# Functional analysis

## The need

Who’s the users: food producer (solid food, not liquid food)

What kind of product: 4 kind of product

* Vegetables, moist food
* Aromatics and medicinal plants
* Cheese
* Nuts
* Cereal

What’s the aim: Dry food with airflow

Causes:

* improve food conservation
* create new products

## Functional analysis

* *Function: a function is an action, a service or a constraint of a product*
* *Interactor: all element which have a contact or a relation with the product*
* *Phase: different using phase (using phase, supplying phase, cleaning phase …)*

*To find product’s functions, generally it needs to identify all interactor, and to identify all interactors it need to identify the using phases.*

### Different phases

For that product, we imagine 5 different phases. Except the 2 main phases, the utilisation phase and the supplying phase, all of other phases is optional and we tried to developed a product which can integrate, or not, that phase, according to user’s desire.

### Drying phase

#### Product/Interactors/Functions - Schematic links:

User

Food

External energy

External environment

Dryer

Legislation

PF1

UF1

UF4

CF2

CF1

UF2

UF5

FS3

#### Interactor characterisation:

|  |  |  |  |
| --- | --- | --- | --- |
| Kind of interactor | Interactor | Criterion | Level |
| User | Women | Size  Muscular capacity |  |
| Men |  |  |
| Professional |  |  |
| Amateur |  |  |
| Food | Vegetables, moist food | Relative humidity  Size  Capillarity |  |
| Aromatics and medicinal plants |  |  |
| Cheese |  |  |
| Nuts |  |  |
| Meat |  |  |
| Cereal |  |  |
| External energy | Electricity | Power |  |
| Non pollute flow  Solar |  |  |
| Pollute flow  Combustion/compost |  |  |
| Legislation | French legislation |  |  |
| External environment | Building – house | Meteo  T ext |  |
| Outside |  |  |

#### Function

The dryer need to:

* Principal function:
  + PF1: Dry dietary products
* Using function:
  + UF1: Be ergonomic
  + UF2: Contain food - Capacity (kg/week producer units, transfer it in technician units)
  + UF3: Respect alimentary laws - Material choice
  + UF4: drying speed – optimisation of the heating and airflow drying
  + UF5: drying homogeneity – optimisation of convection
* Constraint function:
  + CF1: Product quality (T° regulation)
  + CF2: Noise pollution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function | Criterion | Level | Limit | Flexibility |
| PF1 : Dry | T° mini |  |  |  |
| Humidity/s |  |  |  |
| Speed flow |  |  |  |
| UF1: Ergonomic | Time to prepare a session |  |  |  |
| Time during a session |  |  |  |
| Technical level |  |  |  |
| UF2: Capacity | Kg/week |  |  |  |
| UF3: Alimentary laws | Contact direct |  |  |  |
| Contact indirect (by flow) |  |  |  |
| UF4: Drying speed | Regulation of heating |  |  |  |
| Regulation of airflow |  |  |  |
| UF5: Drying homogeneity | Repartition of the airflow |  |  |  |
| CF1 : product quality | T° limit |  |  |  |
| Nutriment saturation in the airflow |  |  |  |
| CF2: Noise pollution | Noise |  |  |  |

**Fast for lists of solution**

* **Detailed of that function in technical solutions on Using phase/FAST document**

**SADT for choice of solution**

* **Comparison of function on Using phase/SADT document**

### Supplying phase

User

Food

Dryer

PF1

* PF1: be simple to supply and to empty food

### Cleaning phase

* PF1: Be washable

### Stocking phase

* PF1: Take a minimum of place

### Transport phase

* PF1: Be transportable

### Maintenance/optimisation phase

* UF1: Be reparable
* UF3: Be adaptable to different kind of product