

Form1.

Summary of the typical and hydrated lime production unit plan

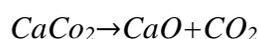
## 1. Introduction to products or services

### 1.1. The goal of plan

The main goal of this plan is to establish quicklime and hydrated lime unit in Lorestan province. This plan will be exploited from 2018 with 40 personnel and 70% of the practical capacity in 3 working shifts of 8 hours and 300 day annually and will reach its 100% of the practical capacity by 2020.

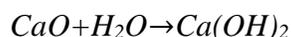
### 1.2. Characteristics and advantages

Lime or CaO is obtained by heating the limestone:



Pure lime is white, formless and fragile. Its specific weight depends on curing heat and is between 3.08 and 3.3g/cm<sup>3</sup>. Its combined affinity is also dependent on the curing temperature as the specific weight. If the temperature was less than 1000°C, its unfolding time would be increased. The lime melt point is 2614°C and after being melted and cooled, it would be in form of cubic white crystals or light yellow solid crystals. Trivalent iron oxides, manganese and titan cause the colorfulness of the product and reduction of lime quality. The lime is used in following forms:

1. Clod lime: clod lime refers to the cured limestone.
2. Powder quicklime: this lime is obtained by grinding the clod lime
3. Hydrated lime: hydrated lime is the calcium hydrate which is obtained by combining the water with lime as:



### 1.3. Custom fees

Table1. Chips custom fees and tariffs

No.	Description	Tariff code	Fees %
1	Hydrated lime	25222000	5
2	Quicklime (typical)	25222000	5

### 1.4. ISIC code

The plant considered is for hydrated and typical lime production. The ISIC code related to this product is 2694 in the department of industry, mine and commerce systems in subgroup different lime types production and its measurement scale is ton.

Table2. Product ISIC code

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ISIC code	Description	Scale
2694412304	Hydrated lime Chips	Ton
2694412302	Quicklime	Ton

### 1.5. Introduction to products application

Steel industries: before 1960, lime was used as the melting factor in steelmaking along with other materials in open furnace procedures. The lime used for providing 1 ton of steel is 12 kg.

Metallurgy applications: for melting the metal ore such as copper, the lime is used.

Sanitary applications: Bicarbonate in water is deposited by adding the lime and reduces the water hardness.

Chemical applications: in preparing sodium carbonate and sodium bicarbonate, producing calcium carbide, ethylene and propylene compounds, glycols, calcium containing organic salts as well as filtration and concentration of citric acid and glucose, the lime is used.

Paper production: in paper industry, the lime is used in order to produce sulfate pulp, reusing the sodium carbonate and producing calcium hypochlorite with the whitening property.

Ceramic and construction materials: it is used as the mixture, in building and in glass production as the melting aid factor.

Pharmacy: calcium carbonate has the anti-acid property and can be used as the calcium complement in kidney defects and osteoporosis treatment.

Filler: the most frequent use of the earth and sediment calcium carbonate is in paper, plastic and color production.

Sugar factories: in producing the sugar, the lime is used for filtration and separation of the phosphate and organic acids.

Petroleum: it is used for neutralizing the sulfur organic compounds, neutralizing the SO<sub>2</sub> gas and producing grease.

Paint industry: lime is used as the filler.

Leather production: it is used for removing the hair or wool from the skin (tannery industry).

Agriculture: lime is used for the water pH control.

### 2. Suggested sites

Based on surveys, the cities such as Sarab Dareh, Aligudarz and Pol Dokhtar are suitable sites for establishing this unit.

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### 3. Raw, auxiliary materials and consumables

The raw material for lime production is limestone.

### 4. Sales plan and target market (local and foreign)

The target market at first is to supply locally in sections and then for additional production, the export would be done to Iraq and western neighbors.

Table3. Products production and sales plan

Description	2018	2019	2020	2021
Production capacity	70%	80%	90%	100%
Production level				
Hydrated lime	10500	12000	13500	15000
Quicklime	84000	96000	108000	120000
Total	945000	108000	121500	135000
Sales level				
Hydrated lime	19425	222000	24975	27750
Quicklime	117600	134400	151200	168000
Total (m.Rial)	137027	156600	176175	195750

### 5. Annual nominal and practical capacity

#### Nominal capacity

The Nominal capacity is the production in ideal situation. This capacity is registered by the machineries manufacturers and is based on the engineering and designing principles.

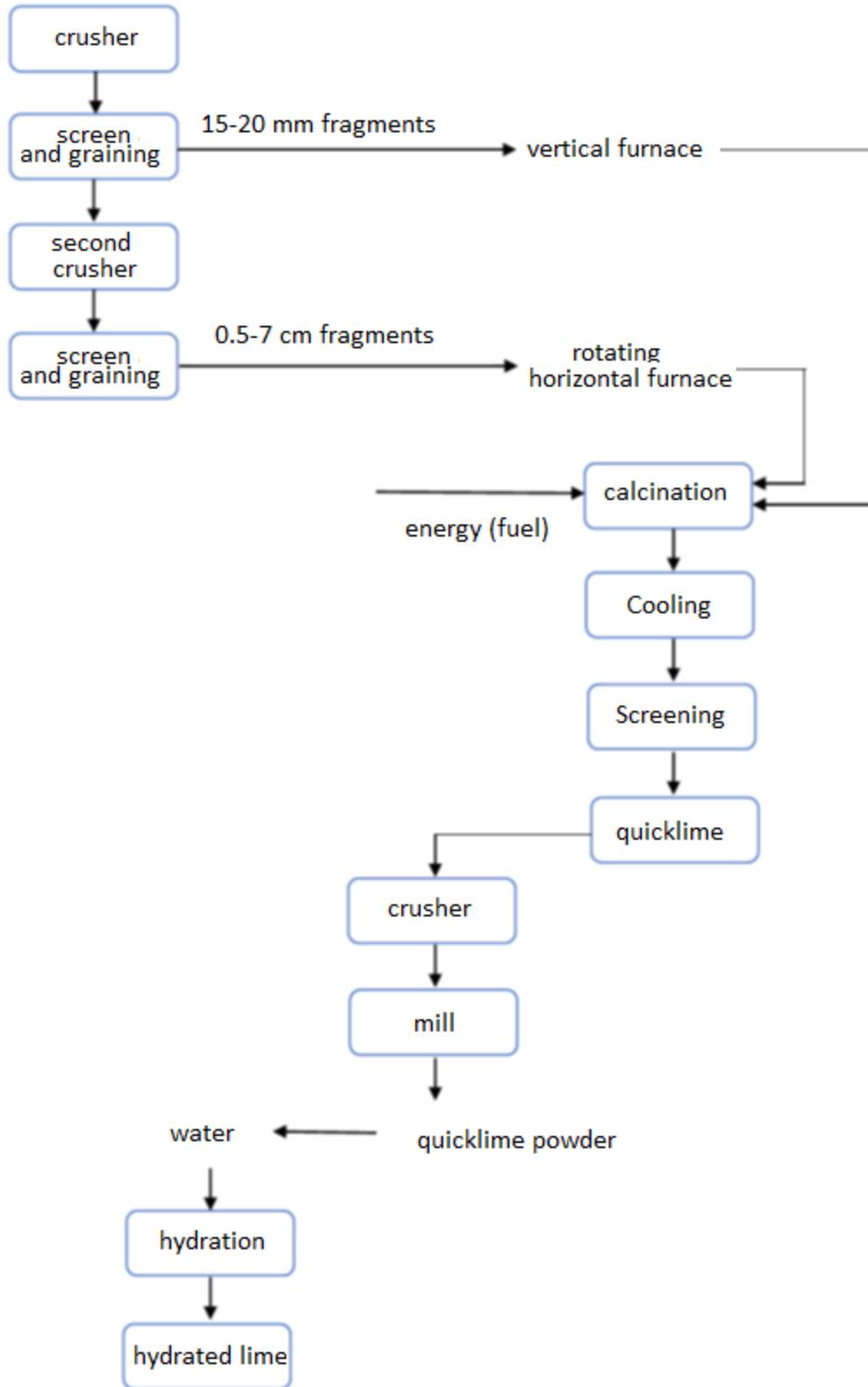
#### 5.2. Practical capacity

The practical capacity is the maximum available capacity in typical situation which is considered as a percentage of the nominal one. Considering that machineries are not capable of 100% production, based on the time for repair, maintains and failure etc. their efficiency is 90% considered. The practical capacity for this unit is 15000 ton of hydrated lime and 120000 ton of quicklime, annually.

### 6. Production procedure and technology

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## 7. Investment costs

### 7.1. Fixed investment

Table4. Investment costs

No.	Description	Costs			
		Dollar	Rial	Rial	Total
1	Land	0	0	12500	12500
2	Landscaping	0	0	5110	5110
3	Building construction	0	0	18925	18925
4	Machineries and equipment	172800	172800	0	68618
5	Branches and installation	0	0	7628	7628
6	Vehicles	0	0	5680	5680
7	Service and official equipment	0	0	255	255
8	Other and unpredicted costs (5% of above costs)	0	0	5936	5936
9	Pre-exploiting costs	0	0	6600	6600
10	Total fixed investment costs	172800	172800	62634	131252
11	Working capital in 100% of capacity	0	0	25431	25431
12	Total investment costs	172800	172800	88065	156683

### 7.2. Working capital

Table5. Working capital

No.	Description	Day	1 <sup>st</sup> year	Base year
1	Raw and auxiliary materials	10	1654	2363
2	Current and produced products inventory	30	7723	10629
3	Debts	30	7828	10729
4	Cash	30	1323	1648
Total			18538	25431

## 8. Production costs

Table6. Production costs

Description	Total costs (m.Rial)
Raw and packing material	84050
Energy	22722
Repair, maintenance and spare parts	5407
Personnel's salary	6957
Unpredicted (6%)	7208
Depreciation	11317
Insurance	202

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Sales and official costs	1958
Total operational and non-operational production costs	140821

#### 9. Economic indices

Description	Amount-measurement scale
NPV	2252515 m Rial
IRR	27.06%
PBP	5.38 years equal to 2021

Plan and Budget Organization of Lorestan province

## PROJECT PROFILE – SUMMARY SHEET

### *Project Introduction*

1. Project title: establishment of typical and hydrated lime production unit
2. Sector: manufacturing non-metallic product of ore Sub sector: plaster, cement and lime production
3. Products/Services: typical and hydrated lime production
4. Location: ...    Free zone <input type="checkbox"/> Economic special zone <input type="checkbox"/> Industrial Estate <input checked="" type="checkbox"/> Main Land <input type="checkbox"/>
5. Project description: Pure lime is white, formless and fragile. Its specific weight depends on curing heat and is between 3.08 and 3.3g/cm <sup>3</sup> . Its combined affinity is also dependent on the curing temperature as the specific weight. If the temperature was less than 1000°C, its unfolding time would be increased. The lime melt point is 2614°C and after being melted and cooled, it would be in form of cubic white crystals or light yellow solid crystals. Trivalent iron oxides, manganese and titan cause the colorfulness of the product and reduction of lime quality.
6. Annual capacity: 15000 t of hydrated lime and 120000 t of typical lime.

### *Project Status*

7. Local / internal raw material access 100 %
8. Sale: 100% locally - Anticipated export market 0 %
9. Construction Period 24 month Beginning of activity: 03/2016 In-site beginning of activity: 03/2016 End of project: 02/2017 Commercial activity beginning: 03/2017

## Project Status

### 10. Project Status:

- Feasibility study available? Yes  No
- Required land provided? Yes  No
- Legal permissions (establishment license, foreign currency quota, environment, etc) taken? Yes  No
- Partnership agreement concluded with local/foreign investor? Yes  No
- Financing agreement concluded? Yes  No
- Agreement with local / foreign contractor(s) concluded? Yes  No
- Infrastructural utilities (electricity, water supply, telecommunication, fuel, road, etc) procured? Yes  No
- List of know-how, machinery, equipment, as well as seller / builder companies defined? Yes  No
- Purchase agreement for machinery, equipments and know- how concluded? Yes  No

## Financial Structure

### 11. Financial Table

Description	Local Currency Required			Foreign Currency Required Million Dollar	Total Million Dollar
	Million Rials	Rate	Equivalent in Million Dollar		
Fix Capital	62634	34530	1.81	1.99	3.80
Working Capital	25431	34530	0.74	0.00	0.74
Total Investment	88065	69060	2.55	1.99	4.54

- Value of foreign equipment/machinery 1.99 million dollar
- Value of local equipment/machinery 0 million dollar
- Value of foreign technical know- how 0 million dollar
- Value of local technical knows- how 0 million dollar
  
- Net Present Value (NPV): 22525.15 million Rial for .... Year
- Internal Rate of Return (IRR) 27.06%
- Payback Period (PP) 5.38 Year (2021)

## General Information

12. Project Type : Establishment  Expansion and completion

### 13. Company Profile:

-Name (legal /natural persons): Sepinud Shargh institute of strategic studies

-Company Name: engineering consultation

-Address: unit 5, No. 3, Boostan 3 St., Pasdaran, Tehran

-Tel: 02122584901

Fax: 02122580343

-E-mail: info@sepinud.com

Web site: www.sepinud.com

-Local entrepreneur : private sector  public sector  other

***Please attach follow documents if available***

- Pre-feasibility study
- Feasibility study
- Legal permissions (establishment license, foreign currency quota, environment, etc)

**Ministry of Economic Affairs and Finance**  
**Organization for Investment Economic and Technical Assistance of Iran (OIETAI)**  
**Foreign Investment Center of Lorestan Province**  
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