Performance change by speed control – example that changes at 80% speed by using an inverter

1）The shaft horse power decreases in proportion almost to the third cube of the pump speed.

2）In addition to the decrease in the shaft horse power, the motor efficiency can be decreased to the input electric power.

3）The consumption power of the inverter exists though the power of the pump decreases.

Existing performance（100% speed）					Expected performance at 80% speed						
Flow ratio	Flow	Total head	Efficiency	Speed	S.H.power	Speed ratio	Speed	Flow	Total head	Eff. reduction ratio	Efficiency	S.H.power
(%)	(m^3/min)	(m)	(%)	(min^{-1})	(kW)		(min^{-1})	(m^3/min)	(m)		(%)	(kW)
0	0.000	96.8	0.0	2940	17.00	0.80	2352	0.000	62.0	0.98	0.0	9.00
20	0.440	95.8	35.0	2940	19.68	0.80	2352	0.352	61.3	0.98	34.3	10.28
40	0.880	94.7	56.5	2940	24.10	0.80	2352	0.704	60.6	0.98	55.4	12.59
60	1.320	92.8	67.7	2940	29.57	0.80	2352	1.056	59.4	0.98	66.3	15.45
80	1.760	88.4	72.7	2940	34.97	0.80	2352	1.408	56.6	0.98	71.2	18.27
100	2.200	82.0	74.6	2940	39.51	0.80	2352	1.760	52.5	0.98	73.1	20.64
120	2.640	71.5	71.7	2940	43.02	0.80	2352	2.112	45.8	0.98	70.3	22.47

Performance change by speed control

——— 100% speed   ——— 80% speed

Total head (m)、Efficiency (%)、S.H.power (kW)

Flow (m3/min)

Total head

Efficiency

Shaft horse power