



Innovative Technology

**Aeroponic Production System
Salad/Medical Herb Plant Factory system**

*Russia Project
Overview of Case Studies*





Plant Factory System

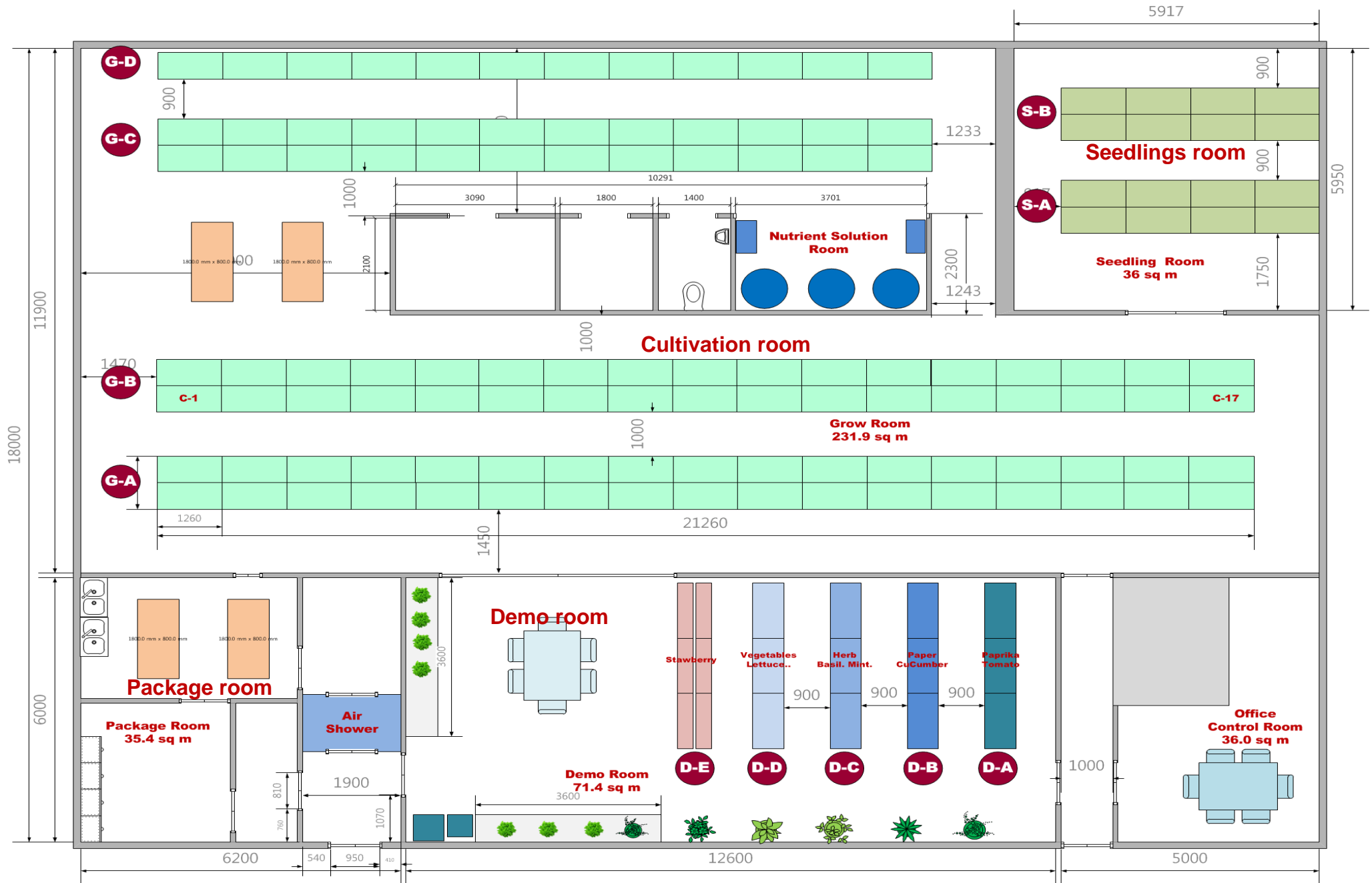
308_{m2}

Production Line



PARUS
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Plant Factory Design (308m²)





Plant Factory Design (308m²) System Design





Plant Factory Design (308m²) Vegetables Production - Output



1. Vegetables Production (Lettuce Standard)

(Every 15 days produced, 150g~/pot)

-Day/Production : 887pot/1day (total 133kg ~)

-Month/Production : 26,610pot/30day (total 3,991kg~)

-Year/Production : 319,320pot/1year (total 47,898Kg~)



2. Seedlings Production (Lettuce Standard)

- Every 15 days produced

-Day Production: 920pot

-15day Production : 13,800pot

-30day production : 27,600pot



Plant Factory Design (308m²) Income Statement



Scale of the plant factory
Numbers of Growing Tray
Plant density

308m²
416tray (1200mmx600mm)
32pot (150mm range of the gap/pot)

Price Unit : \$
Price : USD

Subject	일 (Daily)	월 (Monthly)	년 (Annually)	Note
I. AMOUNT SALES	\$1,596	\$47,921	\$575,056	Production Sales
Production plants	887 plants	26,623 plants	319,476 plants	1 Pot(one plant 150g~)
SELLING PRICE PER PLANT	\$1.8	\$1.8	\$1.8	AVERAGE PRICE(Korea Standard)
II. COST OF SALES	\$11.5	\$345.3	\$4,143.6	
NUTRIENT SOLUTION	\$2.72	\$81.6	\$979.2	A,B Solutions
SEEDS	\$1.33	\$39.9	\$478.8	Seed
OTHERS	\$7.46	\$223.8	\$2,685.6	Net pot, sponge, pH, Co2 ...
III. GROSS PROFIT	\$1,584	\$47,575	\$570,913	Gross profit = Amount sales - Cost of sales
IV. FIXED COST	\$392	\$11,738	\$140,856	Fix cost = Labour + Electricity + Water + Management + Packing
<i>인건비</i> LABOUR COST	-			
<i>관리자</i> MANAGER	\$88	\$2,640	\$31,680	총괄 관리자 1명 Technical Manager 1people
<i>작업자</i> worker	\$107	\$3,200	\$38,400	작업자 3명 (인당 월 1,200,000원) Worker 3people
<i>전기/물 비용</i> ELECTRICITY / WATER USE				
ELECTRICITY COST(total)	\$174.2	\$5,226	\$62,712	
LED Grow Light	\$74.2	\$2,227	\$26,724	
Air conditioning system	\$88	\$2,640	\$31,680	
Aeroponics & other devices	\$12	\$360	\$4,320	
WATER COST	\$2.4	\$72	\$864	
<i>관리비용</i> MAINTANANCE COST				
MAINTANANCE	\$15	\$450	\$5,400	
PACKING / SALES COST	\$5	\$150	\$1,800	
V. NET PROFIT	\$1,195	\$35,837	\$430,057	Net profit = Gross profit – Fixed cost



Plant Factory Design (308m²)

Electricity expenses list

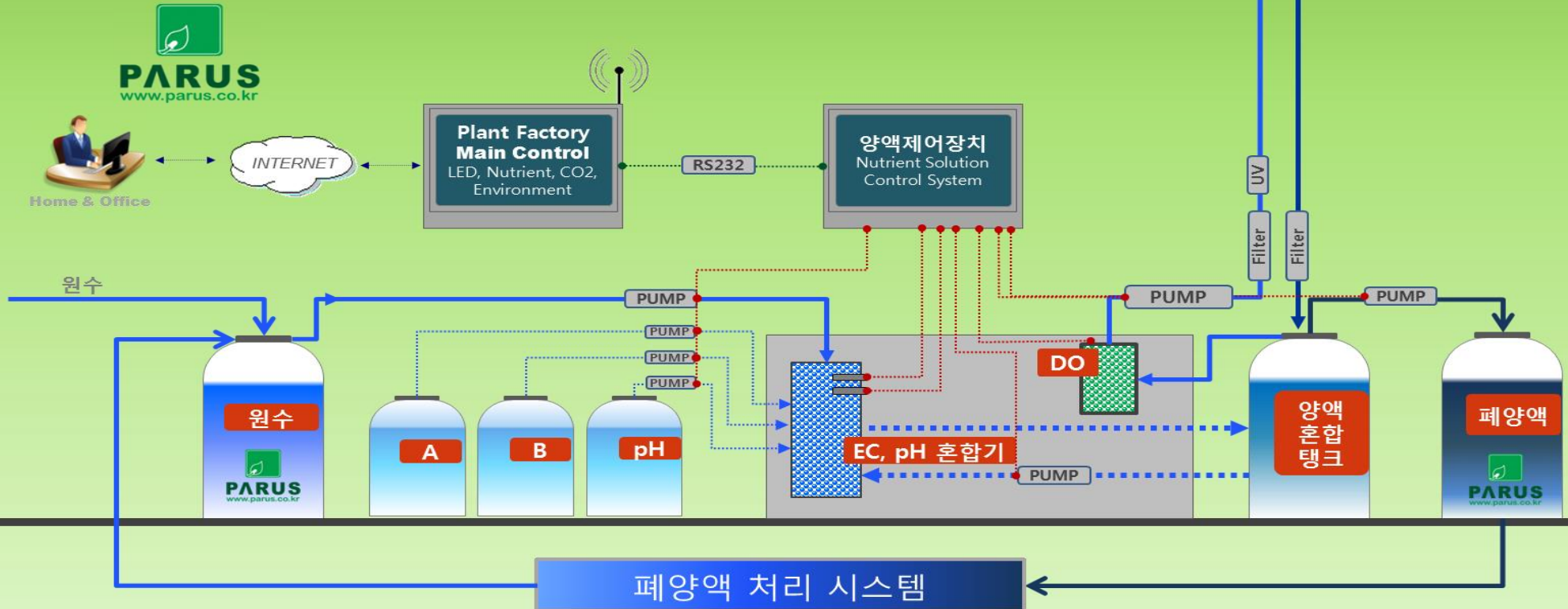
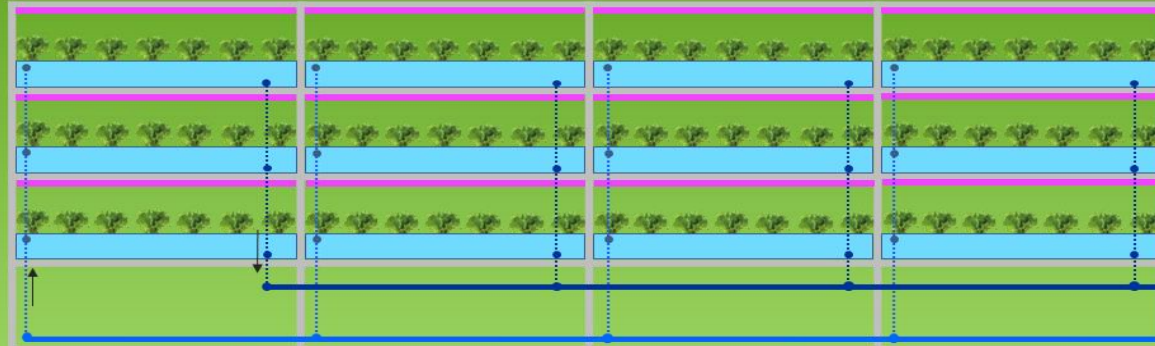
Total Electricity: 176.4KWH(Max)
Total Electricity cost : \$5,227/monthly

전기사용 내역 Electricity expenses list	전기비용 Electricity cost /monthly = Used amount x use time x cost x days
1. LED Grow light light : 46.4Kw/hr	\$2,227= 46.4Kw x 16hr x \$0.1x 30 days (RU Standard)
2. Air conditioning system : 110Kw/hr	\$2,640= 110Kw x 8hr x \$0.1x 30days
3. Aeroponics and other devices : 20Kw/hr	\$360= 20Kw x 6hr x \$0.1x 30days



식물공장 양액 자동 공급시스템

Nutrient Solution Auto Control System





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Growing Room



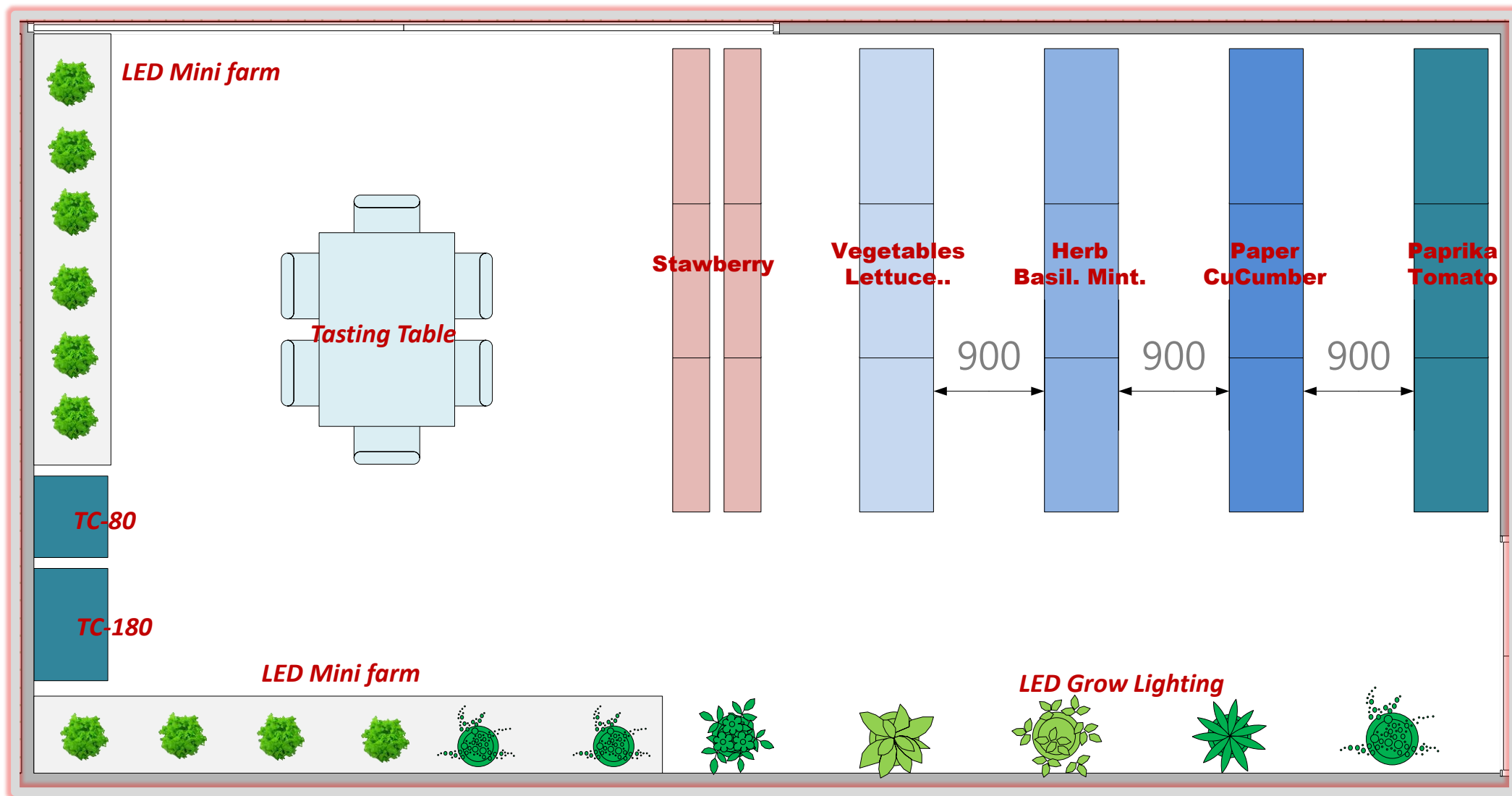


Seedling Room





Plant Factory Demo room (71.4m²)



Demo Room



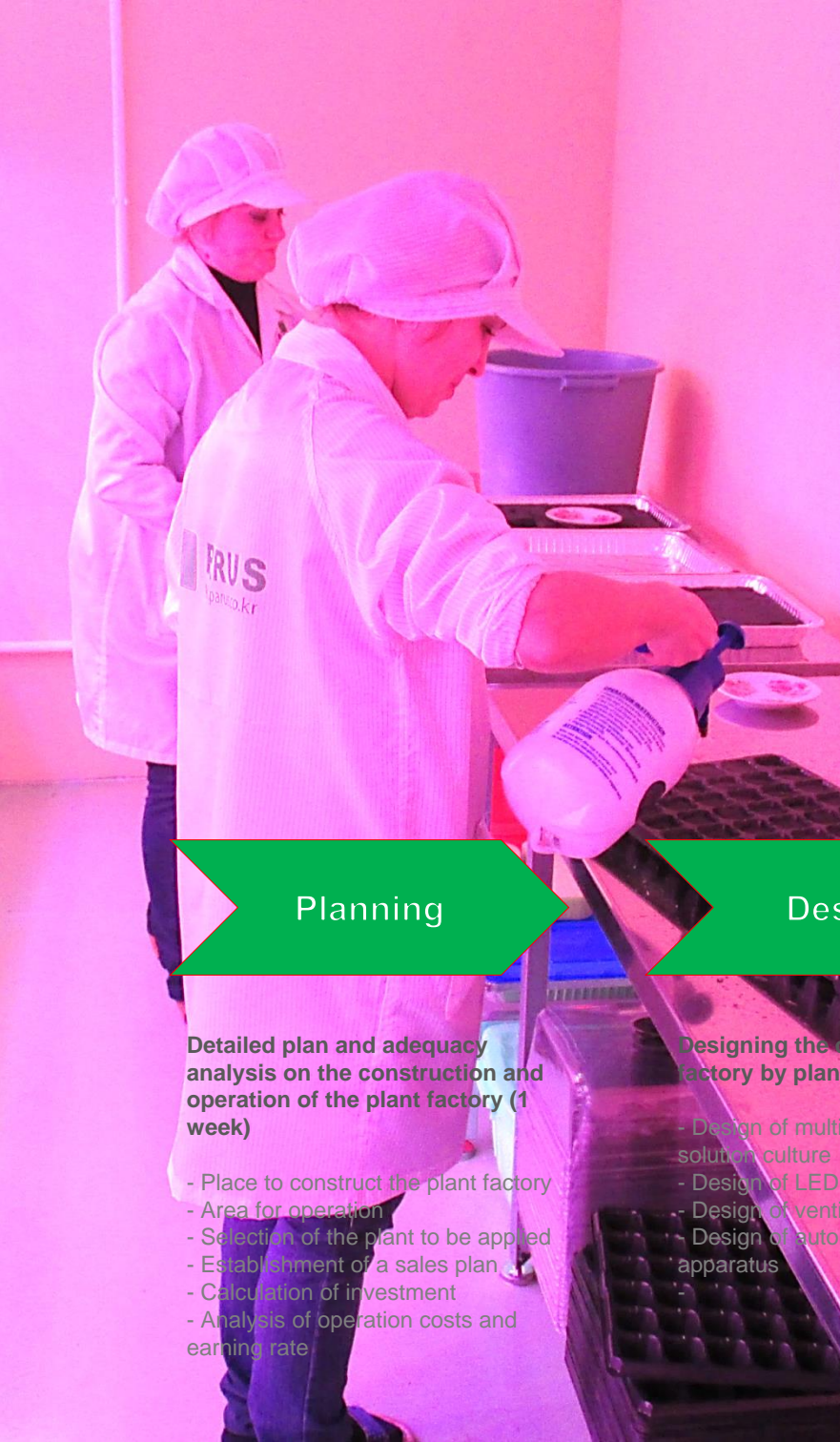


**Plant Factory
System**

71 m²

Demo Room





Procedure to construct a plant factory

Planning

Detailed plan and adequacy analysis on the construction and operation of the plant factory (1 week)

- Place to construct the plant factory
- Area for operation
- Selection of the plant to be applied
- Establishment of a sales plan
- Calculation of investment
- Analysis of operation costs and earning rate

Design

Designing the details of the plant factory by plan (2 week)

- Design of multi-layer nutrient solution culture
- Design of LED lighting
- Design of ventilation systems
- Design of automatic control apparatus

Construction

Construction by design and test operation (2 Month)

- Configuration of the rooms for raising seedlings, supply of nutrient solution, lighting, and ventilation, etc.
- Construction of multi-layer profiles
- Construction of pipes and electric apparatus
- Construction of lighting systems
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Operation

Education on checking stability and operation (1 weeks)

- Education on operation of plant factory facilities
- Education on plant control
- Education on theory and application of lighting
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