

Plant for licorice root extract production



Draft outline of "Turkmendermansenagat" association

Cost of project is 18 000 000 US dollars

Equipment capacity and characteristics of finished products

Dry extract of licorice root

in quantity of 600 metrical ton in year,
by the following characteristics

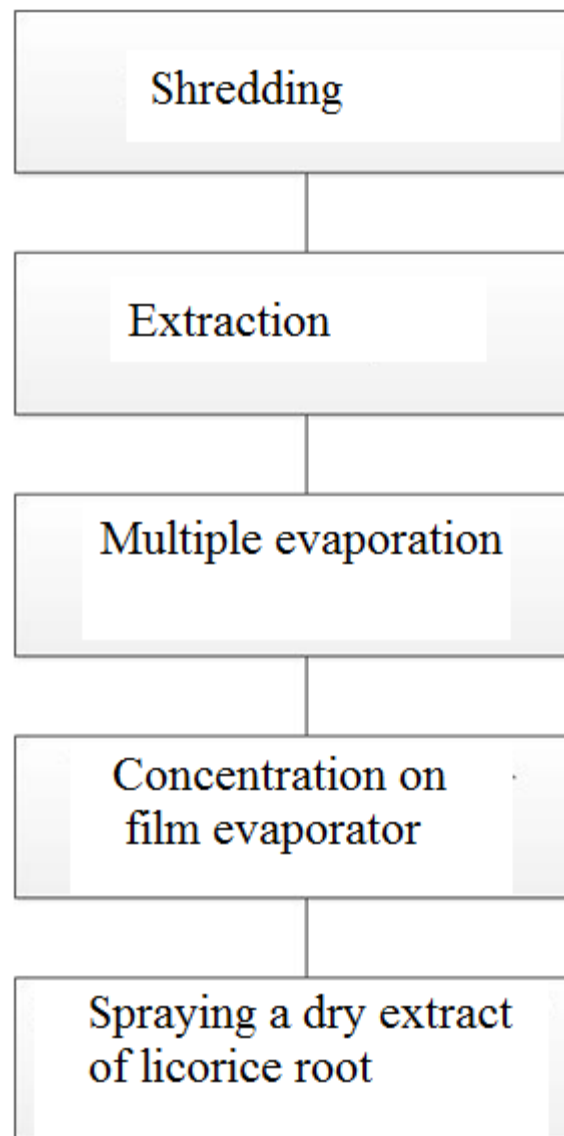
Table 1	
Glycyrrinic acid, %	11
Mass concentration of sugars, %	18
Insoluble substances in a heated state, %	1,2
Starch and glue%	24
Loss on drying, %	3,5
Ash, %	7,6
pH	5

Thick extract of licorice root

in quantity of 400 metrical ton in year,
by the following characteristics

Table 2	
Glycyrrinic acid, %	11
Mass concentration of sugars, %	20
Insoluble substances in a heated state, %	1,5
Starch and glue%	20
Loss on drying, %	36
Ash, %	8
pH	5

Brief description of production process



Feasibility study of plant for licorice root extract production in Turkmenabad city

US dollars

Total investment amount		18 000 000
Annual refund amount	16%	2 980 000
Return	years	10 +2 construction years total 12 years

Plant will produce:

600 tons of dry licorice root extract per year

400 tons of thick extract of licorice root per year

Price as of 08/06/2018

Dry extract of licorice root

price per ton 3,500 USD

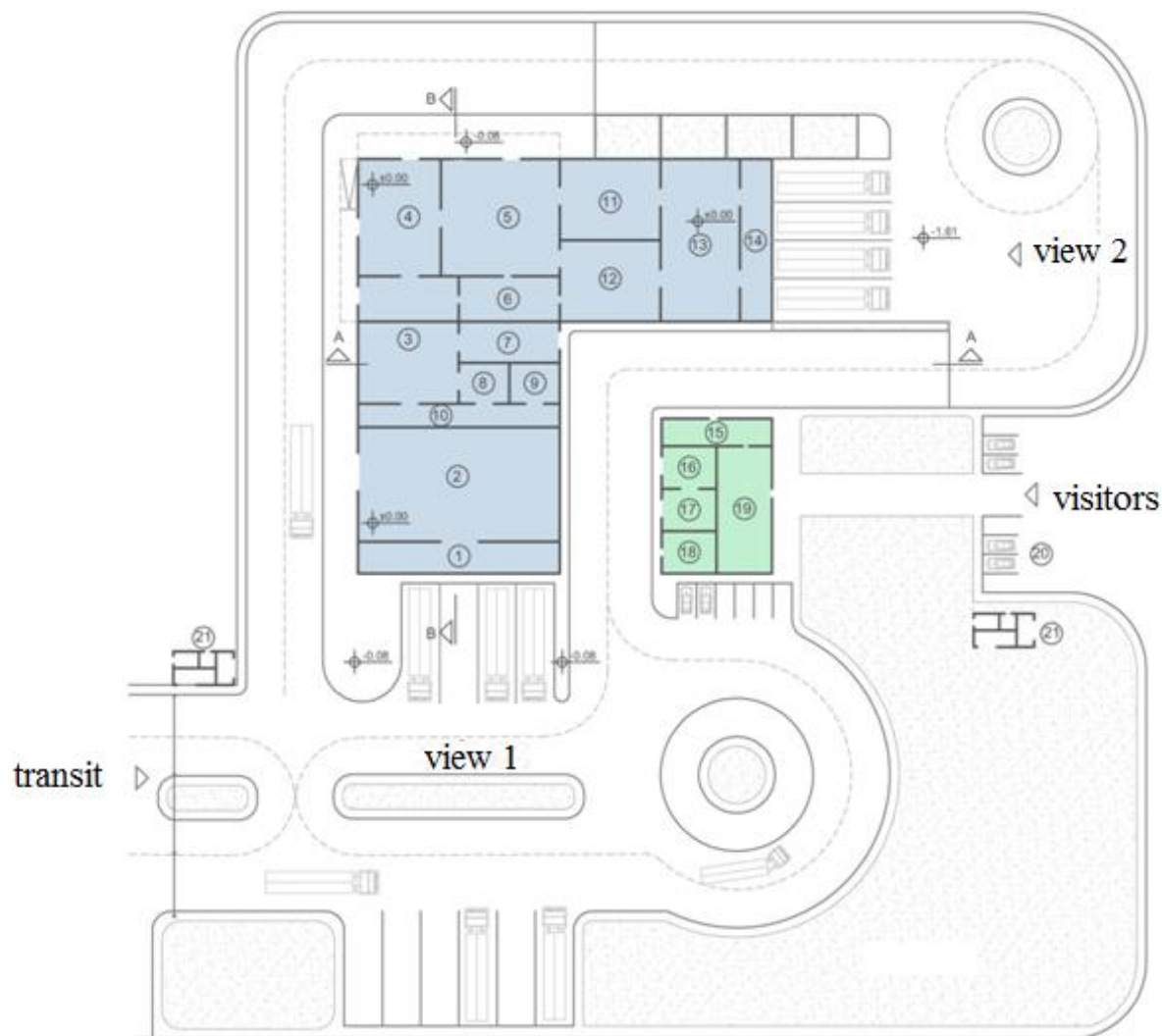
Productivity per year	ton	600
Production volume per year	US dollars	2 100 000

Thick extract of licorice root

price per ton 2,200 US dollars

Productivity per year	ton	400
Production volume per year	US dollars	880 000

Plan of plant
scale 1:1000



1. Production plan
1. Ramp
2. Root acceptance, grinding, storage
3. Boiler house
4. Storage tanks
5. Extraction
6. Control room
7. Preparation of water
8. Dressing rooms
10. Warehouse
11. Corridor
12. Spray drying
13. Concentration
14. Dry storage warehouse, silo
15. Ramp
2. Administrative building
15. Administrative room
16. Stock of spare parts
17. Spare parts warehouse
18. Laboratory
19. Offices
20. Parking place
21. Inlet / outlet control

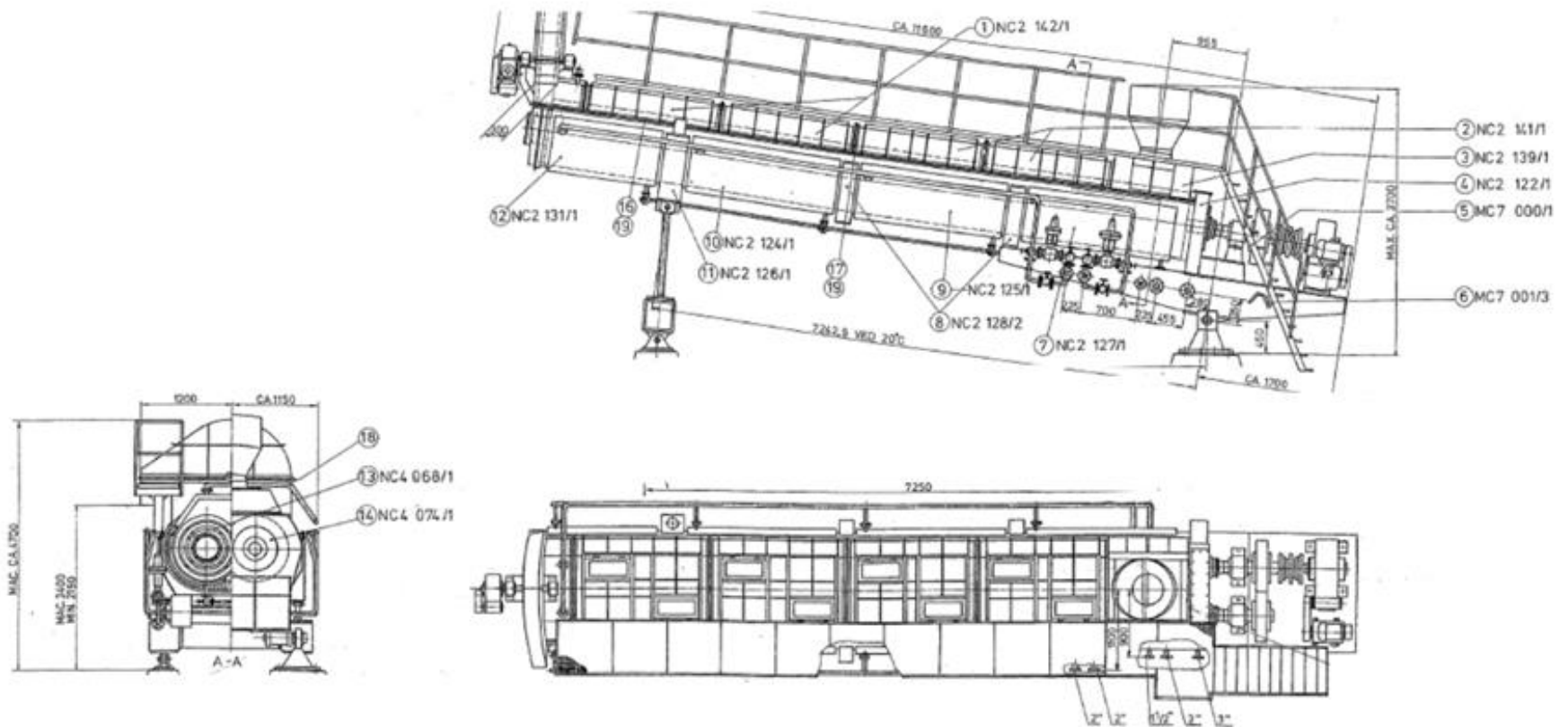
View 1, Scale 1:500



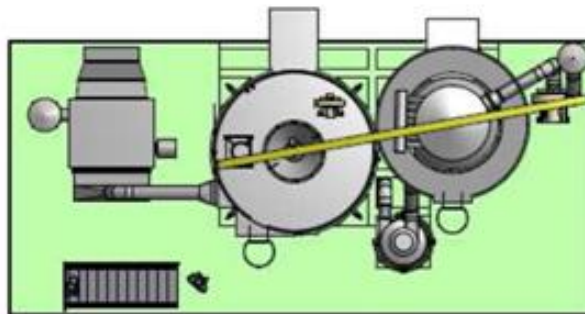
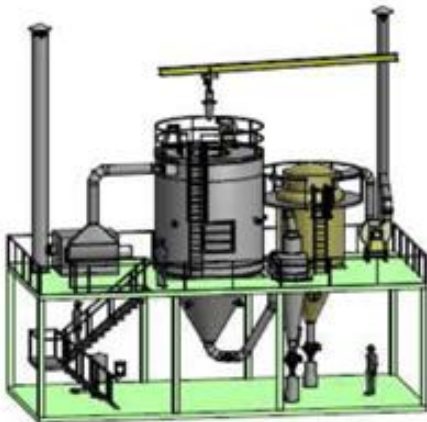
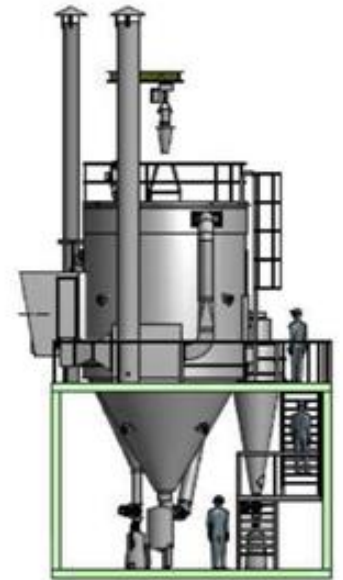
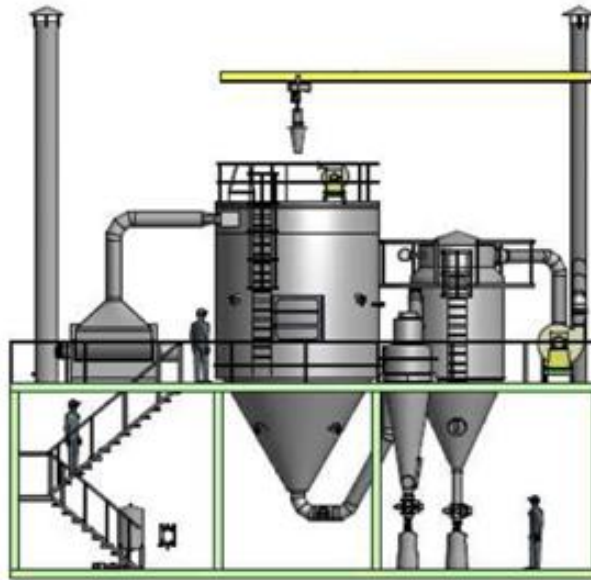
View 2, Scale 1:500



Extractor

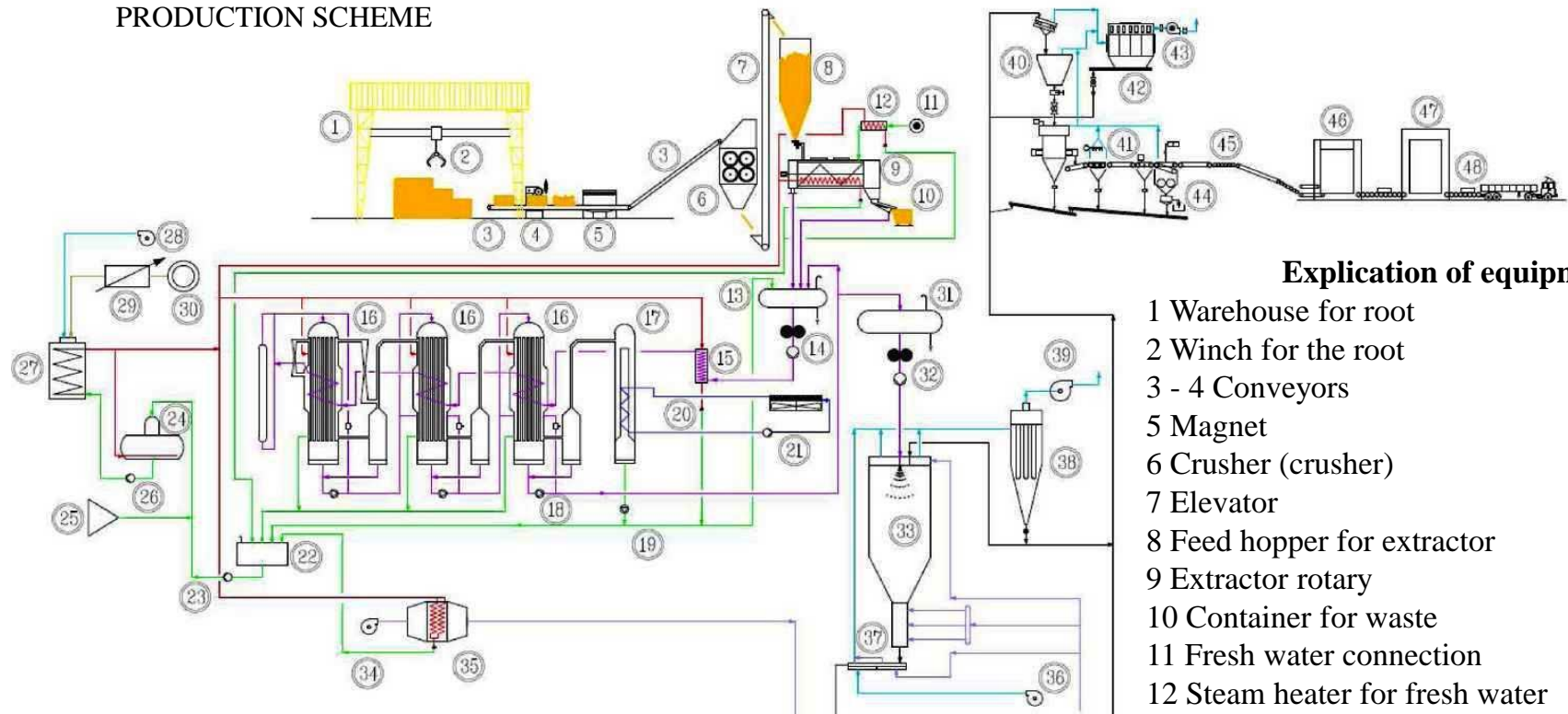


Spray drying



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PRODUCTION SCHEME



Explication of equipment:

- | | | |
|-------------------------------------|--------------------------------------|---|
| 1 Warehouse for root | 26 Pump for boiler | 39 Fan |
| 2 Winch for the root | 27 Boiler for steam | 40 Dry extract hopper |
| 3 - 4 Conveyors | 28 Fan | 41 Packaging extract |
| 5 Magnet | 29 Gas station | 42 Packing |
| 6 Crusher (crusher) | 30 Connecting Natural Gas | 43 Fan |
| 7 Elevator | 31 High-concentration liquorice tank | 44 Removing emergency bags |
| 8 Feed hopper for extractor | 32 Filtration pumping station | 45 Conveyor for bags |
| 9 Extractor rotary | 33 Hot air dryer | 46 Palletizer |
| 10 Container for waste | 34 Fan | 47 Final inspection of product and labeling |
| 11 Fresh water connection | 35 Steam heater | 48 Loading pallets |
| 12 Steam heater for fresh water | 36 Blower | |
| | 37 Powder conditioner | |
| | 38 Dryer | |
| 13 Low-concentration liquorice tank | | |
| 14 Filtration and Pumping Station | | |
| 15 Steam heater - root quenching | | |
| 16 Evaporator | | |
| 17 Condenser | | |
| 18 Vacuum pumps | | |
| 19 The reversible pump | | |
| 20 Pump for condensate | | |
| 21 Water cooling system | | |
| 22 Condensate reservoir | | |
| 23 Circulation pump | | |
| 24 Water reservoir | | |
| 25 Water treatment | | |