

First ! Best ! Smart !

태양전지용 실리콘 feedstock

KCC 강경훈

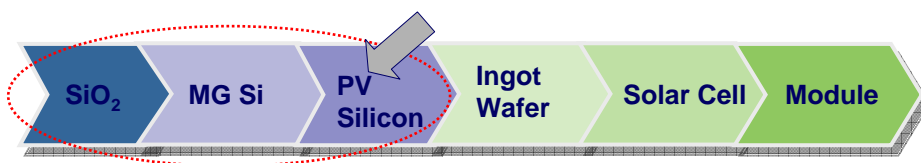
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PV Chain



Quartzite
mining



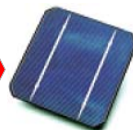
MG Si
production



CVD reaction
→ PolySi



Ingot growing
→ Wafering



pn Junction →
Solar cell



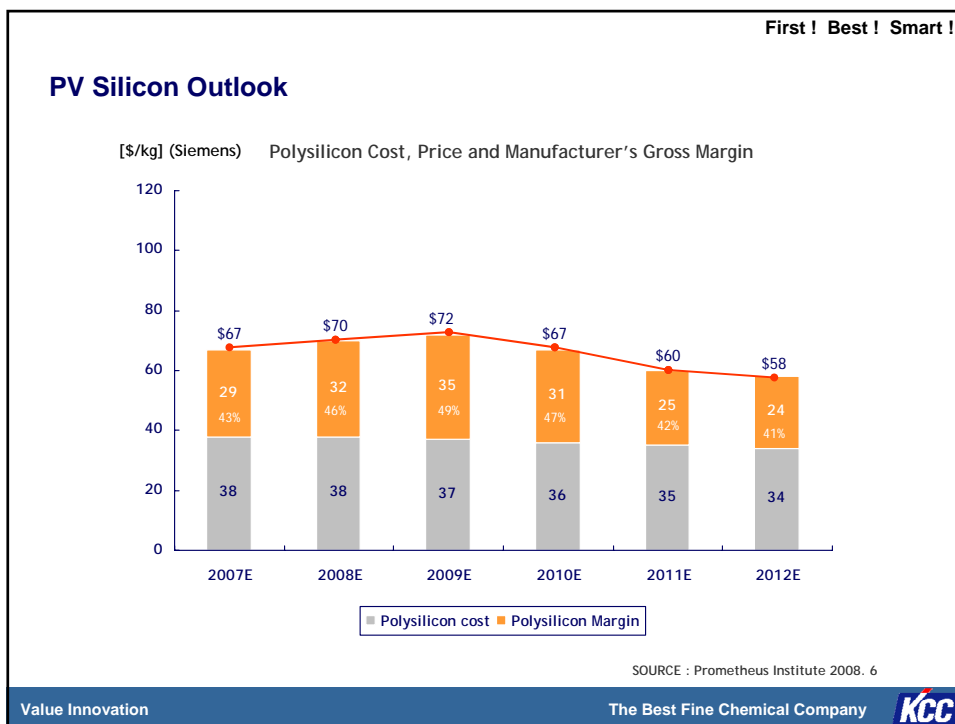
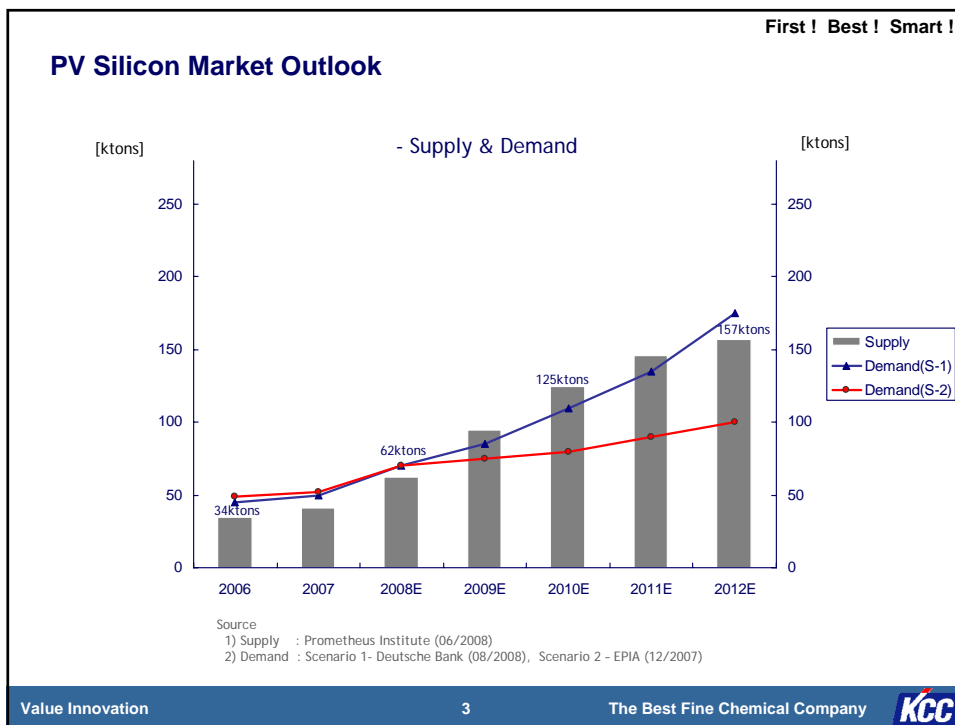
Fabrication
→ Module

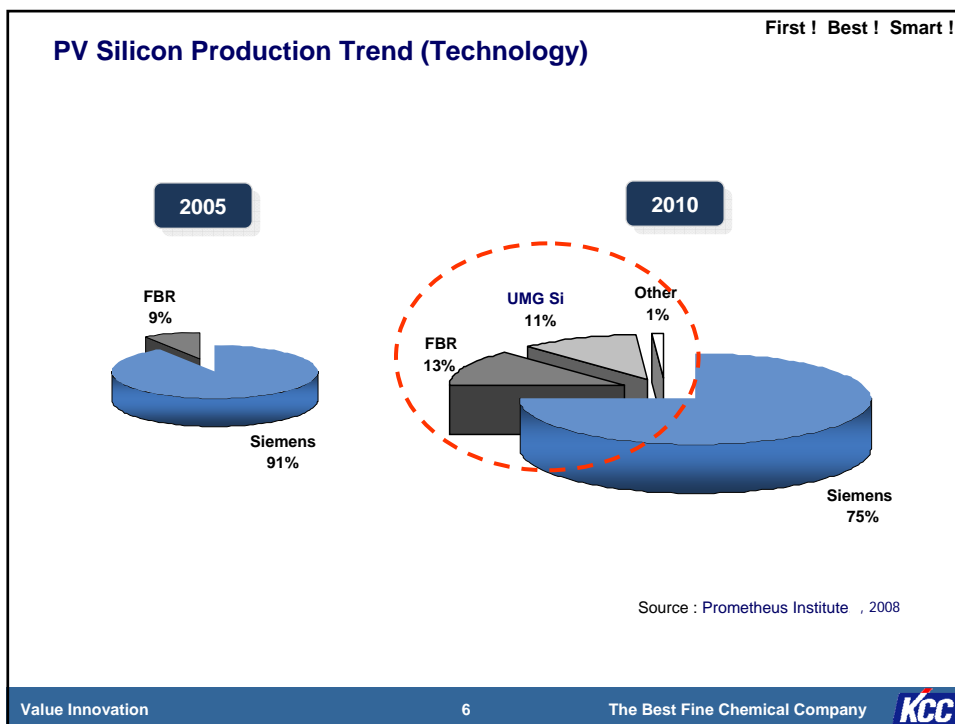
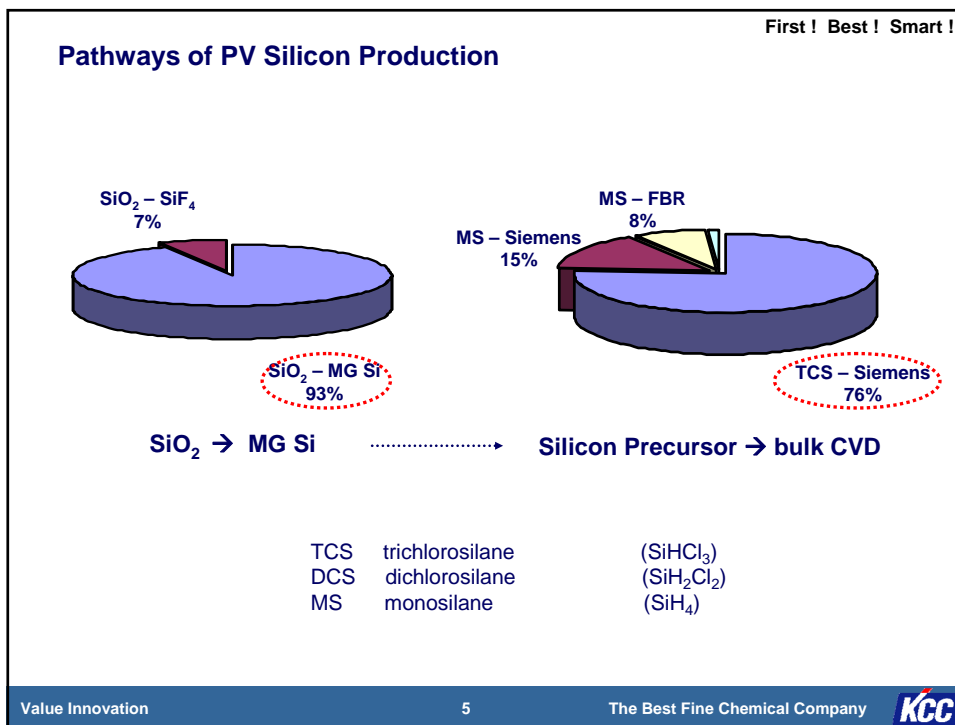
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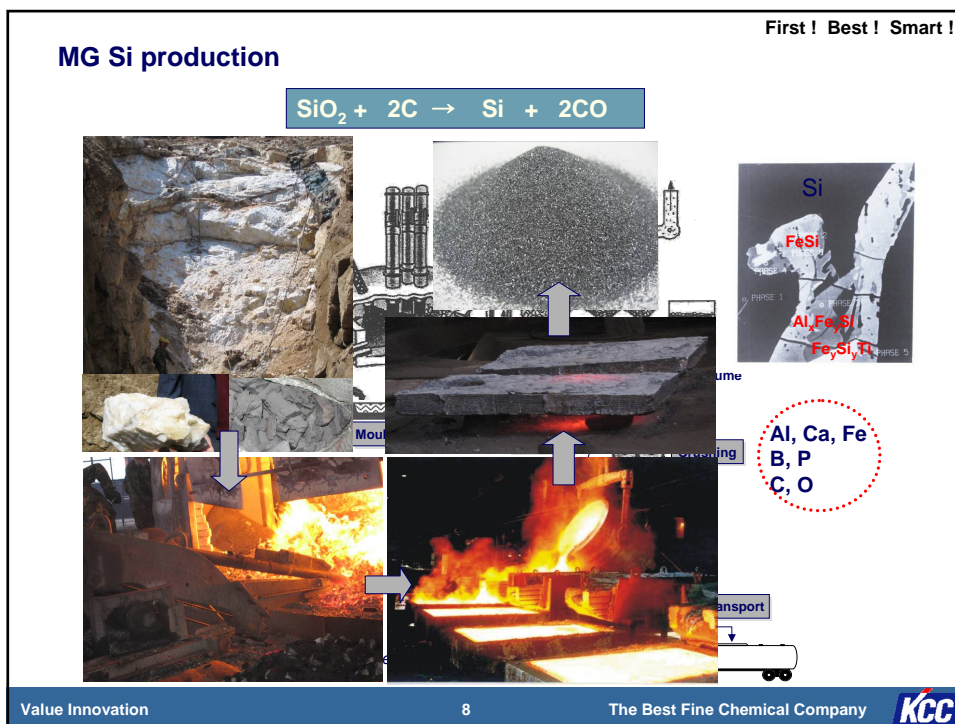
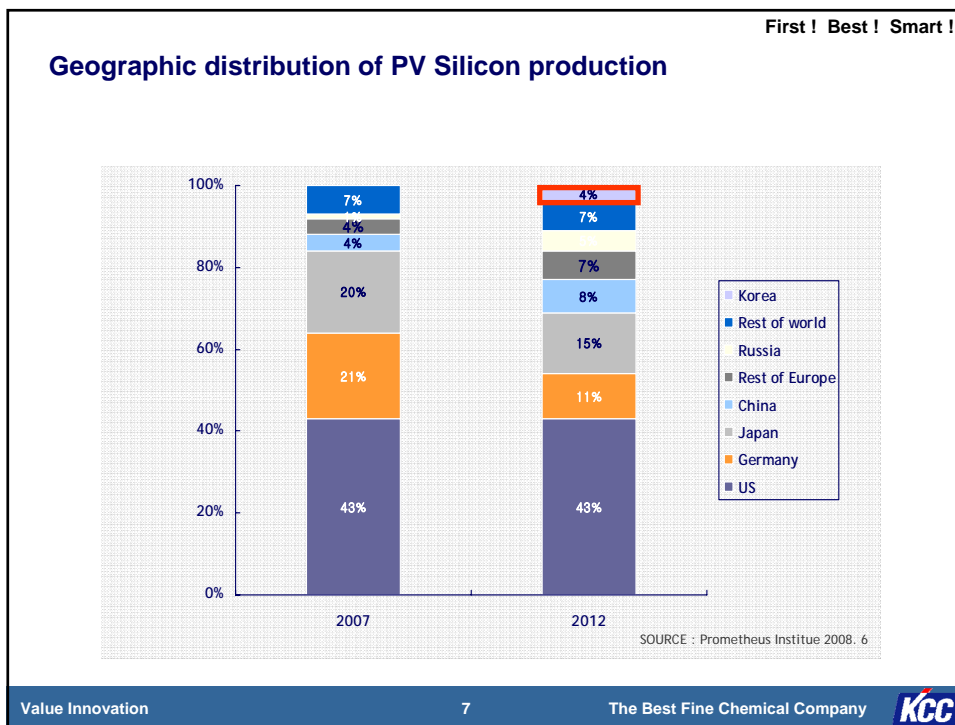
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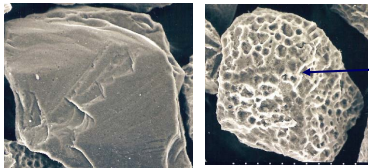


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Preparation of Silicon Precursors

Name	Reaction	Yield	Reactor
Chlorination	$\text{MG Si} + \text{HCl} \rightarrow \text{TCS}$	high	FBR
Hydro-Chlorination	$\text{MG Si} + \text{STC} + \text{H}_2 \rightarrow \text{TCS}$	med	FBR
Redistribution	$\text{TCS} \rightarrow \text{DCS} \rightarrow \text{MS}$	low	Reactive distillation
Hydride Reduction	$\text{SiF}_4 + \text{MH} \rightarrow \text{MS}$	high	3 phase

Reaction of MG Si with gas \rightarrow Direct Synthesis (Silicon Chemistry)



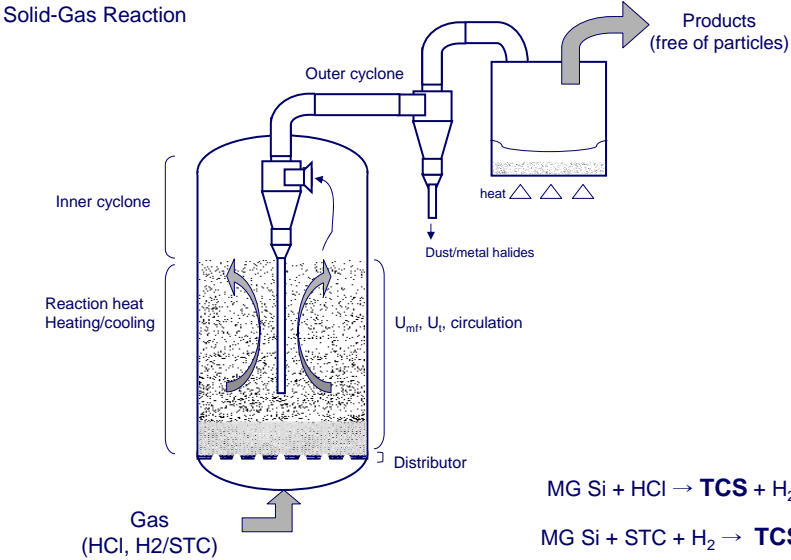
Si
Cu
Al, Ca, Fe

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FBR (Fluidized Bed Reaction) System


Solid-Gas Reaction

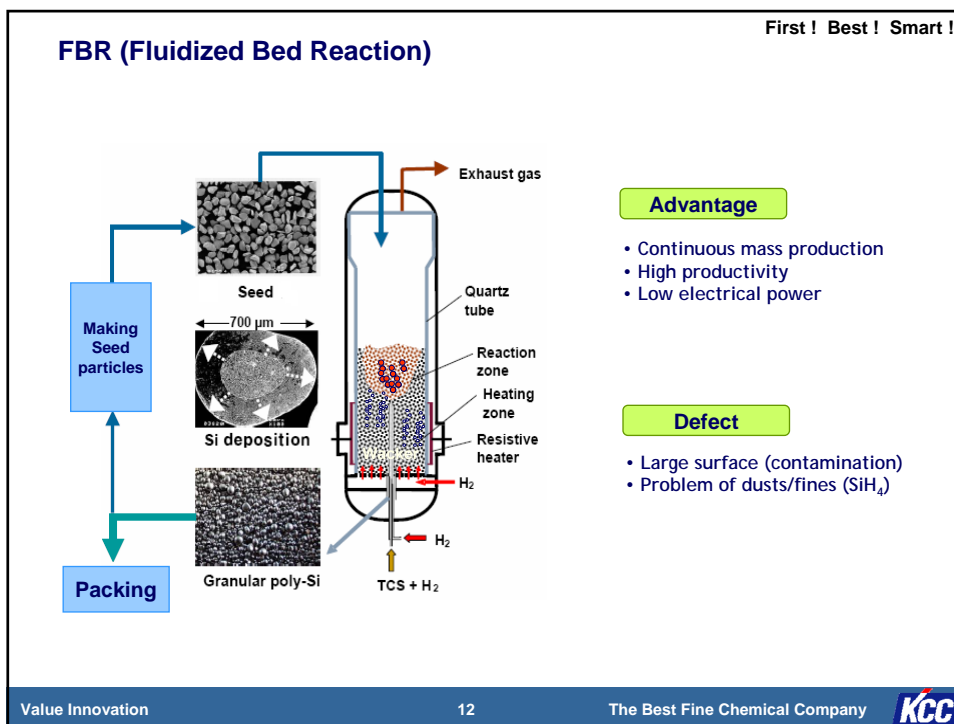
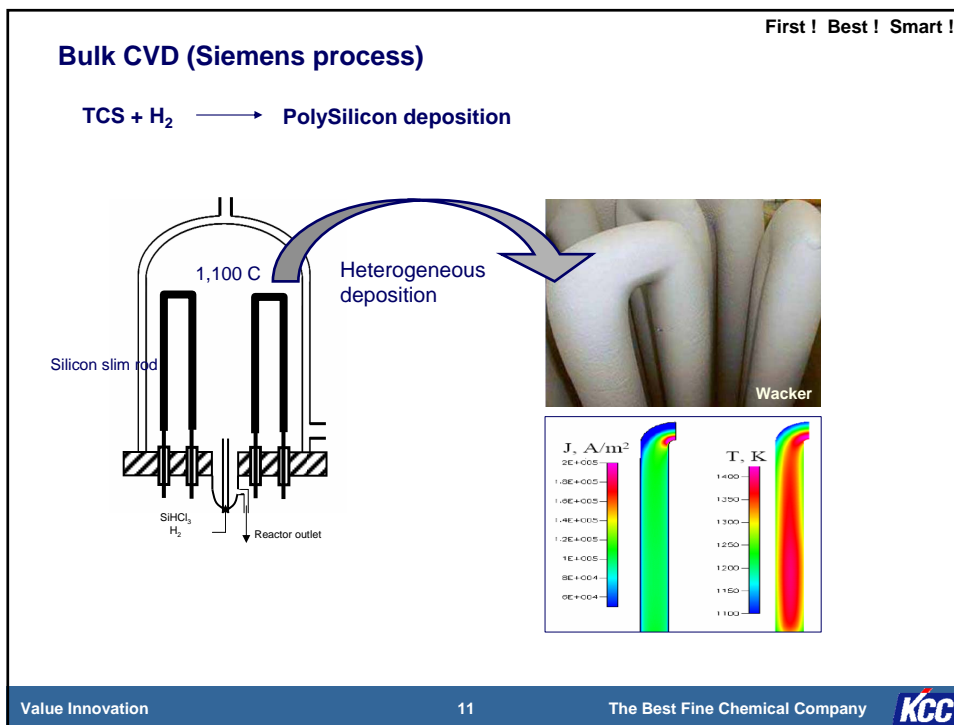


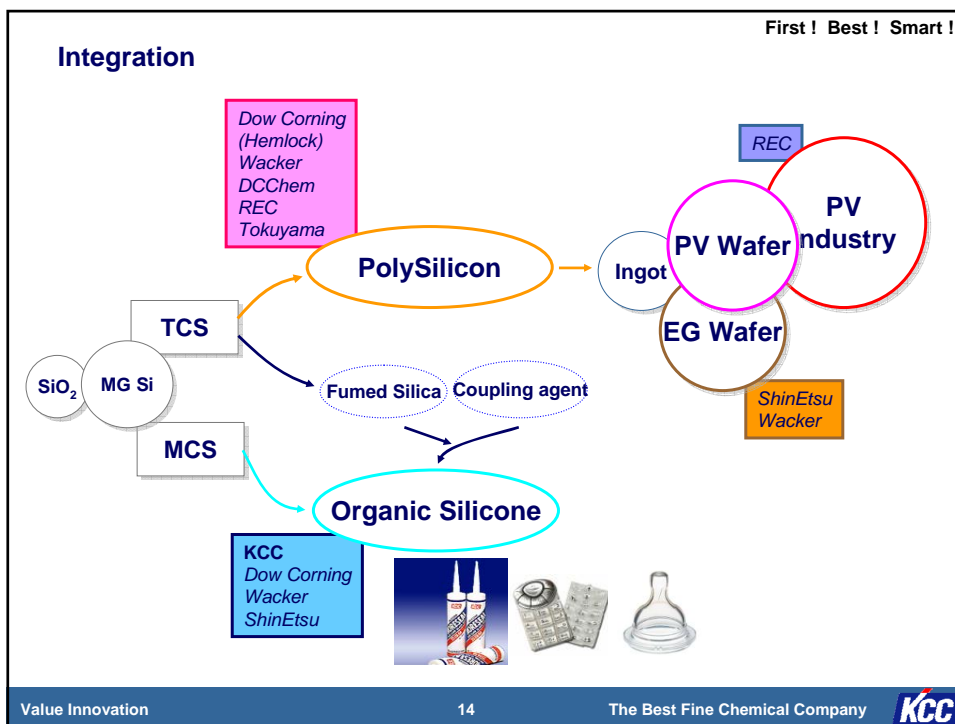
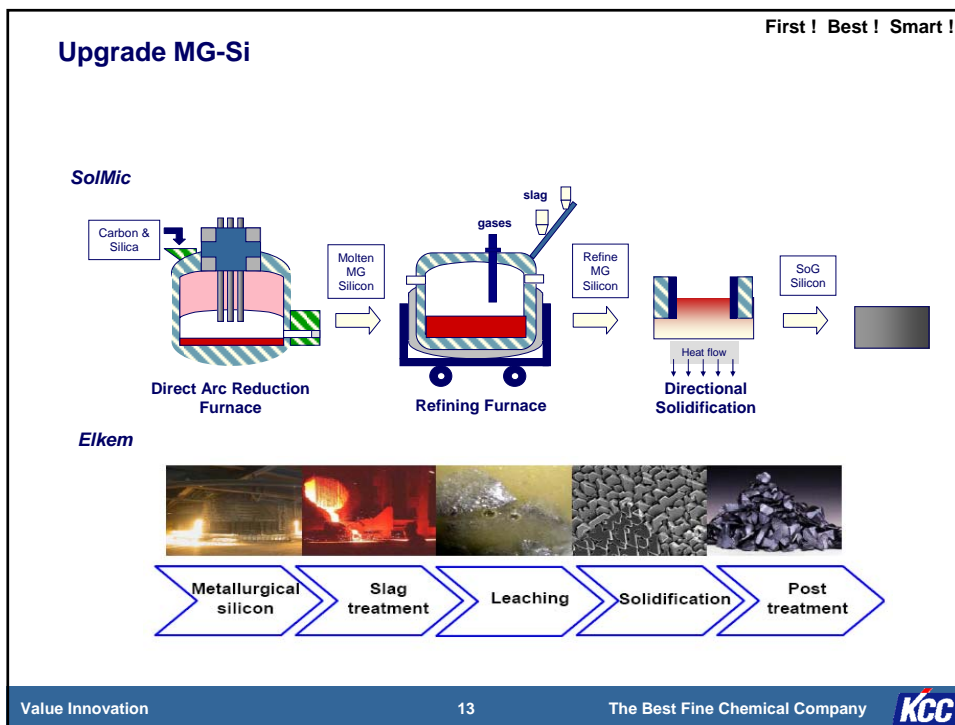
Gas
(HCl, H₂/STC)

$\text{MG Si} + \text{HCl} \rightarrow \text{TCS} + \text{H}_2$

$\text{MG Si} + \text{STC} + \text{H}_2 \rightarrow \text{TCS}$

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KCC Organic Silicone Plant (1st)

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Junjoo site

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Thank you