



Reference List

ACID CONCENTRATION PLANT (SULFURIC- / NITRIC ACID)

DEN = waste acid denitration
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Year	Country	Type of Plant	Feed	NA-Conc.	Capacity	SA-Conc.	Capacity
Africa							
1969	Egypt	NAC		C	C		
1971	Egypt	NAC		C	C		
1972	Egypt	NAC			7 t/d		
1978	Egypt	NAC			22 t/d		
1982	Egypt	MNT/DNT-DEN SAC	MNT/DNT spent acid		100t/d	96,00%	72 t/d
1983	Egypt	DEN	NG-WA		3x0,5t/h	70,00%	
1987	Egypt	SAC	SA-70,00%			96,00%	3 t/d
1987	Libya	SAC	Cl -dry. -WA			96,00%	
1977	Marocco	NAC			5 t/d		
1974	South-Afrika	DEN	NAC DEN	99,00%	1t/h	70,00%	
1981	South-Afrika	SAC	NIGU spent acid		C		
1972	Zambia	NAC			C		
America							
1979	Argentina	DEN			C		
1979	Argentina	DEN			C		
1979	Argentina	NAC			11 t/d		
2004	Argentina	DEN 72,	00%			94,00%	100 t/d
1972	Brasil	NAC	NA-52,00%	99,00%	2,4 t/d	70,00%	
1982	Brasil	SAC	33 t/d WA fr. NB			84,00%	25,0 t/d
1983	Brasil	NAC			4 t/d		
1983	Brasil	SAC	SA-70,00%			82,50%	67 t/d
1984	Brasil	DEN SAC	WA from DNT, DNCB		120t/d	96,00%	85,2 t/d
1986	Brasil	DEN NAC	100 t/d NC-WA	95,00%	19,2 t/d		
1988	Brasil	DEN SAC	344 t/d WA fr. SBE			78,00%	131,0 t/d
1989	Brasil	DEN NAC	NA-50 +NC-WA	98,50%	60,0 t/d		
2000	Brasil	SAC	33 t/d WA fr. NB			84,00%	25,0 t/d
2003	Brasil	DEN SAC	70,00%	98,00%	23 t/d	86,00%	326 t/d
1970	USA	NAC			48 t/d		
1971	USA	NAC			20 t/d		
1974	USA	NAC		98,00%	192 t/d		
1975	USA	NAC			C		
1976	USA	NAC					
1998	USA	SAC				92,00%	3000 t/d
1978	Canada	NAC			72 t/d		
1982	Colombia	DEN NAC SAC NOx	NA-53,00% +NG-WA	98,50%	3,8 t/d	96,00%	5,0 t/d
2007	Peru	DEN SAC	NA 55,0 % +SA 73,0%	99,00%	17,3 t/d	96,00%	1,7 t/d
Asia							
1994	China	SAC	SA-73,00%			88,00%	80 t/d
1996	China	SAC				88,00%	165 t/d
1996	China	SAC				96,00%	54 t/d
1996	China	SAC	SA-72,00%		75t/d	90,00%	75t/d
1997	China	SAC				88,00%	150 t/d
2001	China	NAC Purification	NA-68,00%	68,00%	12 t/d		
2001	China	SAC				90,00%	70 t/d
2002	China	NAC SAC	NA17% SA60,00%	98,50%		96,00%	50 t/d
2003	China	DEN SAC		c	c	c	c
2003	China	SAC				83,00%	260 t/d
2003	China	DEN SAC				94,00%	70 t/d
2003	China	DEN SAC	888 t/d DEN; 652 t/d	>99,00 %	438 t/d	>93,00 %	671 t/d
2004	China	SAC	SA 67,00%			83,00%	264 t/d
2004	China	SAC	SA 62,00%			96,00%	50 t/d
2005	China	DEN SAC/NAC SAC/N	NA 86%,SA 71 %	99,00%	27 t/h	93,00%	37 t/h
2006	China	DEN SAC	36 T/D WSA			96,00%	



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Year	Country	Type of Plant	Feed	NA-Conc.	Capacity	SA-Conc.	Capacity
2006	China	DEN SAC	70,5 T/D WSA			94,00%	
2008	China	DEN SAC	70,5 T/D SA 70%			94,00%	70,5 t/d
2008	China	DEN NAC SAC	288 T/D SA 70%	98,00%	15 t/d	96,00%	209 t/d
2008	China	DEN SAC	SA 77%			92,00%	138 t/h
1975	Far East	NAC			C		
1982	Far East	DEN			21 t/d		
1988	Far East	DEN			48 t/d		
1991	Far East	DEN	NC-WA		1,8t/h		
1998	Far East	DEN/SAC/Nox	NC-WA	99,00%	23 t/d	85,00%	37t/d
1979	India	NAC			30 t/d		
1980	India	DEN NAC	NA-50,00% +NG-WA	99,00%	10,0 t/d		
1980	India	DEN NAC	NA-50,00% +NC-WA	99,00%	20,0 t/d		
1980	India	SAC	SA-25,00%			90,00%	14,4 t/d
1982	India	DEN			29 t/d		
1983	India	DEN NAC	NA-55,00% +NG-WA	99,20%	15,0 t/d		
1983	India	NAC SAC	NA-60,00%	99,00%	20,0 t/d	85,00%	64,0 t/d
1985	India	NAC			10 t7D		
1986	India	SAC	SA-68,00%			78,00%	40 t/d
1988	India	NAC			10 t/d		
1988	India	SAC				88,00%	36 t/d
1989	India	Hydrol. Col. SA Conc	73 t/d SBE, SA 14,00%			60,00%	51,4 t/d
1991	India	NAC			C		
1991	India	SAC				86,00%	48 t/d
1991	India	NAC			10 t/d		
1997	India	SAC				96,00%	104 t/d
2006	India	NAC	50%	99,00%	100t/d		
u	India	DEN NAC	24 t/d NG-WA	99,00%	6,0 t/d		
u	India	DEN NAC	24 t/d NG-WA	99,00%	6,0 t/d		
1978	Israel	SAC	SA-40,00%			70,00%	33 t/d
1994	Israel	NAC		98,50%	60t/d	70,00%	
1984	Japan	NAC			96 t/d		
1989	Japan	SAC	SA- 65,00%			85,00%	86 t/d
1994	Japan	SAC	SA-65,00%			85,00%	106 t/d
1988	Pakistan	NAC					
1988	Pakistan	SAC				88,00%	85 t/d
1976	South Korea	DEN NAC SAC	SA-70,00%		6 t/d	88,00%	61 t/d
1983	South Korea	DEN SAC	SA-70,00%		C	96,00%	42 t/d
1987	South Korea	DEN			C		
1980	Taiwan	NAC			22 t/d		
1980	Taiwan	SAC	SA-70,00%	88,		00%	97 t/d
1987	Thailand	DEN SAC	SA-70,00%		15 t/d	96,00%	14 t/d
1992	Other Asian C.	SA-Distillation/Purif.	65 kg/h			97-98,00 %	1,6 t/d
1996	Other Asian C.	SAC	3630 kg/h DNCB-WA 72%	72,00%		90,00%	69,6 t/d
u	Other Asian C.	NAC	NA-50,00%	98,50%	4,0 t/d		
u	Other Asian C.	NAC	NA-50,00%	65,00%	1,2 t/d		
u	Other Asian C.	DEN NAC	18 t/d NG-WA	98,50%	4,0 t/d		
u	Other Asian C.	DEN NAC SAC	NA-55,00% +NG-WA	98,50%	10,0 t/d	96,00%	3,6 t/d
u	Other Asian C.	DEN SAC	100 t/d WA from TNT			96,00%	68,4 t/d
u	Other Asian C.	SAC	SA-65,00%			96,00%	70,0 t/d
u	Other Asian C.	NAC	NA 60,00%	98,50%	12,0 t/d		
u	Other Asian C.	DEN	NC-WA	98,00%	19,2 t/d		
1996	Vietnam	SAC				96,00%	8 t/d
	Australia						
1989	Australia	DEN NAC SAC			C	96,00%	40 t/d



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Year	Country	Type of Plant	Feed	NA-Conc.	Capacity	SA-Conc.	Capacity
1991	Australia	NAC			C		
1991	Australia	SAC			4	95,00%	292 t/d
Europe							
1979	Albania	NAC			36 t/d		
1963	Belgium	NAC		C	C		
1980	Belgium	NAC	NA-69,00%	99,00%	180,0 t/d		
1984	Belgium	NAC	NA-45,00% with Fe,Cu	65,00%	3,6 t/d		
1987	Belgium	NOx-Absorption	NO2 330 kg/h	60,00%	0,8 t/h		
1988	Belgium	SAC	SA-65,00%			87,50%	210 t/d
u	Belgium	NAC SAC	NA-56,00%	99,00%	144,0 t/d	82,00%	560,0 t/d
u	Belgium	SAC	SA-50,00%			75,00%	1,8 t/d
u	Belgium	DEN NAC SAC	NA55,00% (RDX) +NG-WA	99,00%	38,0 t/d	85,00%	126,0 t/d
u	Belgium	NAC	NA-50,00%	65,00%	3,4 t/d		
u	Belgium	NAC	NA-69,00%	99,00%	60,0 t/d		
u	Belgium	Distillation	NA 10,40%; SA 31,30% NA 55,00% (RDX) +NG-WA	60,00%	2,3 t/d	SA 58,0 %	
u	Belgium	DEN NAC		99,00%	19,8 t/d		
1982	Bulgaria	NAC			C		
1972	France	NAC			60 t/d		
1972	France	NAC			7 t/d		
1972	France	SAC	1,2 t/d SA-75,00%			94,00%	1 t/d
1974	France	NAC				99,00%	
1975	France	SAC	SA-10,00%			50,00%	1 t/d
1975	France	SAC	96 t/d SA-40,00%			70,00%	55 t/d
1975	France	DEN SAC	62 t/d WA	55,00%	15,2 t/d	85,00%	195,2 t/d
1976	France	SAC				78,00%	37 t/d
1979	France	SAC	SA-60,00%			78,00%	28 t/d
1980	France	SAC				78,00%	47 t/d
1982	France	NAC			C		
1982	France	SAC	SA-70,00%			89,00%	208 t/d
1984	France	SAC	SA-60,00%			78,00%	46 t/d
1986	France	SAC				83,00%	205 t/d
1986	France	SAC				83,00%	205 t/d
1990	France	NAC			C		
1990	France	SAC				85,00%	640 t/d
u	France	NAC	NA-65,00%	99,00%	30,0 t/d		
u	France	DEN	80 t/d from TNT	55,00%			
u	France	NAC	NA-80,00%	98,50%	48,0 t/d		
u	France	Dist.of HNO3/N2O4	HNO3 + N2O4	99,00%	80,4 t/d		
1983	Finland	DEN			C		
1975	Germany	SAC	19 t/d SA-40,00%			70,00%	11 t/d
1976	Germany	SAC	SA-40,00%			70,00%	26,8 t/d
1978	Germany	SAC	SA-66,00%	82,00%		82,00%	13,4 t/d
1980	Germany	DEN NAC SAC	134 t/d WA	98,00%	32,1 t/d	85,00%	277,8 t/d
1981	Germany	DEN NAC SAC	56 t/d NC-WA	98,50%	10,8 t/d	96,00%	30,2 t/d
1982	Germany	SAC				92,00%	248 t/d
1982	Germany	SAC	SA-70,00%			82,50%	244 t/d
1984	Germany	SAC	SA-70,00%			85,00%	10 t/d
1986	Germany	SAC	SA-78,00%			92,00%	248 t/d
1988	Germany	SAC	SA-80,00%			92,00%	15 t/d
1988	Germany	SAC	SA-70,00%			82,50%	830 t/d
1991	Germany	SAC Engineering	SA-20,00%			65,00%	20 t/d



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Year	Country	Type of Plant	Feed	NA-Conc.	Capacity	SA-Conc.	Capacity
1991	Germany	SAC Engineering	SA-13,00%			65,00%	38 t/d
1993	Germany	NAC SAC	mixture NA 16/SA38	62,00%	1,3 t/d	77,00%	1,2 t/d
1993	Germany	SAC	SA 28,00%			68,00%	45 t/d
1995	Germany	SAC	SA-73,50%			96,00%	210 t/d
1995	Germany	SAC	SA-27,00%			76,00%	6 t/d
1995	Germany	SAC	SA-73,50%			96,00%	210 t/d
1996	Germany	SAC	SA-78,00%			92,00%	410 t/d
1997	Germany	SAC	SA-78,00%			92,00%	37 t/d
1999	Germany	SAC	SA-78,00%			85,00%	12 t/d
1999	Germany	NAC SAC Engineering	NA 67,00%, SA-75,00%	99,00%	210 t/d	88,00%	612 t/d
1999	Germany	NAC	NA 58,00%, SA-96,00%	99,00%	78,0t/d		
1995	Germany	SAC	SA-73,50%			96,00%	210 t/d
1995	Germany	SAC	SA-27,00%			76,00%	6 t/d
1995	Germany	SAC	SA-73,50%			96,00%	210 t/d
1996	Germany	SAC	SA-78,00%			92,00%	410 t/d
1997	Germany	SAC	SA-78,00%			92,00%	37 t/d
1999	Germany	SAC	SA-78,00%			85,00%	12 t/d
1999	Germany	NAC SAC Engineering	NA 67,00%, SA-75,00%	99,00%	210 t/d	88,00%	612 t/d
1999	Germany	NAC	NA 58,00%, SA-96,00%	99,00%	78,0t/d		
2000	Germany	DEN SAC	SA-72,00%			96,00%	20 t/d
2000	Germany	NAC	NA 58,00%, SA-96,00%	99,00%	2 x 52 t/d		
2001	Germany	SAC				87,00%	513 t/d
2001	Germany	SAC				87,00%	600 t/d
2001	Germany	SAC				82,00%	990 t/d
2001	Germany	SAC Purification	SA -50,00%			50,00%	24 t/d
2002	Germany	SAC	153 t/h			92,00%	129 t/h
2003	Germany	NAC	58,00%	99,00%	7,5 t/d		
2004	Germany	SAC	75,00%			96,00%	94 t/d
2006	Germany	NAPC	55-68%				
u	Germany	DEN NAC	52 t/d NC-WA	98,50%	11,6 t/d		
u	Germany	SAC	SA-22,00%			66,00%	16,8 t/d
u	Germany	SAC	SA-40,00%			66,00%	7,6 t/d
u	Germany	SAC	SA-50,00%			96,00%	2,4 t/d
u	Germany	SAC	SA-30,00%			65,00%	7,2 t/d
u	Germany	NAC	NA-60,00%	99,00%	60,0 t/d		
u	Germany	SAC	SA-70,00%			96,00%	300 kg/h
u	Germany	SAC	SA-30,00%			65,00%	375 kg/h
2007	Germany	SAC	SA- 78,00%			96,00%	32,0t/d
1974	Greece	DEN NAC Nox	NG-WA	99,00%	24 t/d	70,00%	
2006	Hungary	SAC	SA-78,00% fr.Cl-drying			96,00%	0,8t/h
1974	C	NAC					C
1976	C	NAC					C
1977	C	NAC					C
1978	C	NAC					C
1969	Italy	NAC			36 t/d		
1974	Italy	REKDEN NAC SAC	34 t/d NC-WA	99,00%	9,6 t/d	85,00%	18,0 t/d
1984	Italy	NAC	NA-20,00% + NGL	65,00%	2,0 t/d		
u	Italy	DEN	24 t/d NG_WA	65,00%			
u	Italy	NAC	NA-45,00%	99,00%	6,5 t/d		
u	Italy	DEN	24 t/d NG_WA	65,00%			



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Year	Country	Type of Plant	Feed	NA-Conc.	Capacity	SA-Conc.	Capacity
u	Italy	NAC	NA-45,00%	99,00%	6,5 t/d		
1984	Norway	NAC			C		
1970	other Europa C.	DEN NAC	NA-50,00% +NG-WA	99,00%	12,0 t/d		
1990	Poland	DEN	NG-WA	85,00%	12,0t/d		
1988	Portugal	SAC				70,00%	C
1999	Romania	SAC Purification	SA-98,00%			98,00%	0,2 t/d
2004	Russia	SAC	18,7 t/d 76,00%			96,00%	15,6 t/d
1977	Spain	DEN NAC	NA-50,00 % +NG-WA	98,50%	16,4 t/d		
1984	Spain	SAC	SA-76,00%			92,00%	19 t/d
1985	Spain	SAC	4,2 t/d WA with DME	98,00%	7,0 t/d	92,00%	91 t/d
1987	Spain	NAC SAC	NA-55,00% (RDX)	99,00%	42,8 t/d	85,00%	153,0 t/d
1990	Spain	SAC	4,2 t/d WA with DME	98,00%	7,0 t/d		
u	Spain	SAC	93 t/d WA from TNT			96,00%	3,2 t/d
u	Spain	SAC	SA 54,00% 477 kg/h			77,00%	258 kg/h
1980	Sweden	Bleacher		99,00%			
1972	Switzerland	DEN	NC+NGL-WA	98,00%	1t/h	70,00%	
1980	Switzerland	NAC			C		
1980	Switzerland	SAC	SA-70,00%			85,00%	17 t/d
1980	Switzerland	DEN / Nox	18 t/d NG-WA	65,00%	2,0 t/d	70,00%	
1999	Switzerland	SAC	SA-48,00%			65,00%	70 t/d
u	Switzerland	DEN NAC	NC- +NG-WA	98,00%	4,8 t/d		
u	Switzerland	DEN NAC SAC	112 t/d WA	98,50%	21,6 t/d	85,00%	118,0 t/d
u	Switzerland	DEN SAC	36 t/d NB/DNCB-WA			85,00%	54,0 t/d
u	Switzerland	NAC SAC	NA 58,00%	99,00%	50,0 t/d	85,00%	
1963	UK	NAC			60 t/d		
1968	UK	NAC			C		
1970	UK	NAC			C		
1979	UK	NAC			2 t/d		
1979	UK	NAC			60 t/d		
1982	UK	DEN			C		
1984	UK	DEN	6 t/d WA from TNT	70,00%			6t/d
1990	UK	NAC			C		
1993	UK	NAC SAC NOx	NA-60,00%	99,00%	75,0 t/d	86,00%	242 t/d
2003	UK	NAC SAC NOx	NA-60,00%	99,00%	75,0 t/d	86,00%	243 t/d
u	UK	DEN	115 t/d WA from TNT	70,00%			
1978	Yugoslavia	DEN			C		
1988	Yugoslavia	NAC SAC	NA/SA, SA-68,00%	98,00%	16,8 t/d	88 / 96%	140 / 36 t/d
2000	Yugoslavia	DEN SAC	SA-68,00%			96,00%	27 t/d
u	other Europa C.	NA-Dist.	NA + N2O4	99,00%	266,0 t/d		
u	other Europa C.	DEN NAC	24 t/d NG-WA	99,00%	3,6 t/d		
u	other Europa C.	NAC SAC NOx		98,50%	84,0 t/d	85,00%	365,0 t/d
u	other Europa C.	DEN NAC	PETN- +NG-WA	99,00%	10,8 t/d		
u	other Europa C.	DEN NAC SAC	32 t/d NG-WA	98,00%	3,1 t/d	96,00%	19,5 t/d
u	other Europa C.	DEN NAC	14 t/d NG-WA	98,50%	2,4 t/d		
u	other Europa C.	DEN NAC	NC-WA +NA-50,00%	98,00%	9,4 t/d		
u	other Europa C.	DEN	NG-WA	75,00%	0,5 t/d	70,00%	12,7 t/d
u	other Europa C.	DEN NAC	NA-50,00% +NG-WA	98,00%	60,0 t/d		
u	other Europa C.	DEN SAC	100 t/d WA from TNT			96,00%	68,0 t/d
u	other Europa C.	SAC	SA-25,00%			90,00%	14,4 t/d
u	other Europa C.	DEN	20 t/d DEGN- +NG-WA	65,00%			
u	other Europa C.	SAC	SA-78,00% fr.Cl-drying			96,50%	4,0 t/d