Mine	2.52	under construction
3	ACC Gagaj. Cement Plant INDIA	dynamic and counter-current braking. (PLC controlled) - 2 belt conveyors	Local manufacturer	0.18+0.075=0.255	under construction
4	Yatagan. Power Plant TURKEY	supervised starting with use of Voigth couplings (PLC controlled) - 4 belt conveyors	Yatagan Power Plant	2x0.5+2x0.75=2.5	1994
5	Bełchatów Power Plant POLAND gypsum handling	PLC controlled	Elektrobudowa Bełchatów	< 0.2	1997

OTHERS

Item	Site	Type	Manufacturer	Driving Power (MW)	Year of Construction
1	Pollytag Gdańsk. Lightweight Aggregate Plant POLAND	power supply. control and signalling with use of PLC's	Elektrobudowa Gdańsk	2.3	1994

6. POWER PLANTS AND HEAT/POWER GENERATING PLANTS

Item	Site	Project	Fuel	Installed Power [MW]	Year of Construction
1	Turów POLAND	lignite handling, ash removal (ash transportation)	lignite	1600	1979
2	Kosovo YUGOSLAVIA	lignite handling	lignite	1600	1966
3	Kostolac II YUGOSLAVIA	lignite handling	lignite	110	1967
4	Obrenovac and Kolubara YUGOSLAVIA	lignite supply	lignite	2500	1969
5	Deva ROMANIA	lignite handling	hard coal	800	1969
6	Bobov Dol BULGARIA	lignite handling	lignite	600	1972
7	Tuncbilek TURKEY	lignite handling	lignite	1600	1974
8	Tuzla YUGOSLAVIA	lignite handling	lignite	800	1976
9	Thierbach GERMANY	lignite handling	lignite	860	1977
10	Kozienice POLAND	lignite handling	hard coal	2600	1977
11	Cottbus GERMANY	lignite supply	lignite	900	1978
12	Chvaletice CZECHO-SLOVAKIA	lignite reloading station	lignite	500	1979
13	Prunerov II CZECHO-SLOVAKIA	lignite handling	lignite	1050	1979
14	Połaniec POLAND	coal handling, ash removal (ash transportation)	hard coal	1600	1979
15	Gdynia III POLAND	lignite handling	hard coal	490	1979
16	Kawęczyn POLAND	lignite handling	hard coal	744	1979
17	Osłomej YUGOSLAVIA	ash removal (ash transportation)	lignite	300	1980
18	Wrocław POLAND	coal handling, ash removal (ash transportation), ash disposal site	hard coal	1400	1981
19	Bełchatów POLAND	coal handling, ash removal (ash transportation)	lignite	4320	1981-86
20	Yatagan TURKEY	lignite supply, lignite handling, ash removal (ash transportation), ash disposal site	lignite	1050	1982
21	Stalowa Wola POLAND	lignite handling	hard coal	1250	1983
22	Toruń-Grębocin POLAND	lignite handling	hard coal	279	1983
23	Ptolemais GREECE	ash disposal site	lignite	600	1984

Item	Site	Project	Fuel	Installed Power [MW]	Year of Construction
24	Zabrze II POLAND	lignite handling	hard coal	412	1984
25	Yeniköy TURKEY	lignite supply, lignite handling, ash removal (ash transportation), ash disposal site	lignite	1050	1985-87
26	Pruszków II POLAND	lignite handling	hard coal	182	1986
27	Bydgoszcz POLAND	lignite handling	hard coal	1300	1986
28	Lublin-Wrotków POLAND	lignite handling	hard coal	424	1987
29	Kemerköy TURKEY	lignite supply, lignite handling	lignite	630	1995-99
30	Szczecin POLAND	lignite handling	hard coal	530	1991-93
31	Opole POLAND	desulphurization	hard coal	2160	1996
32	Bełchatów POLAND	desulphurization	lignite	6 × 360	2000
33	Połaniec POLAND	desulphurization	hard coal	4 × 200	1998
34	Łaziska POLAND	desulphurization	hard coal	1040	1999
35	Żerań POLAND	lignite handling	hard coal	Ofz-450	1999
36	Katowice POLAND	sorbent supply, coal handling, ash removal	hard coal	BCF-100	1999
37	Komorany CZECH REPUBLIC	sorbent supply, ash removal	lignite	5 × OF-140	1998
38	Łagisza POLAND	desulphurization, DESOX, product storage	hard coal	2 × OF-380	1998
39	Kozienice POLAND	desulphurization	hard coal	2 × 500	2001
40	Kozienice POLAND	desulphurization	hard coal	800	2004+

Note:

The flue gas desulphurization system relates mostly to the limestone handling, crushing, milling, loading, storage and other processing facilities including supply of the media to the absorber and the waste and sewage management as well.

7. CIVIL AND STRUCTURAL ENGINEERING

GENERAL, SOCIAL AND NON-RESIDENTIAL CONSTRUCTION

Item	Site	Specification
1	Surface Mining Equipment Factory – FUGO POLAND	Hall of steel structure factory, 4 Nos. of 4×30 – 220 m lengthwise bays, 2 Nos. of 2×30 – 120 m crosswise bays. Track-mounted cranes $Q_{max} = 320$ kN. Development area $F_2 = 32.00$ m ² , cubage $V=460,000$ m ³ . System steel structure, light housing out of corrugated plates and mineral wool.
2	Lignite Surface Mine Bełchatów POLAND	Repair hall, steel structure, 4 Nos. of 24 m span bays with 2×9 m outhouses, 110 m long. Development area $F_2=10.700$ m ² . cubage $V=141.000$ m ³ . Overhead cranes in each bay. $Q_{max}=320/80$ kN. Light housing out of corrugated plates.
		Conveyor belts reconditioning hall, reinforced concrete structure, 4 Nos. of 24 m span bays, cable-concrete girders $l = 24$ m, every 6 m. Development area: $4 \times 24 + 6$ m – 128.5 m = 13.107 m ² . cubage $V=145.000$ m ³ . Housing out of prefabricated reinforced concrete slabs.
		Auxiliary equipment repair hall, steel structure, 2 Nos. of 24 m span bays provided with track-mounted cranes. Development area including outhouses $F_2=6.934$ m ² . cubage $V=63.400$ m ³ . Light housing out of corrugated plates and mineral wool
		Main store CMKT-1, steel structure, 3 Nos. of 24 m span boys provided with track-mounted cranes $Q=80.160.300$ kN and storeyed outhouse. Development area $F_2 = 11.921$ m ² . cubage $V = 152.940$ m ³ . Light housing out of corrugated plates and mineral wool.
3	Crushed Aggregate Plant Morawica POLAND	Aggregate screening plant, building of steel frame construction, cubage $V = 42000$ m ³ , 46.5 m high. Construction loaded dynamically by screens at level +21.2 m.
4	Basalt Processing Plant Krzeńców POLAND	Grit plant. Overground portion ($V=31.100$ m ³) as steel frame construction, underground portion ($V=4215$ m ³) out of reinforced concrete. Dimensions in plan: 37.5×20.1 m, some 47 m high. Dynamic loads by screens at level +22.3 and +28.3 m.
		Primary crushing plant. Reinforced concrete ground-penetrated (on slope) foundation shaped cylindrically to support 200t cone crusher. Inner diameter of cylinder: 15.5 m; some 22 deep.
		43 mx24 m housed store of finished product. Steel structure: crosswise one, triangular plate girder frames of 43 span length. In lengthwise centreline of store, at level +16.5 m, housing on 12 m wide galleries to support four mobile conveyors. Foundation with stays, retaining walls, reinforced concrete tunnels.
5	North Port Gdańsk POLAND	Wagon tippers building, founded on silted ground, at level of about 7 m below sea level. Heavy multi-layer insulations (among others, aluminium screens, copper plate). Upper portion of 36 m span length as steel structure. Spatial triangular roof trusses. Light housing.
6	River Port on Elbe Lovosice CZECHO-SLOVAKIA	Building of coal unloading from wagons (unloading bin). Lower portion (up to level +7 m) out of reinforced concrete of cubage 24 630 m ³ , in this portion two rows of 7550 m ³ bunkers. Upper portion of hall type as steel structure ($V=33280$ m ³). Width of building in centreline of columns: 13 m, length: 256 m.
		Building of coal loading on barges (loading bin). Steel structure, 3 Nos. of lengthwise bays (along wharf) and 1 No. of crosswise bays in mid-length, building width: 36 m, length: 72, cubage $V = 35500$ m ³ . Elevations out of light sandwich plates PW8.

1	2	3
7	Slate Roasting Plant Dzikowiec Kłodzki POLAND	One-chimney stack (d=3 m), 105 m high. Up to level +7 m, space truss tower of square section. Special bearings for easy assembly.
8	Lignite Surface Mine Bełchatów POLAND	<p>Pumping station and hydrophore building; development area: 1.213 m². cubage V=7460 m³. Reinforced concrete structure out of prefabricated components.</p> <p>Garage for special trucks, development area: 2086 m², cubage V=16000 m³. Prefabricated reinforced concrete structure of 5×9 and 6×12 columns grid.</p> <p>Cloak-bath room for 600 persons (303 persons per 1 shift) with rooms for working clothing cleaning and drying and also, with dining room and kitchen facilities. Development area: 887 m²; effective area: 3013 m²; cubage V=11812 m³. Frame construction out of prefabricated reinforced concrete components.</p> <p>Administration building for 485 users, 10 overground storeys. Development area: 711 m²; effective area: 7365 m²; cubage V=21630m³. Reinforced concrete structure out of prefabricated frames. Outside curtain multi-layer walls, aluminium windows. Building designed on mining damage ground.</p>
9	BUS GmbH Bendorf. GERMANY 1992	8 Nos. of steel structure silos of capacity V=200 m ³ each designed for building materials storage. Silos are fitted with hand-controlled dampers to load trucks.
10	SCHÜSSLER GmbH Nürnberg. GERMANY 1992	
11	Turów Lignite Surface Mine POLAND 1992	Chemical electrical laboratory and testing station.
12	STAHLBAU GmbH Niesky, GERMANY 1992-1993	<ul style="list-style-type: none"> - steel structure for Gobel-Radeberger Car Dealer House - steel structure for 91F type filling station with shop - steel structure for Shell filling station with service facilities (4 Nos.) - steel structure for Niederdorf car repair shop - steel structure for Gehre Car Dealer House
13	ABB FLÄKT Butzbach, GERMANY 1993	steel structure of electrofilter and reactor
14	Lightweight Aggregate Plant POLLYTAG Gdańsk, POLAND 1994	<ul style="list-style-type: none"> - screening plant - sintering plant - palletising plant - fans building - administration building and electrical switching station - outer sewer system - roads and yards
15	OPOLE Power Plant Opole, POLAND 1994	Flue gas desulphurization plant including: <ul style="list-style-type: none"> - gypsum storage - loading station - compressor station
16	BABCOCK Anlagen GmbH Oberhausen, GERMANY 1994	Steel structure of silos
17	KNAUF-Poland Ltd. Bełchatów, POLAND 1995	Gypsum wallboard plant. Complete civil and installation documentation for manufacturing and storage facilities of total cubage 129 000 m ³ and development area 13 900 m ² . Execution design.
18	ABB Butzbach GERMANY, 1995	Steel structure of electrical precipitator for Lippendorf Power Plant.

1	2	3
19	Adamów Lignite Surface Mine POLAND 1992	Cloak and bath rooms building of cubage $V = 3600 \text{ m}^3$.
20	Turów Lignite Surface Mine POLAND 1995	Administration-social facilities (cubage $V = 790 \text{ m}^3$). Site development (yards and parking areas).
21	Adamów Lignite Surface Mine POLAND 1970-1996	Roads and yards in surface mine. Roads – 40 km, yards - $150\,000 \text{ m}^3$
22	Bełchatów Lignite Surface Mine POLAND 1975-1996	Roads and bridge facilities in surface mine. Roads – 40 km, bridges and culverts – 60 Nos.
23	Brzeg Town Municipality (Opole Province) POLAND 1996	Development plan of post-Soviet Army air field (600 ha)
24	Knurów Town Municipality POLAND 1996	Feasibility study for management of municipal landfill site (34.5 ha)
25	KNAUF-Bełchatów Ltd. POLAND 1996	Administration-social building of cubage $V = 6300 \text{ m}^3$. Site development, yards and parking areas.
26	CASINO-Poland/France Kraków, POLAND 1996	Hipermarket and shopping gallery of area $22\,500 \text{ m}^2$. Car park of area: $80\,000 \text{ m}^2$. Structural – civil, installation and communications design.
27	Bełchatów Power Plant POLAND 1996	Trestles of belt conveyors for gypsum handling from power plant to gypsum wallboard plant “KNAUF-Bełchatów”. Length: 1 km, number: 4 Nos., capacity: 100-200 t/h.
28	KNAUF-Jaworzno III Ltd. Jaworzno, POLAND 1997-1998	Plaster and gypsum wallboard plant. Civil – installation execution design for production and storage facilities of total cubage 69970 m^3 and development area 8654 m^2 .
29	KNAUF-BAUPRODUKTE-Polska Ltd. Bełchatów, POLAND 1998	Building materials mixing plant. Multidisciplinary civil design of production-storage hall of total cubage of 24950 m^3 and development area of 3200 m^2 .
30	Turów Lignite Surface Mine POLAND 1998	Truck and bus wash house. Multidisciplinary civil design of car wash with cubage of 3990 m^3 and development area of 590 m^2 .
31	KNAUF- Bełchatów Ltd. POLAND 1998	Extension of gypsum wallboard plant in Bełchatów. Enlargement of existing wallboard production line building. Cubage 13550 m^3 , development area 1530 m^2 .
32	T. Kościuszko Power Plant in Połaniec, POLAND 1997-1998	Flue Gas Desulphurization Plant. Multidisciplinary civil design of absorber building. Cubage 133000 m^3 , development area 3140 m^2 .
33	Odra Cement Plant Opole, POLAND 1998	Cement plant revamping project. Civil designs for retrofit of rotary furnace, clinker cooling, homogenizing department and electrical precipitator installation.
34	Bełchatów Lignite Surface Mine POLAND 1998	Design of workshop facilities for departments m-3 and m-7. Detailed civil drawings for workshop house of cubage 14300 m^3 and development area 2000 m^2 .

1	2	3
35.	ATLAS Gypsum and Anhydrite Mine Nowy Łąd – Niwice POLAND 1999	Pulverised anhydrite plant. Civil and detail engineering of anhydrite grinder station and pulverised anhydrite storage including additional outdoor storage silos. Steel structures, cubage of approx. 6000 m ³
36.	Konin Lignite Surface Mine Drzewce Open Pit POLAND 1999	Detailed design of lignite railway including associated facilities. Railway length of 9.53km.
37.	Kozienice Power Plant Kozienice, POLAND 1999	Gypsum storage and conveyor route for Flue Gas Desulphurization Plant. Civil and detail engineering. Storage of approx. 56 000 m ³ volume. Approx. 250 m long conveyor bridges.
38.	Bełchatów Lignite Surface Mine POLAND 1999-2001	Supporting facilities of Szczerców Open Pit. Cubic volume structures (hotels, shelters, social buildings), roads and yards, crane runways, sewer systems and facilities within systems.
39.	KNAUF-Bełchatów Ltd. POLAND 2000-2001	Extension of storage room. Civil and detail engineering approx. 46 000 m ³ storage room.
40.	KNAUF-Bełchatów Ltd. POLAND 2002-2003	Raw materials reloading yard. Belt conveyor system and temporary gypsum storage. Total area of approx. 9000 m ² . Civil and execution designs.
41.	KNAUF-Jaworzno III Ltd. Jaworzno, POLAND 2003	Raw materials unloading yard. Unloading bunker, tonne conveyor and gypsum storage yard of approx. 2500 m ² area. Civil and execution designs.
42.	Bełchatów Power Plant POLAND 2002-2003	Revamping project of limestone handling system. Conveyor galleries, transfer junction and crusher building. Civil design + execution.
43.	PZF Polfa Pabianice S.A. POLAND 2003-2004	Multi-function drug storehouse. Complex of facilities. High storage room V = 31.400 m ³ . Forwarding house V = 18.100 m ³ Office building V = 5.300 m ³ Auxiliary facilities V = 1.500 m ³ Civil and execution designs for installations. Execution designs in area of architecture and civil works and also, structural and civil works.
44.	Kozienice Power Plant S.A. Kozienice, POLAND 2004-2005	Flue gas desulphurization plant for 200 MW units of 800 MWe equivalent capacity. Civil and execution designs for civil facilities and engineering structures in area of architecture and civil works, structural, sanitary systems and electricals. 1. Absorber Ø = 19,65; h = 32,85 m 2. Electrical building V = 4200 m ³ 3. Pumping station building V = 3300 m ³ 4. Slurry handling and gypsum dewatering building including sewage treatment plant V = 10.300 m ³ 5. Foundation and structure of wet stack h = 909 m 6. Wet stack Ø = 10,1; h = 120 m 7. Tanks and engineering structures related to flue gas desulphurization technology

8. ENVIRONMENTAL PROTECTION. WASTE DISPOSALS

WASTE DISPOSALS

Item	Site	Waste Producing Plant	Type of Wastes	Waste Disposal Rate [thous. m ³ /year]	Capacity of Disposal Area [mil. m ³]	Dumping Height [m]	Handling and Disposal Technology	Land Reclamation
1	2	3	4	5	6	7	8	9
1	Kościelniok POLAND	Pniówek Hard Coal Mine	Coal wastes	3500	89.0	30	Belt conveyors Spreader	Afforestation- Sodding
2	Pochwacie POLAND	Zofiówka Hard Coal Mine	Coal wastes	920	36.6	70	Railway Belt conveyors Spreader	Afforestation- Agriculture
3	Mszana POLAND	Moszczenica Hard Coal Mine	Coal wastes	500	2.0	11	Railway Dozers	Afforestation- Agriculture
4	Skrzyszów POLAND	1 Maja Hard Coal Mine	Coal wastes	1100	13.0	60	Railway Dozers	Afforestation- Agriculture
5	Borynia POLAND	Borynia Hard Coal Mine	Coal wastes	2400	30.0	90	Railway Belt conveyors Spreader	Afforestation- Sodding
6	Chwałowice POLAND	Chwałowice Hard Coal Mine	Coal wastes	850	10.0	20	Railway Dozers	Afforestation- Sodding
7	Buków POLAND	Anna Hard Coal Mine	Coal wastes	50	14.0	20	Railway Dozers	Afforestation- Sodding
8	Bogdanka POLAND	Bogdanka Hard Coal Mine	Coal wastes	1300	11.2	17	Belt conveyors Spreader	Afforestation- Sodding
9	Szotkówka POLAND	Jastrzębie Hard Coal Mine	Coal wastes	1000	11.0	30	Railway Dozers	Afforestation- Sodding
10	Pozgwizdów POLAND	Morcinek Hard Coal Mine	Coal wastes	500	3.6	18	Railway Dozers	Afforestation- Sodding
11	Przechlebie POLAND	Zabrze. Makoszowy and Gliwice Hard Coal Mines	Coal wastes	1200	17.2	20	Railway Belt conveyors Spreader	Afforestation
12	Przechlebie POLAND	Rybnik Power Plant	Fly ash Bottom ash	1400	12.0	20	Hydraulic	–
13	Wizów POLAND	Wizów Chemicals Plant	Phosphogyp- sums	94	2.0	35	Trucks	Temporary planting with trees and shrubs
14	Bełchatów POLAND	Bełchatów Power Plant	Fly ash Bottom ash	5000	80.0	Together with overburden from Bełchatów Lignite Surface Mine		
15	Pątnów POLAND	Pątnów Power Plant	Wastes from power plant	1300	33.0	16	Railway. Hydraulic	Affore- station- Agriculture
16	Knurów POLAND	Knurów Town and Adjacent munici- palities	Municipal Wastes	142	0.997	10-19	Trucks. Dozers. Compactor	Afforestation
17	Bełchatów POLAND	Bełchatów Power Plant	Gypsum	370	3.8	26	Trucks	Afforestation

1	2	3	4	5	6	7	8	9
18	Bełchatów POLAND	Bełchatów Power Plant	Fly ash. Bottom ash	5500+ 8200	110	26	Belt conveyors. Hydraulic	Affore-station
19	Podkościele POLAND	Jankowice Hard Coal Mine	Mine Wastes	860	8.5	40	Trucks. Dozers	Sports & Recrea-tion
20	Krupiński POLAND	Jankowice Hard Coal Mine	Mine Wastes	1500	4.5	40	Belt conveyors. Dozers	Affore-station
21								

GROUNDWATER CONTROL

Item	Site	Area	Impact on Water		Impact Range [km]	Monitoring System [Number of piezo- meters]	Method of Control	Substitute Wells Constructed [pcs]
			Impact	Main Pollutants [mg/dm ³]				
1	2	3	4	5	6	7	8	9
1	Bełchatów Mine „Dębina” Salt Diapir POLAND	52	Water pollution	Cl-11980 SO ₄ -4670	5.0	70	Hydraulic barrier – 36 wells	—
2	Bełchatów Mine POLAND	2100	Depression cone – loss of water from intakes	—	13.5	495	Water supply for towns	45
3	Konin Mine (Pałnów. Kazimierz and Józwin Open Pits) POLAND	1290	Depression cone – loss of water from intakes	—	6.9	50	Water supply for towns	50
4	Lubstów Mine POLAND	360	Depression cone – loss of water from intakes	—	3.5	27	Water supply for towns	15
5	Adamów Mine POLAND	950	Depression cone – loss of water from intakes	—	8.5	64	Water supply for towns	7
6	Turów Mine POLAND	1700	Depression cone – loss of water from intakes	—	2.0	58	Water supply for towns	6
7	Bełchatów Power Plant Waste Disposal from Desulphurization Process POLAND	30	Water pollution	Cl-700 SO ₄ -2000	3.0	4	Horizontal sealing	—
8	Konin Power Plant Ash Disposal POLAND	150	Water pollution	Cl-1500 SO ₄ -400	3.0	45	Substitute well construction	4
9	Bogdanka Mine Waste Disposal POLAND	80	Water pollution	Cl-660 F-5.8	2-3	12	Horizontal sealing	—

1	2	3	4	5	6	7	8	9
10	Moszczenica Mine. „Mszana” Waste Disposal POLAND	21	Water pollution	Cl-550 SO ₄ -278	2.5	23	Horizontal sealing	—
11	1 Maja Mine „Skrzyszów” Waste Disposal POLAND	70	Water pollution	Cl-685 SO ₄ -3176	3.5	10	Waste compaction drainage. surface reclamation	—
12	Borynia Mine Waste Disposal POLAND	83	Water pollution	Cl-4909 SO ₄ -1774	4.0	10	Waste compaction drainage. surface reclamation	—
13	Chwałowice Mine Waste Disposal POLAND	52	Water pollution	Cl-2370 SO ₄ -310	2.5	30	Waste compaction drainage. surface reclamation	—
14	Marcinek Mine „Pogwizdów” Waste Disposal POLAND	80	Water pollution	Cl-2427 SO ₄ -732	3.5	8	Vertical cut-off wall [2480 m]	—
15	Rybnik Mine „Przechlebie” Waste Disposal POLAND	170	Water pollution	Cl-1470 SO ₄ -17184	4.0	20	Waste compaction drainage. surface reclamation	—
16	Pniówek Mine „Kościelnik” Waste Disposal POLAND	379	Water pollution	Cl-713	3.5	29	Waste compaction drainage. surface reclamation	—
17	Zofiówka Mine „Pochwacie” Waste Disposal POLAND	145	Water pollution	Cl-2016 SO ₄ -2309	3.0	31	Waste compaction drainage. surface reclamation	—
18	Bełchatów Power Plant (ash. bottom ash and gypsum disposal) POLAND	415	Water pollution	TDS-2700 SO ₄ -550	6.0	16	Horizontal sealing	—
19	Szprotawa Foundry (industry wastes disposal) POLAND	5	Water pollution	phenols- to 24.0 Fe - to 5.7 Mn - to 3.4 Cl - 135 SO ₄ - 279	0.7-1.0	7	Selective disposing. Horizontal sealing. Drainage. Surface reclamation	—
20	Jastrzębie Hard Coal Mine (Szotkówka mine wastes disposal) POLAND	3	Water pollution	Cl - 1120 SO ₄ - 2048	1.0	5	Drainage. Surface reclamation	—

1	2	3	4	5	6	7	8	9
21	Jankowice Hard Coal Mine (Podkościele mine wastes disposal) POLAND	32	Water pollution	Cl - 542 SO ₄ - 2048	0.4	8	Compac-ting. Horizontal sealing. Drainage. Surface reclamation	—
22	Krupiński Hard Coal Mine (mine wastes disposal) POLAND	26	Water pollution	Cl - 1136 SO ₄ - 195	1.0	5	Compac-ting. Horizontal sealing. Drainage. Surface reclamation	—
23	Knurów (municipal waste disposal) POLAND	34.5	Water pollution	Cl - 5000 NO ₃ - 2200 BZT ₅ -10000 Fe - 76	1.5	7	Horizontal sealing. Drainage. Surface reclamation	—
24	Kotlarnia Backfilling Sands Mine POLAND	881	Depression cone. Loss of water from intakes	—	1.6	55	—	4
25	Szczakowa Backfilling Sands Mine (Siersza field) POLAND	130	Depression cone. Loss of water from intakes	—	1.2	15	—	2

SURFACE WATER PROTECTION AND MINE WATER TREATMENT

Item	Site	Treatment rate [m ³ /min]	Type of pollutants	Quantity of pollutants [g/m ³]	Treatment method	Area of settling pond [ha]	Treatment effect – Percentage of reduction
1	2	3	4	5	6	7	8
1	Bełchatów Lignite Surface Mine (settling pond no.1) POLAND	60	Suspended solid	up to 200	sedimentation + grass filter	11	85
2	Bełchatów Lignite Surface Mine (settling pond no.2) POLAND	180	Suspended solids	up to 200	sedimentation + grass filter	28	85
3	Bełchatów Lignite Surface Mine (settling pond no.3) POLAND	180	Suspended solids	up to 200	sedimentation + grass filter	24	85
4	Bełchatów Lignite Surface Mine (settling pond no.1Sz) POLAND	120	Suspended solids	up to 200	sedimentation + grass filter	18	85
5	Konin Lignite Surface Mine (settling pond for Lubstów Open Pit) POLAND	50	Suspended solids	up to 500	sedimentation + grass filter	20	90
6	Konin Lignite Surface Mine (settling pond for Drzewce Open Pit) POLAND	30	Suspended solids	up to 200	sedimentation + grass filter	6	80
7	Adamów Mine (Dump Area) POLAND	15-35	Suspended solids	100-250	Sedimentation	12	85-90
8	Bogdałów Mine POLAND	20-40	Suspended solids	100-200	Sedimentation	10	95-95
9	Władysławów Mine POLAND	15-25	Suspended solids	200-300	Sedimentation	10	90-95
10	Bełchatów Lignite Surface Mine (settling pond) POLAND	30	Suspended solids	60-120	Sedimentation	7	85

UNDERGROUND WATER INTAKES FOR MUNICIPAL PURPOSES

Item	Site	Wells for Water Intake			
		Number	Depth [m]	Yield [m ³ /h]	Groundwater Drawdown [m]
1	2	3	5	5	6
1	Borowa Piotrków Trybunalski District POLAND	2	120 120	49.2 100.4	9.8 9.7
2	Dobroszyce Piotrków Trybunalski District POLAND	1	211	75.7	49.7
3	Gorzkowice Piotrków Trybunalski District POLAND	1	130	63.0	30.5
4	Grocholice Piotrków Trybunalski District POLAND	1	130	100.4	9.4
5	Janów Wolski Piotrków Trybunalski District POLAND	2	75 80	51.0 60.0	14.4 12.8
6	Dąbrowiec Częstochowa District POLAND	2	135 112	116.4	27.0
7	Kamieńsk Piotrków Trybunalski District POLAND	1	100	136.0	41.0
8	Kietlin Piotrków Trybunalski District POLAND	2	80 80	65.3 115.0	6.1 11.7
9	Kluki Częstochowa District POLAND	2	65 58	74.5	8.1
10	Krępa Piotrków Trybunalski District POLAND	2	130 130	104.0 90.0	16.0 16.0
11	Nowy Janów Piotrków Trybunalski District POLAND	1	125	54.4	16.8
12	Łękawa Piotrków Trybunalski District POLAND	1	120	180.0	7.9
13	Łękińsko Piotrków Trybunalski District POLAND	2	121.5 170	50.8 70.2	6.1 43.1
14	Osiny Piotrków Trybunalski District POLAND	1	115	137.4	36.1
15	Parzniewice Piotrków Trybunalski District POLAND	2	130 130	198.0 265.2	4.6 4.9
16	Pudzików Piotrków Trybunalski District POLAND	2	100 100	131.5 168.5	2.9 3.8
17	Słostowice Piotrków Trybunalski District POLAND	1	120	158.0	25.3

1	2	3	5	5	6
18	Stobiecko Miejskie Piotrków Trybunalski District POLAND	2	84 84	165.0 211.0	12.2 22.1
19	Wiewiórów Piotrków Trybunalski District POLAND	1	160	170.0	5.9
20	Włodzimierz Piotrków Trybunalski District POLAND	2	107 133	111.0	11.2
21	Wola Kotkowska Piotrków Trybunalski District POLAND	1	109	77.1	10.4
22	Kleczew Konin District POLAND	1	150 150	50	23
23	Władysławów Konin District POLAND	1	160	46	29
24	Rożnowa Konin District POLAND	1	122	45	5.5
25	Dąbrowa-Sławęcín Konin District POLAND	2	134 150	50	12.7
26	Tokarki Konin District POLAND	2	114 102	42	8.0
27	Stawoszewek Konin District POLAND	1	100	15	7.8
28	Kazimierz Biskupi Konin District POLAND	2	120 100	60	1.5
29	Dobrosólowo Konin District POLAND	2	91 90	72	8.0
30	Mikorzyn Konin District POLAND	2	124 114.5	41	3.5
31	Bochlewo Konin District POLAND	1	110	18	12
32	Kalinowice Konin District POLAND	2	110 110	52.5	2.1
33	Stefanowo Konin District POLAND	2	104.6	14.0	33
34	Bielawy Konin District POLAND	1	154	10.0	46.7
35	Kazimierz Konin District POLAND	1	59	9	6

WATER TREATMENT AND SUPPLY

Item	Site	Number of Wells	Depth of Well [m]	Yield of Well [$\frac{m^3}{day}$ / $\frac{m^3}{h}$]	Water Treatment	Length of Water Piping [km]	Number of Consumers
1	2	3	4	5	6	7	8
1	Marianów Water Supply Station (Lubstów Mine) POLAND	5	50	831/35	Deironing Demanganization Disinfection	5.7	6000
2	Bielce Water Supply Station (Lubstów Mine) POLAND	6	60	2348/163.5	Demanganization Disinfection	66.0	20 000
3	Dąbrowa Water Supply Station (Lubstów Mine) POLAND	3	70	1885/78.5	Demanganization Disinfection	5.6	10 000
4	Kamieniec Water Supply Station (Pałnów Mine) POLAND	1	140	560/66	No treatment	2.5	2000
5	Janów Water Supply Station (Konin Mine) POLAND	4	153	3300/165	Deironing Disinfection	25.0	20 000
6	Kleczew Water Supply Station (Józwin Mine) POLAND	2	140	836/60	Demanganization Disinfection	4.0	4000
7	Kazimierz Water Supply Station (Konin Mine) POLAND	2	110	1008/42	No treatment	30.0	5620
8	Mikorzyn Water Supply Station for holiday resort POLAND	1	50	560/52.5	Deironing Demanganization Disinfection	1.5	2000
9	Warenka Water Supply Station (Adamów Mine) POLAND	2	120	1000/123	Deironing Disinfection	1.5	2000
10	Józwin Water Supply Station (Konin Mine) POLAND	1	94.5	35/8.2	Demanganization Disinfection	0.12	300
11	Chabielice Water Supply Station (Bełchatów Mine) POLAND	6	120-200	14 000/660	Deironing Disinfection	10.0	58 000
12	Włodzimierz Water Supply Station (Bełchatów Mine) POLAND	2	140	842/50	Deironing Disinfection	5.9	500

1	2	3	4	5	6	7	8
13	Janki Water Supply Station (Bełchatów Mine) POLAND	3	130	3006/150	Deironing Disinfection	10.2	1156
14	Łękińsko Water Supply Station (Bełchatów Mine) POLAND	3	140	1963/121	Deironing Disinfection	10.3	1055
15	Rogowiec Water Supply Station (Bełchatów Mine) POLAND	3	130	3200/125	Deironing Disinfection	15.0	10 000
16	Bełchatów Lignite Surface Mine (settling pond) POLAND	30	Suspend ed solids	60-120	Sedimentation	7	85

SEWAGE TREATMENT

Item	Site	Location	Treatment Rate [m ³ /day]	Type of Treatment	Concentration of Pollutants [g/m ³]	Treatment Method	Sewage Treatment Effect
1	2	3	4	5	6	7	8
1	Bełchatów Mine POLAND	Sanitary Treatment Plan at Rogowiec	4000	Mechanical-biological	BOD ₅ -200 Suspended solids – 350	Activated sludge with prolonged aeration	BOD ₅ -90% Suspended solids – 91%
2	Bełchatów Mine POLAND	Sanitary Treatment Plan at Piaski	520	Mechanical-biological	BOD ₅ -190 Suspended solids – 330	Activated sludge with prolonged aeration	BOD ₅ -90% Suspended solids – 91%
3	Bełchatów Mine POLAND	Rain Water and Industrial Sewage Treatment Plan at Rogowiec	Dry weather – 16 500 Rainy weather – 25 000	Mechanical	Dry weather BOD ₅ -40 Suspended solids – 100 Rainy weather BOD ₅ -200 Suspended solids – 390	Settling tanks – sedimentation and floatation	Dry weather BOD ₅ -50% Suspended solids – 70% Rainy weather BOD ₅ -70% Suspended solids – 74%
4	Turów Mine POLAND	Sanitary Treatment Plan in Administrative-Service Centre	450	Mechanical-biological	BOD ₅ -250 Suspended solids – 250	Biofilters	BOD ₅ -88% Suspended solids – 86%
5	Turów Mine POLAND	Sanitary Treatment Plan near ramp V	84	Mechanical-biological	BOD ₅ -240 Suspended solids – 470	Biofilters	BOD ₅ -94% Suspended solids – 96%
6	Lubstów Mine POLAND	Sanitary Treatment Plant	104	Mechanical-biological	BOD ₅ -240 Suspended solids – 400	Activated sludge	BOD ₅ -95% Suspended solids – 95%

AIR POLLUTION CONTROL

Item	Site	Installed Power [kcal/h]	Fuel	Height of Stack [m]	Dust Control Efficiency [%]	Emission [kg/h]			
						Dust	SO ₂	NO _x	CO
1	2	3	4	5	6	7	8	9	10
1	Konin Mine Boiler house at Janów POLAND	6x455 000	lignite	45.0	80.0	24.8	40.0	6.4	10.6
2	Konin Mine Boiler house at Mikorzyn POLAND	2x35 000	lignite	26.0	80.0	5.5	8.9	1.4	2.4
3	Konin Mine Boiler house at Kazimierz POLAND	3.75x10 ⁶	lignite	28.0	80.0	15.6	50.5	7.0	11.7
4	Konin Mine Boiler house at Lubstów POLAND	4.455x10 ⁶	lignite	34.0	90	10.1	55.7	7.1	11.8
5	Jankowice Mine Boiler house POLAND	22.5x10 ⁶	hard coal	60.0	85.0	43.6	95.7	6.9	29.6
6	ZMP Mine Boiler house POLAND	70x10 ⁶	hard coal	100.0	85.0	136.0	97.0	93.7	58.6
7	Krupiński Mine Boiler house POLAND	75x10 ⁶	hard coal	100.0	85.0	71.5	218.4	60.2	99.8
8	Krupiński Mine Boiler house POLAND	6x10 ⁶	gas – methane	28.0	—	0.22	—	0.140	0.23
9	Mysłowice Hause Works Boiler house POLAND	1.75x10 ⁶	diesel oil	20.0	—	–	7.5	0.80	0.11
10	Jankowice Mine Briquetting plant-drying room POLAND	60x10 ⁶	hard coal	40.0	98.0	90.0	156.0	47.9	10.8
11	Nowa Ruda Mine Boiler house POLAND	3x5x10 ⁶	hard coal	52.0	85.0	51.5	52.0	31.0	4.2
12	Nowa Ruda Mine Boiler house POLAND	50x10 ⁶	hard coal	45.0	80.0	260.0	188.0	94.8	12.5

1	2	3	4	5	6	7	8	9	10
13	Jankowice Hard Coal Mine POLAND Boiler house	2x2.45x10 ⁵	light oil	2x17.5	-	0.0113 0.0071	0.032 0.0201	0.0158 0.0099	0.0056 0.0036
14	Szczakowa Backfilling Sand Pit POLAND Boiler house	4.47x10 ⁶	fine	45	85	7.89	10.29	2.99	6.21
15	Knauf Engineering GmbH GERMANY - drying room - gypsum silos (2 pcs)	-	heavy oil -	1 x 25 3x19.5	- 99	1.16 0.08	17.1 -	3.26 -	0.47 -
16	Jankowice Hard Coal Mine POLAND Processing Plant	-	-	2x22.3 2x41.3 2x42.7 1x28.7 1x52.0	95	8.94	-	-	-
	-Forge Hearths	-	hard coal	10x10 10x13	-	0.28	0.25	0.026	1.89
17	Anna Hard Coal Mine POLAND - Processing Plant	-	-	2x10.3 2x33.0	95	6.8	-	-	-
	- Flotation Concentrate Drier	-	heavy oil. fine	2x45	98	0.11 11.8	1.14 4.82	0.27 12.0	0.03 -
	-Forge Hearths	-	hard coal	3x9.5	-	0.18	0.18	0.032	0.87
18	Jankowice Hard Coal Mine	73x10 ⁶	fine	1x75		10.3	11.5	6.8	4.2
	POLAND Boiler house			1x69.5	96	2.4	9.3	14.4	0.5
19	Jankowice Hard Coal Mine POLAND Boiler house - Shaft No. 6	22.5x10 ⁶	fine	6.0	85	3.1	6.3	3.8	2.3
20	Jankowice Hard Coal Mine POLAND Jodłowniki Boiler house	8.6x10 ⁶	hard coal	40	78	8	19.2	5.8	5.6

1	2	3	4	5	6	7	8	9	10
21	Rymer Hard Coal Mine POLAND Boiler house	45×10 ⁶	hard coal	40 60	90 85	8.8 6.4	17.2 13.7	5.0 3.7	3.3 1.0
22	Anna Hard Coal Mine POLAND Heat/Power Generating Plant	85×10 ⁶	hard coal	105	97	58.9	136.6	66.5	9.7
23	Chwałowice Hard Coal Mine POLAND Heat/Power Generating Plant	135×10 ⁶	hard coal	90 85	85 98	45.0 20.5	167.5 74.0	50.0 23.9	4.1 4.0
24	Kotłarnia Sand Mine Concrete Products Plant cement silo	-	-	25	99.9	0.4	-	-	-
25	KNAUF Poland Ltd. Gypsum Cardboard Plant	-	-	16	99.9	1	-	-	-
26	Konin Lignite Mine Industrial Waste Utilizator type WPS- 1000	-	waste	15	-	0.006	0.057	0.017	0.079
27	Konin Lignite Mine Supporting Facilities Pańców Open Pit in Janów	-	-	-	-	16.89 Mg/year	74.34 Mg/year	6.34 Mg/year	190.1 Mg/year
28	Konin Lignite Mine Supporting Facilities Kazimierz Open Pit in Komorów	-	-	-	-	1.8 Mg/year	7.22 Mg/year	0.62 Mg/year	18.45 Mg/year
29	Konin Lignite Mine Supporting Facilities Lubstów Open Pit	-	-	-	-	27.3 Mg/year	111.94 Mg/year	23.3 Mg/year	149.7 Mg/year

1	2	3	4	5	6	7	8	9	10
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30	Konin Lignite Mine Administration & Workshop Centre in Kleczew	-	-	-	-	46.9 Mg/year	137.5 Mg/year	28.9 Mg/year	171.2 Mg/year
31	Konin Lignite Mine Supporting Facilities Kazimierz Open Pit in Kazimierz Biskupi	-	-	-	-	21.4 Mg/year	63.9 Mg/year	12.5 Mg/year	93.01 Mg/year

NOISE CONTROL

Item	Site	Noise Sources	Sound Power of Sources dB(A)	Noise Reduction Efficiency [LE dB(A)]			
				Active Methods	LE dB(A)	Passive Methods	LE dB(A)
1	2	3	4	5	6	7	8
1	Konin. Bełchatów. Turów and Adamów Mines POLAND	Excavator. belt conveyors. driving stations. spreaders	70-95	Maintenance. lubrication. replacement of worn parts. shakeproof washers. sound deadeners	5-7	Natural screens on open pit slopes	12
						Earth embankments	14
						Special shiftable screens	18
						Isolating green zones	4
2	Zofiówka Mine. „Pochwacie” Waste Disposal POLAND	Excavator. belt conveyors. driving stations. spreaders	70-78	Maintenance. lubrication. replacement of worn parts. shakeproof washers. sound deadeners	5-7	Waste material embankment	14
						Isolating green zone	4
3	1 Maja Mine. Waste Disposal POLAND	Rail cars. dozers	74-100	Maintenance. lubrication. replacement of worn parts. shakeproof washers. sound deadeners	5-7	*Waste material embankment	14
4	Józef Quarry near Lubań Basalt processing POLAND	Crushers. transfer points. conveyors. screening plant	80-100	Maintenance. lubrication. replacement of worn parts. shakeproof washers. sound deadeners	5-7	Sound absorbing housing for crushers and screening plant	15
						Isolating green zone	4

1	2	3	4	5	6	7	8
5	Działoszyn Limestone Qzarry near Wieluń POLAND	Trucks. excavators. Dozers. drilling rigs	70-95	Maintenance. lubrication. replacement of worn parts. shakeproof washers. sound deadeners	5-7	*Natural screens on open pit slopes	15
6	Jankowice Hard Coal Mine POLAND	Processing plant. Fans. Converters. Compressors. Pumps. Belt conveyors. Dozers	75-103	Maintenance. Shakeproof washers. Replacement of screening decks	3-10	Replacement of walls in processing plant buildings. Anti-noise shields	10
7	Jankowice Hard Coal Mine POLAND	Trucks. Mine's ground level	75-103	-	-	Screen made of special prefabricated components	3-12
8	1 Maja Hard Coal Mine POLAND	Processing plant. Fans. Converters. Compressors. Pumps. Dozers. Belt conveyors.	75-103	Maintenance. Shakeproof washers	3-8	Replacement of walls in processing plant building. Anti-noise shields	10
9	Bełchatów Lignite Surface Mine. POLAND Reconditioning shop	Cutting. straightening. grinding. forging and flame plating stands	75-110	Use of tools with reduced sound power	1-3	Work - stands development and screening	2-3
10	Konin Lignite Surface Mine - Stefanów Region POLAND	Belt conveyors. Drive station. Spreader	115	-	-	Drive stations shields. Screening embankment heaped up from overburden	8-10
11	Pollytag Lightweight Aggregate Plant. Gdańsk POLAND	Blast drier fan room	117	Fan building with slotted suppressors	15	Anti-noise screen in front of slotted suppressors	8
12	Bełchatów Lignite Surface Mine POLAND Heat Treatment Dpt. and Forging Shop	Oil forging furnaces. presses and hammers	113	Automatic closing of oil furnaces. replacement of burners	6-8	Screening of work-stands-stationary and portable screens	2-4
13	Pawłowiczki Grain Processing Plant POLAND	Chain. belt and bucket conveyors. Drives. Fans. Cyclones. Mills. Screens	92-95	Plastic linings	5-7	Special windows. Wall insulations	8-10

1	2	3	4	5	6	7	8
14	Konin Lignite Surface Mine Opencast Drzewce POLAND	bucket wheel excavators. conveyors	113-118	-	-	Screening embankment heaped up from overburden. operation enginee-ring instruction	5-8
15	Krupiński Hard Coal Mine POLAND	dozers	108	-	-	Screening embankment heaped up from overburden. operation enginee-ring instruction	5-8
16	Kotłarnia Sand Mine POLAND Concrete cube production plant	loaders	108	-	-	Screening embankment heaped up from sand	5-8
17	Łagisza Power plant POLAND	trucks	105-108	-	-	Anti-noise screens	5-8
18	T. Kościuszko Power Plant Połaniec POLAND	fans. el. motors. turbines. generators. transformers. cubage sources	up to 115	-	-	replacement of equipment by silent-running. anti-sound screen. technological guidelines	5
19	Opole Power Plant POLSKA	compressors	-	-	-	gypsum cardboard casing. structure insulation	10
20	Mineral Products Mine Koźmin Łódź Guźnia 1 Mine POLAND	concrete-mixing substation. conveyors. drives	80-100	-	-	sound absorbing casings	10
21	Jankowice Hard Coal Mine POLAND	main minehead facilities – processing plant. sorting plant. loading station. trucks of retail buyers	75-103	-	-	noise screen	5-7
22							

LAND RECLAMATION

Item	Site	Noise Sources	Total Area [ha]	Reclamation Type			
				Arable Land [ha]	Forest [ha]	Afforestation-Sodding [ha]	Water Pond [ha]
1	2	3	4	5	6	7	8
1	Bełchatów Lignite Mine External Dump POLAND	6.1-6.5	980	100	880	—	—
2	Adamów Lignite Mine External and Internal Dumps POLAND	5.6-6.8	1900	1200	700	—	—
3	Konin Lignite Mine External and Internal Dumps POLAND	7.1-7.7	3490	2440	1050	—	—
4	Turów Lignite Mine External Dump POLAND	4.2-5.6	525	—	525	—	—
5	Pniówek Hard Coal Mine „Kościelniok” Waste Disposal POLAND	7.2-8.7	350	—	—	35	—
6	Zofiówka Hard Coal Mine „Pochwacie” Waste Disposal POLAND	5.6-7.5	145	80	—	65	—
7	Zofiówka Hard Coal Mine „Szeroka” Waste Disposal POLAND	7.8-8.3	89	89	—	—	—
8	Moszczenica Hard Coal Mine. „Mszana” Waste Disposal POLAND	6.1-6.7	21	21	—	—	—
9	1 Maja Hard Coal Mine „Skrzyszów” Waste Disposal POLAND	7.3-8.9	70	40	—	30	—
10	Borynia Hard Coal Mine POLAND	8.2-9.0	11	—	—	11	—
11	Chwałowice Hard Coal Mine POLAND	2.9-9.3	36	—	—	36	—
12	Anna Hard Coal Mine „Buków” Waste Disposal POLAND	7.2.7.8	35	—	—	35	—
13	Morcinek Hard Coal Mine „Pogwizdów” Waste Disposal POLAND	3.9-8.3	26	—	—	26	—
14	Krupiński Hard Coal Mine POLAND	7.8-8.0	20	—	—	20	—
15	Zabrze. Makoszowy and Gliwice Hard Coal Mines „Przechlebie” Waste Disposal POLAND	3.5-9.0	170	—	—	170	—

1	2	3	4	5	6	7	8
16	Bogdanka Hard Coal Mine POLAND	4.2-8.3	82	—	—	76	6
17	Victoria Hard Coal Mine POLAND	6.1-7.9	25	—	—	25	—
18	Siarkopol Tarnobrzeg Sulphur Mine. „Machów” External Dump POLAND	5.7-6.1	132	73	55	—	4
19	Klęczany Sandstone quarries POLAND	6.4-6.7	212	—	212	—	—
20	Jaroszów Refractory Clays. Mine „Stanisław” and „Halina” Open Pits POLAND	6.8-7.2	85	85	—	—	—
21	Obora Backfilling Sands Mine POLAND	5.3-7.2	292	12	280	—	—
22	Szczakowa Backfilling Sands Mine POLAND	5.4-5.7	1340	—	1340	—	—
23	Kamienna Góra. Brickyard POLAND	5.4-6.2	10	—	10	—	—
24	Kazimierz Dolny Limestone Quarry POLAND	5.6-7.0	36	—	36	—	—
25	Wizów Chemical Works Phosphogypsum Waste Disposal POLAND	3.5	15	—	15	—	—
26	Szprotawa Foundry POLAND	6.6-7.2	5	—	—	5	—
27	Konin Lignite Surface Mine POLAND Internal and External Dumps	7.1-7.7	6700	4576	1899	-	225
28	Wilków Basalt Quarry POLAND	3.9-4.7	20	-	-	20	-
29	Konin Lignite Surface Mine POLAND Area outside mining operation	7.4	22	-	10	-	12
30	Jastrzębie POLAND Coal Waste Dump Szotkówka I	3.5-8.0	8	-	-	8	-
31	Jankowice POLAND Coal Waste Dump	7.2	38	-	-	38	-
32	Lewin Brzeski Aggregate Mine POLAND Sand mining area	6-8	16	12	-	-	4

1	2	3	4	5	6	7	8
33	VISCOPLAST S.A. – - Wrocław POLAND Industrial Waste Disposal	7-9	8	-	-	7	-
34	Dziergowice Aggregate Mine POLAND Underwater Opencast Pit	6.8	87	-	-	-	52
35	Knurów POLAND Municipal Waste Disposal	4-7	7	-	-	7	-
36	Kotlarnia Backfilling Sands Mine POLAND	5.3 – 7.0	1190	-	680	-	510
37	Krupiński POLAND Mine Waste Disposal	8.2-9.0	20	-	-	20	-
38	Jankowice POLAND Increased-Radioactivity Sludge Disposal	8-9	5	-	-	5	-
39	Konin Lignite Surface Mine POLAND internal overburden disposal area and final open pit	7.7	937	568	244	-	125
40	Łagisza Power Plant POLAND storage yard of final product of ash handling installation	12.5	1.2	-	-	1.2	-
41	Państwów Power Plant POLAND waste storage	7.0-8.0	49.5	-	32.75	15.0	-
42	Jankowice POLAND Podkościele depression	2.9-9.3	5.25	-	2.09	3.16	-
43	Krupiński POLAND excavation and waste rock dump	8.0	12.0	-	12.0	-	-
44	Władysławów Open Pit POLAND south-east field	7.5	30	-	-	-	30
45	Krzeniów Building Stone POLAND excavation	7.0-8.3	56	-	56	-	-
46	Konin Lignite Surface Mine POLAND final excavation	7.7	448	-	78	24	346

1	2	3	4	5	6	7	8
47	Adamów Lignite Surface Mine POLAND Adamów Open Pit	150	-	-	-	-	150
48	Adamów Lignite Surface Mine POLAND Władysławów Open Pit Eastern Field	80	-	-	-	-	80
49	ZKSM „Kozia Góra“ Basalt Mine POLAND	-	10	-	-	2	8
50	ZKSM Rogoznica Granite Quarry POLAND	-	43	4	7	15	17

Environmental Impact Assessments

Item	Investor	Site	Description
1	PPHU Komart Ltd. POLAND	Waste disposal in Knurów	Waste disposal – disposing in area IIA
2	Kozienice Power Plant POLAND	Kozienice Power Plant	Feasibility study of Flue Gas Desulphurization Plant for 200MW Units (FGDP II – unit Nos. 4-8 in total form 600 Mwe).
3	Konin Surface Lignite Mine POLAND in Kleczew	Open pits in the Mine	Amount of non-point emission of dust from open pits of the Mine
4	Konin Surface Lignite Mine POLAND in Kleczew	Span Ślesin-Koło Ruchenna	Environmental impact assessment for 39-40 Nos. 200 kV Line span reconstruction project Ślesin-Koło Ruchenna
5	Bełchatów Power Plant POLAND	External dump of Bełchatów Power Plant	Monitoring of water environmental including assessment of ash storage impact at external dump site of Bełchatów Open Pit on environment – final report
6	Bełchatów Surface Lignite Mine	Szczerców Field	Workshop – service supporting facilities of Szczerców Field. Car parking area. Environmental impact assessment.
7	Konin Surface Lignite Mine POLAND in Kleczew	Konin Mine	Motion for issuance of permit to produce hazardous wastes and other than hazardous ones.
8	Konin Surface Lignite Mine POLAND in Kleczew	Kazimierz North Open Pit	Construction of acoustic screen to protect Kleczew town from nuisance caused by Kazimierz North Open Pit
9	ADROS Works Ltd. POLAND	ADROS Works	Motion for issuance of integrated permit to make use of environment for ADROS Works Ltd.
10	Kozienice Power Plant POLAND	Kozienice	
11	Konin Surface Lignite Mine POLAND	Tomisławice Pit Piaski Pit	Environmental impact assessment
12	Turow Power Plant POLAND	Bogatynia	Environmental impact assessment for ash handling system

9. TURN-KEY PROJECTS

Item	Investor	Project	Basic Technical Data	Year of construction	Scope
1	Turów Surface Mine Poland	ZGOT 11.500.100 Spreader Tripper Car Cable Drum Car	Capacity: 11500 m ³ /h	1997/1999	„turn-key” basis
2	Neyveli Lignite Corp. INDIA	2400 mm Belt Conveyor BWE 700 L excavator – 2 Nos 4420.61 Spreaders – 2 Nos. 1600 mm Belt Conveyor TC2000 Transpor Crawler	Capacity: 20000 t/h 3400t/h 4420 m ³ /h 6000 t/h Load capacity: 5800 kN	1998/1999 2000/2001 2000/2002 2000 2000/2001	Design, erection, supervision, tests, training
3	Kraków Power Generating Plant	Retrofit of ŁZKS –250.25/31,5 Stacker-Reclaimer	Capacity: 1250/2000	2001	Retrofit of slewing drive and replacement of bearings.
4	Kozienice Power Plant POLAND	Flue gas desulphurization plant, gypsum handling, and storage	Gypsum storage Cap. = 14500m ³ Gypsum transport conveyor B=650, cap. 100t/h Total length of conv.1350 m	2001	„turn-key” basis
5	RWE Power GERMANY	Delivery and assembly of bucket wheel for excavator 281	15.2 m in diameter	2003	Replacement for new one
6	Kozienice Power Plant POLAND	Retrofit of stack flue within area of stack no.2	Total length ab 290m max sectional size 111x4,5m	2006	„turn-key” basis
7	Kozienice Power Plant POLAND	FGD II installation	800 MWe	2006	turn-key” basis
8	PAK Power Plant Pałnów POLAND	Lignite sampling station	Installed on belt conv: Capacity:2 x 1500 t/h Belt width: 1400 mm	2006	Obiekt „pod klucz”
9	PAK Power Plant Ada mów POLAND	Lignite sampling station	Installed on belt conv: Capacity:2 x 1200 t/h Belt width: 1200 mm	2006	Obiekt „pod klucz”
9	PAK Power Plant Konin POLAND	Lignite sampling station	Installed on belt conv: Capacity:2 x 900 t/h Belt width: 1200 mm:	2006	Obiekt „pod klucz”

10. OTHERS

Item	Client	Project	Year
1	Ministry of Privatization, Wrocław Branch POLAND	Techno-economic Studies for 22 Largest Lower Silesian (Poland) Stone Quarries for Privatization Purposes	1993
2	Woodward Clyde International U.S.A. / GERMANY	Environmental Study of Lift Manufacturing Plants in Former Soviet Union for Privatization Purposes	1992
3	Woodward Clyde International U.S.A. / GERMANY	Environmental Study of all Heavy Chemistry Plants in Poland for Privatization Purposes	1992
4	Woodward Clyde International U.S.A. / GERMANY	The Privatization Study of Margarine Production Plant at Brzeg (Opole Province, Poland)	1992
5	SOLO Trading Company, Wrocław POLAND	Environmental Impact Assessment of Fuel Storage Tanks at Małujowice and Skarbimierz (Opole Province, Poland)	1994
6	Ministry of Industry and Trade POLAND	Main Points of Energy Policy in Poland till 2010	1993