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미래형 대형풍력발전기 개발 추세 (Europe 지역의 Case Study)

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차 례

1. 풍력발전 일반
2. 세계 풍력발전 보급 현황
3. 우리나라 發電추세
4. 대형풍력발전기 개발 현황
5. 경제성 분석 및 Cost 구성

1. Why Wind Power?

Advantages of Wind Energy : free cost, non-pollutant, free waste
large unit is possible

Disadvantages : intermittent of energy density
limited sites

Unit Capacity of various Power Plant

Solar PP : 10 ~ 500 kW
Wind PP : 200 ~ 2000 kW
Nuclear PP : 700 ~ 1000 MW

Installation Cost of Power Plants

Nuclear PP : \$ 2,500 /kW
Solar PP : \$ 6,000 /kW
Wind PP : \$ 1,000 /kW

2. Status of Wind Power in world

2.1 Installed capacity in the world, Beg. 1998

No.	nation	Mid 1997 MW	% of the world total
1	U.S./Canada	1,700	25.6 %
2	Germany	2,000	30.1 %
3	Denmark	900	13.5 %
4	Holland	299	4.5 %
5	U.K.	300	4.6 %
6	Spain	249	3.7 %
7	Sweden	139	2.1 %
8	Korea	3	0.05 %
9	Asia total	1,050	15.8 %
Total		6,640	100.0 %

2.2 Installed capacity of wind power in Europe and U.S

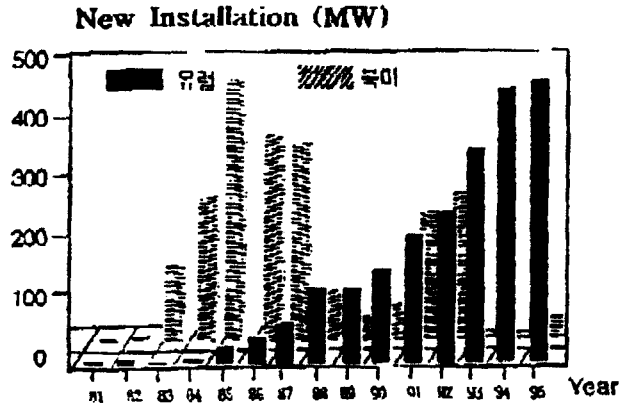


Fig 2. Installed capacity of wind power in Europe and U.S

2.3 Generation of wind power plant in Europe and U.S.

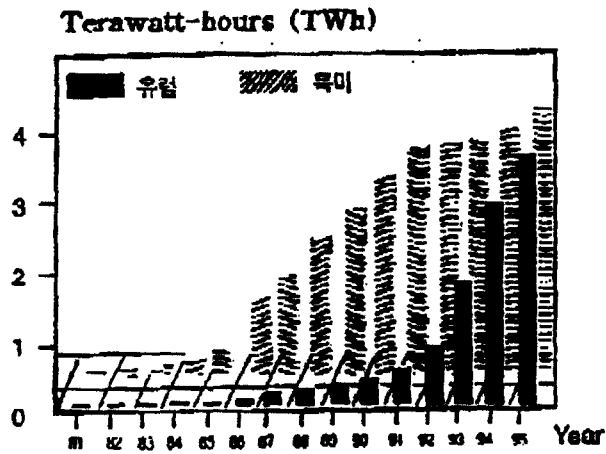


Fig 3. Generation of wind power plant in Europe and U.S.

3. Trends of Wind Power Generation in Korea

3.1 Periodical Stages

1980-1990	Study period
1993-1996	Development of 300kW unit (VAWT)*
1997-1999	Development of 550kW unit (HAWT)*
2000-2002	Development of 1000kW unit (HAWT)
1999-2006	Commercialize of New Technology

* initiated by Hankuk Fiber Co.

3.2 Government Promotion of new & renewable energy

1987	NRSE(New & Renewable Source of Energy) Development and promotion Act
1994	Regional Plan for Energy Demand and Supply
1997	10 Years Development Plan focussing coverage of 2% of total energy supply in 2006

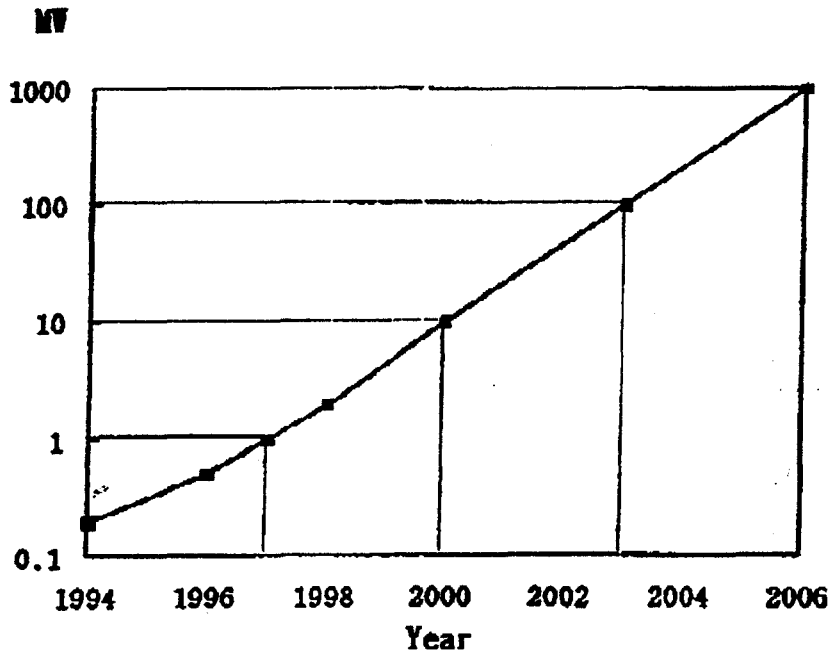
3.3 Some Projects of Wind Power Plants

1989-1992	Cheju Wolyung	1×100 kW
1992	Cheju Chungmoon	1×250 kW
1996	Muan Project	1×300 kW
1997-1998	Cheju Guja Project	2×600 kW

3.4 International Movement for Clean Energy

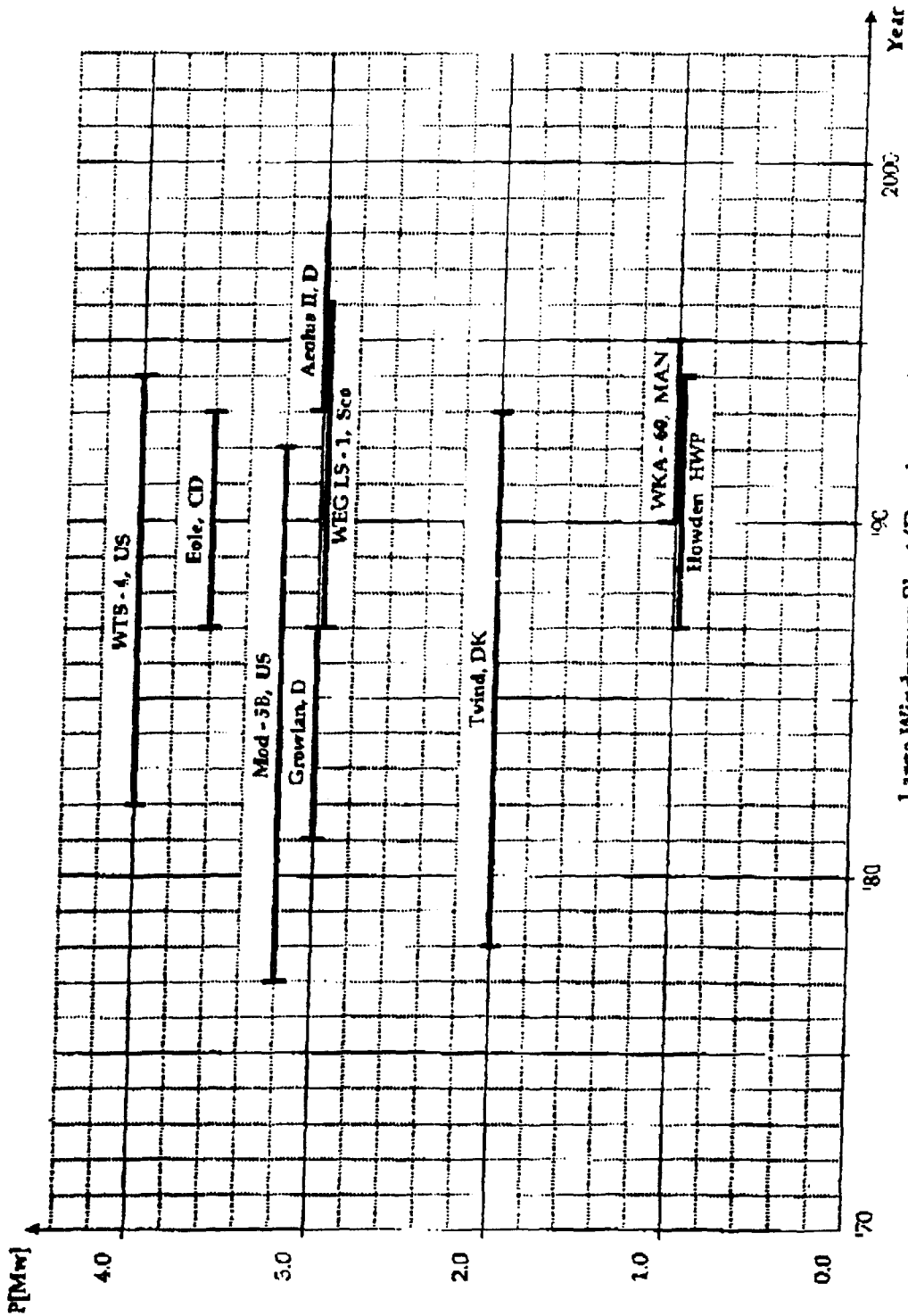
1991	Carbon tax proposed
1992	Rio round, UN Convention on Climate Change, to stabilize CO ₂ emissions at 1990 level by end of the Century.
1990-1995	NFFO(Non-Fossil Fuel Obligation) program.
1997. 10	Bonn round, 15 % reduction of CO ₂ gas at 1990 level.
1997. 12	Kyoto round, environment summit.

3.5 Installed capacity, grid connected, estimated



4. 대형 풍력발전기 개발현황

4.1 개발 Prototype의 자취



Large Windpower Plant (Development)

Kyungpook N. University