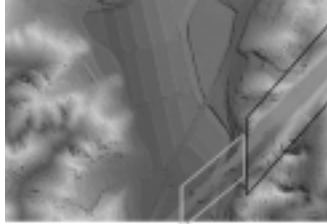




3. LiDAR ()



4.

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(3), LiDAR

가

3 ,
가 LiDAR

1. F. Ackermann. 1999, Airbone laser scanning-present status and future experctation, PE&RS
2. . 2004, Test Flight & Calibration of ALTM 3070/DC in Korea : (GIS/LBS)
chhong@kictre.kr

LiDAR
3 ,
, 3 가

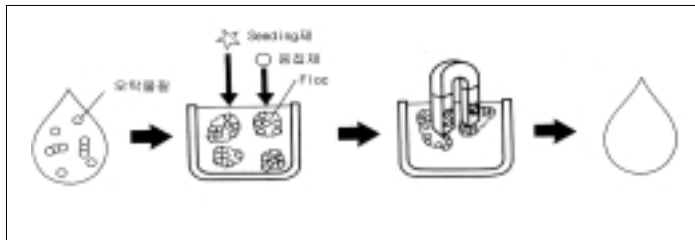


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(Ubiquitous)



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	(m^3/m^2 [] ·)	480	60	96
	SS (%)	90	80	84
		1	8	5
		1	2	3
		1	0.4	0.6
	(m^3/m^2 [] ·)	125	25	63
		1	5	2
		1	0.3	0.3
		1	0.6	0.6

2.

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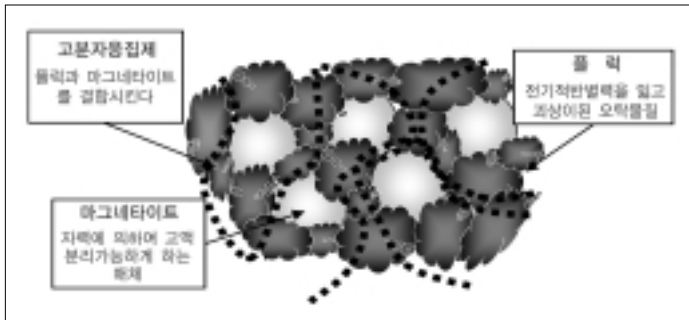
가

100%

2.3 μm

80%

2



2.

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	2.3	44
	84.6emu/g(3.5KOe)	51.8emu/g(5.0KOe)
	100%	80~90%

3.

		(mg/L)	(mg/L)	(%)
	SS	278 ~ 466	7 ~ 19	93 ~ 98
	BOD	80.2 ~ 261	9.3 ~ 25.4	85 ~ 93
	COD	82 ~ 140	7.9 ~ 21.0	82 ~ 92
	T-P	1.79 ~ 5.42	0.14 ~ 0.35	89 ~ 94
	SS	1 ~ 29.5	1 ~ 2.3	37.0 ~ 92.3
	BOD	4.0 ~ 11.0	1 ~ 4.3	37.5 ~ 87.0
	COD	9.6 ~ 15.0	6.9 ~ 9.9	23.3 ~ 39.3
	T-P	0.11 ~ 2.38	0.04 ~ 0.2	763.6 ~ 94.7

EPA()
(CSO)

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25%~30%가 Integrated Construction)
VERA

By-Pass , , , 가 SARA

VBE VTT가

EU 가

가

가 (Silicon Valley) VBE
4D-CAD

1994 .)
hmsong@kict.re.kr

가 CIFE(the Center of Integrated
Facility Engineering)

ICT(Information
Communication
Technology)
Virtual Building
Environment(VBE)

VBE
VTT가
. VTT 1942
Application

3000
5000 . 1990

1. Customer 가 Electronic Data
Exchange

Latham report (1994, Constructing The Team) Egan report (1997, Re-Thinking Construction)

2003 220 million Euro . VTT
Electronics, VTT Information
Technology, VTT Industrial
Systems, VTT Processes, VTT
Biotechnology, VTT Building
and Transport .
VTT CIC (Computer

3
Line Based
2D
3