

# New Technology of Fertilizer in China

The First Edition

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## **Executive Summary**

## **Introduction and Methodology**

### **1 Technology of Urea and Ammonia**

1-1 Ammonia Existing Technology and Equipment

1-2 Research Institutes with New Ammonia Technology

1-3 Urea Existing Technology and Equipment

1-4 Research Institutes with New Urea Technology

### **2 Technology of Slow (Controlled) Release Fertilizer and Stabilized Fertilizer**

2-1 Existing Technology

2-2 Research Institutes with New Technology

### **3 Technology of Compound Fertilizer**

3-1 Existing Technology

3-2 Research Institutes with New Technology

### **4 Technology of Water-soluble Fertilizer**



## Urea and Ammonia

## Comparison of Coal-Water Mixture Gasification Process (1)

Item	Northwest Research Institute of Chemical Industry - XXX	XXX	XXX
Lining of gasification furnace	Refractory brick	XXX	XXX
Gasification pressure	XXX	XXX	XXX
Combustor	XXX	XXX	XXX
Combustor size	XXX	XXX	XXX
Crust of gasification furnace	XXX	XXX	XXX
Gasification furnace	XXX	XXX	XXX
Construction period	XXX	XXX	XXX
Running time	XXX		XXX
Maintenance cost	XXX	XXX	XXX
Pick-up time	XXX	XXX	XXX

## Comparison of Coal-Water Mixture Gasification Process (2)

Item	Northwest Research Institute of Chemical Industry - XXX	XXX	XXX
Burner of gasification furnace	XXX	XXX	XXX
Number of burner	XXX	XXX	XXX
Feed control	XXX	XXX	XXX
Burner cooling water system	XXX		XXX
	XXX		XXX
	XXX		XXX
Operation of gasification furnace	XXX		XXX
Coal	XXX	XXX	XXX

## Comparison of Acid Gas Removal Technology

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Item	Unit	XXX	XXX	XXX
LP steam ( ≤0.3MPa )	t	XXX	XXX	XXX
MP steam ( 1.0MPa )	t	XXX	XXX	XXX
shift gas heat utilization	10 <sup>6</sup> KJ	XXX	XXX	XXX
Recycling water ( Δt=10℃ )	m <sup>3</sup>	XXX	XXX	XXX
Electricity	KWh	XXX	XXX	XXX
Refrigeratingcapacity-38℃	10 <sup>6</sup> KJ	XXX	XXX	XXX
Refrigeratingcapacity-10℃	10 <sup>6</sup> KJ	XXX	XXX	XXX
H <sub>2</sub> +CO loss	Nm <sup>3</sup>	XXX	XXX	XXX
Solvent loss	kg	XXX	XXX	XXX
Methanol	kg	XXX	XXX	XXX
Stripping gas ( N <sub>2</sub> )	Nm <sup>3</sup>	XXX	XXX	XXX
Operating cost	RMB Million/a	XXX	XXX	XXX
Investment	RMB Million/a	XXX	XXX	XXX

## Comparison of Ammonia Synthesis Converter

No	Converter	XXX	XXX	XXX
1	Structure	XXX	XXX	XXX
2	Design wall temperature, °C	XXX	XXX	XXX
3	Operating pressure, Mpa	XXX	XXX	XXX
4	Gas component, mol%	H2	XXX	XXX
		N2	XXX	XXX
		NH3	XXX	XXX
		CH4	XXX	XXX
		Ar	XXX	XXX
5	Net value of NH3	XXX	XXX	XXX
6	Outlet temperature, °C	XXX	XXX	XXX
7	Unit energy consumption, GJ/t	XXX	XXX	XXX
8	Operating flexibility, %	XXX	XXX	XXX
9	Catalyst self-unloading	XXX	XXX	XXX

## Technology Comparison ( 1 )

Technology	Aqueous solution total recycle	CO <sub>2</sub> stripping	NH <sub>3</sub> stripping	ACES	XXX
Technology developer	/	XXX	XXX	XXX	XXX
<b>Process flow</b>					
Number of HP loop	XXX	XXX	XXX	XXX	XXX
MP dissociation absorption process	XXX	XXX	XXX	XXX	XXX
LP dissociation absorption process	XXX	XXX	XXX	XXX	XXX
Desorption hydrolysis process	XXX	XXX	XXX	XXX	XXX
Dehydrogenation process	XXX	XXX	XXX	XXX	XXX
<b>Synthesis condition</b>					
Reactor temperature, °C	XXX	XXX	XXX	XXX	XXX
Operating pressure, MPa (A)	XXX	XXX	XXX	XXX	XXX
NH <sub>3</sub> /CO <sub>2</sub> (mol)	XXX	XXX	XXX	XXX	XXX
H <sub>2</sub> O/CO <sub>2</sub> (mol)	XXX	XXX	XXX	XXX	XXX
Conversion, %	XXX	XXX	XXX	XXX	XXX



## Technology Comparison ( 2 )

Technology	Aqueous solution total recycle	CO <sub>2</sub> stripping	NH <sub>3</sub> stripping	ACES	XXX
<b>Equipment material</b>					
Reactor lining material	XXX	XXX	XXX	XXX	XXX
HP stripper	XXX	XXX	XXX	XXX	XXX
HP carbamate condenser	XXX	XXX	XXX	XXX	XXX
MP, LP equipment	XXX	XXX	XXX	XXX	XXX
<b>Hydrolysis, desorption</b>					
Equipment	XXX	XXX	XXX	XXX	XXX
Steam pressure, MPa (A)	XXX	XXX	XXX	XXX	XXX
Emission index	XXX	XXX	XXX	XXX	XXX
Oxygen consumption % (v)	XXX	XXX	XXX	XXX	XXX
<b>Urea unit consumption, /t</b>					
NH <sub>3</sub> (100%NH <sub>3</sub> )	XXX	XXX	XXX	XXX	XXX
Steam (kg)	XXX	XXX	XXX	XXX	XXX
CO <sub>2</sub> (kg)	XXX	XXX	XXX	XXX	XXX
Electricity (kWh)	XXX	XXX	XXX	XXX	XXX
Cooling water (tonne)	XXX	XXX	XXX	XXX	XXX
<b>Equipment invest ratio</b>	XXX	XXX	XXX	XXX	XXX

## Key Companies/Research Institutes of Urea

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## Companies with New Urea Technology

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**XXX:** Production increase & energy conversation method and equipment by XXX process

### **Introduction**

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### **Process**

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### **Benefit**

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**Slow (Controlled) Release Fertilizer**

**Stabilized Fertilizer**

## Key Research Institutes of SRF, CRF, Stabilized Fertilizer

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## Introduction of Key Research Institutes

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# Contact Us



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