Energy consumption analysis of traditional drinks making in rini herbs home industry

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Abstract. The small industry "Rini" is a small industry making instant health drinks whose existence has been more than 7 years. In general, health drink processing techniques consist of sorting raw materials, washing, knitting, grinding with blenders, squeezing, heating, filtering, cooling and packaging. The above industry, in general, still uses simple technology, such as washing, squeezing, filtering and still manually by hand while the grinding process is carried out using a blender machine. This condition has an impact on low work capacity, unhygienic product quality (many in contact with workers' hands), not ergonomic and blender machines often damaged due to heavy work. The disadvantage of manual squeeze is that the juice yield is not optimal, this is because the longer the squeeze ability will decrease and will give a heat effect on the hand so that skin irritation will occur which results in unhealthy product. Based on these problems a mechanical device was developed to support the traditional beverage production process. The mechanical tools developed consist of chopper machines, squeezing machines and washing machines. The three engines were developed using gasoline. The results of the energy consumption measurement of making the traditional "Rini" Herbs Home Industry drink amounted to 10 Mj / liter.

1. Introduction
Small industry "Rini" is a small industry making instant health drinks whose existence has been more than 7 years, while the small industry "Nur" is a small industry making health drinks in packages whose existence has been more than 4 years. In general, instant and liquid health drink processing techniques consist of sorting raw materials, washing, knitting, grinding with blender, squeeze, heating, filtering, cooling and packaging. Whereas for the manufacture of instant health drinks there is an additional process of crystallization and drying.

Both of the above industries, in general, still use simple technology, such as the washing process, squeeze, filtering and packaging are still manually by hand while the grinding process is done using a blender machine. This condition has an impact on low work capacity, unhygienic product quality (many in contact with workers' hands), not ergonomic and blender machines often damaged due to heavy work. The disadvantage of manual squeeze is that the juice yield is not optimal, this is because the longer the squeeze ability will decrease and will give a heat effect on the hand so that skin irritation will occur which results in unhealthy product.
The techniques and processing methods applied have an effect on product quality and the efficiency of the production process. The processing of health drinks in the form of liquid and instant need to pay attention to the processing technique because it involves the standarmutu. Paying attention to the real conditions, potential and problems faced by PKM partners, to improve the quality and efficiency of the production process is carried out by introducing empon-empon washers, grinding machines and squeeze hydraulic press systems on PKM partners "Rini".

2. Method
The introduction of empon-empon washers, milling machines and squeezing machines for hydraulic press systems with 1 unit each to PKM partners. Increased production capacity at PKM partners is 2 times the initial condition.

### Table 1. Offered solution

| Rubber rod system washing machine | 1. Washing cylinder tube made of ST 304 stainless steel  
2. The frame of the washing machine is made of ST 420 3 cm box  
3. Source of electric motor drive ½ HP |
|-----------------------------------|--------------------------------------------------------------------------------------------------|
| Grinder screw system | 1. Source of electric motor drive ½ HP  
2. Screw system  
3. The body is made of stainless steel  
4. There is a waste / solid exit hole  
5. There is a liquid outlet  
6. Milling capacity of 5 kg / 5 minutes |
| Hydraulic system hardener machine | 1. Hydraulic capacity 20ton  
2. The size of the press cylinder is 15 cm in diameter and 20 cm in height.  
3. Able to squeeze up to 90%  
4. Dry juice dregs. |

3. Result and Discussion
The raw material in the form of empon-empon is cleaned from soil and dirt to be further processed into various products such as: (1) instant turmeric, (2) ginger isntan, (3) instant ginger, (4) instant key meeting, (5) pepet key instant, (6) instant ginseng, (7) instant katuk leaves, (8) instant tapioca, (9)
instant aloe, (10) instant java chili, (11) instant pandak pule. Instant health drink processing techniques are listed in Figure 1.

a) Process I (Sorting), all the basic ingredients needed are chosen which are of good quality so that they will produce good quality herbs.
b) Process II (Washing), All the basic ingredients that have been prepared are then washed thoroughly to remove the impurities

c) Process III (Drying), all the basic ingredients are dried so that if roasted can dry well.
d) Process IV (roasting), all the basic ingredients are dried and then roasted to be easily ground.
e) Process V (Milling), the raw material that has been roasted is ground to a fine powder
f) Process VI (Forecasting), After the ingredients become powder, the powder is mixed according to its composition.
g) Process VII (Packaging), After the ingredients are mixed or mixed according to the composition, the material is ready to be wrapped.

The extractor capacity of 3 kg empon-empon chopsticks with extractor tub dimensions with a diameter of 35 cm and a height of 25 cm is equipped with 4 crushing blades with a lid to protect the operator from the danger of a knife rotation. To produce fine emponels ready to be processed into traditional herbal medicine, it takes 3-5 minutes so the extractor capacity is 36-60 kg / hour. The process of making traditional herbal drinks is explained as follows.

a. Cleaning and chopping empon

The cleansing process of mas snail meat is done manually by removing the empon-empon skin as shown in Figure 1.
b. Lubricate the empon-empon chopper with an extractor machine
The process of pulverizing the empon-empon chopped is done in stages by inserting little by little empon-empon chaff (Figure 2).

c. Extortion Process
The results of the dozing process are then continued with squeeze (Figure 3).
4. Conclusion
The introduction of empon-empon washers, grinding machines and grater machines can function properly and are able to assist partners in improving their quality and production processes. Increased production capacity at PKM partners, 2 times the initial condition. Partners and the community are satisfied that the training and mentoring that is carried out as well as the technology granted is very useful in supporting the business they are involved in. Quantity enhancement and expansion of product marketing access generated at least 50% of the previous conditions by implementing an online marketing system.

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