

Reducing Demand Urgent Analysis of Production Machine Parts and Supporting Approach to Soft System Methodology

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Abstract:- PT Pacinesia Chemical Industry is a company engaged in the production of water treatment chemicals, namely PAC (Poly Aluminum Chloride). PAC is used to produce material that consists of one HCL acidic and highly corrosive. The nature of this acid causes all material that is metal / metal in the production area becomes corrosive, good production machinery, buildings, until the other supporting equipment. This led to a period to all the equipment and machinery to be faster. Especially in this study will be discussed issues of demand for goods sudden / urgent are often carried out by a team of maintenance-related damage on a production machine. The purpose of this study is the Knowing the causes of the frequent requests for urgent assistance from a team of maintenance items and choose the best strategy to reduce the demand for goods urgent spare parts from maintenance team using Soft Systems Methodology approach. Soft Systems Methodology With this approach it can be arranged and tindakan langkag measures taken to reduce the demand for goods urgent, namely by providing knowledge to the maintenance of the documentation team and special treatment machine engine against corrosive environments.

Keywords:- Supply of Spare Parts, Corrosive, Soft Systems Methodology.

I. INTRODUCTION

A company is said to be good if the company has good corporate governance as well or so-called Good Corporate Governance (GCG). The definition of good corporate governance and the structure itself is the mechanism that regulates the management of the company to generate long-term economic value that is sustainable for all shareholders and stakeholders. Especially companies engaged in manufacturing, to achieve the reach that a company must be able to manage their systems, good production systems, purchasing, sales, and inventory.

In this study will be discussed on supplies, particularly regarding supplies of spare parts for repair purposes and installation on the production line. Sometimes a lot of people underestimate the importance of setting warehouse stock of spare parts, whereas if there is a damaged engine and spare parts are used there, eating machine is unable to production. As a result, the entire production activity will cease so that the company suffered many losses in between, there is the raw material is wasted,

employees who are unemployed because the engine stop, the delivery schedule must be changed, the most serious is a customer complaint that late delivery. It becomes very complicated and very necessary to solve the problem.

Especially in this paper will discuss the issue of demand for goods sudden / urgent are often carried out by a team of maintenance-related damage on a production machine.

Cases taken is PT. Pacinesia Chemical Industry, where I work. PT Pacinesia Chemical Industry is a company engaged in the production of water treatment chemicals, namely PAC (Poly Aluminum Chloride). PAC is used to produce material that consists of one HCL acidic and highly corrosive. The nature of this acid causes all material that is metal / metal in the production area becomes corrosive, good production machinery, buildings, until the other supporting equipment. This led to a period to all the equipment and machinery to be faster.

II. LITERATURE REVIEW

➤ *Understanding Inventory*

Rangkuti (2004: 1) Inventory is an asset which include goods belonging to the company with the intent to sell within a period specified business or stock of goods which are still under construction or production process, raw materials inventory or awaiting use in a production process.

➤ *Understanding Maintenance*

Maintenance (maintenance) is a combination of various measures taken to keep an item or fix until an acceptable condition. In the maintenance practices of the past and today in both the private and government sectors mean that maintenance is a machinery or equipment maintenance actions to renew the life of the plant and the failure / damage mesin. Mesin is frequently at issue between the maintenance and production parts , Because the section is considered wasteful maintenance costs, while the production was tampering but also making money. Generally a product produced by humans, nothing is unlikely to be broken, but the age of its use can be extended to make improvements, known as maintenance. Therefore it is very necessary maintenance activities which include care and maintenance activities on production equipment / machinery.

➤ *Definition Of Soft Systems Methodology*

Soft systems methodology (SSM) is an approach to solving a complex problem situations based on the analysis of unstructured holistic and systems thinking. SSM is also a participatory methodology that can help different stakeholders to understand the perspective of each stakeholder. SSM focus is to create a system of activities and human relationships in an organization or group in order to achieve a common goal.

III. METHOD

SSM methodology is based on a 7-stage process starting from clarifying situations unstructured problems through human activity system design is expected to help improve the situation of the conceptual model is then compared with the situation of the problem in order to identify changes viable.

- **The first step** is a situational analysis of the context of the existing problems, in this case is the problem of the development of biofuels in relation to the energy sector which is the output of the product and the agricultural sector which is the source of the input. At this early stage, we want to see how the real situation in the biofuels industry.
- **Step two** is to know what are the problems associated with the various interested parties views on the needs, the role of the activities and responsibilities of each. The output of this stage is in the form of Rich Picture,

which depicts the relationship between one party with another party.

- **Third step** namely defining each group's role in an approach called CATWOE (Clients or Customers, Actors, Transformations, World view, Owner and Environment constraint).
- **The fourth step** is designing a conceptual model that explain the corresponding relationships between activity to another within a conceptual model describing the relationship of input-process-output from one activity to another.
- **The fifth step** which sets the agenda of activities to be performed in real in the field and at the same time do a comparison between the real world by a conceptual model that has been designed previously.
- **The sixth step** defining the possible changes to be implemented. The debates among experts would be possible at this stage. Some changes that may occur include procedural changes, structural changes or changes in attitudes and culture in the form of changes in values, norms or ways of thinking.
- **Final step or steps seventh** is taking corrective action, especially against a model that has been built. Process in the SSM does not end here, but continue to make improvements to the model in line with the changing environment.

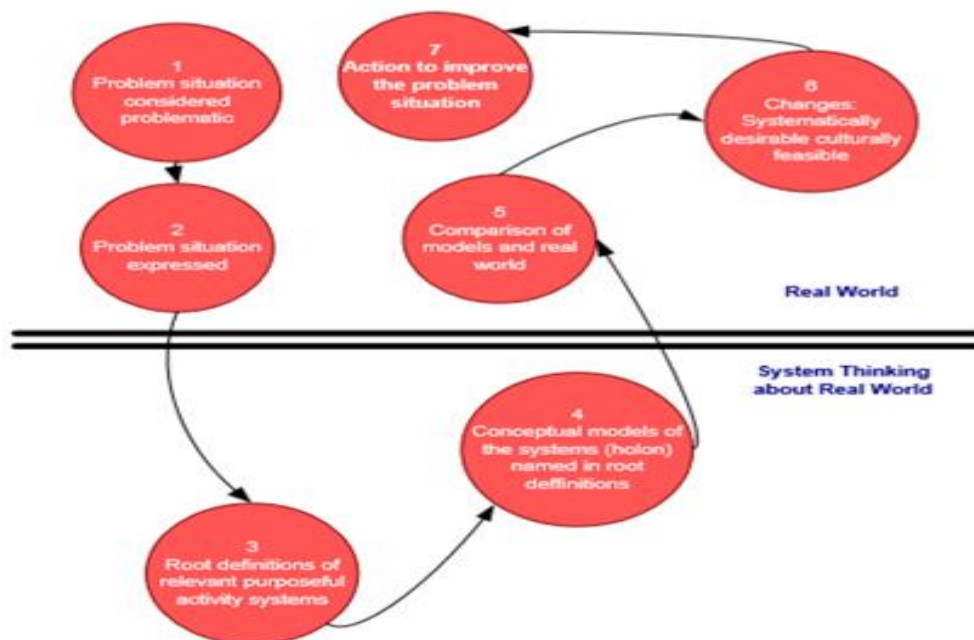


Fig 1:- Tahapan SSM
Source; Checkland Dan Scholes (1990)

The essence of SSM is to build models of systems relating to the problem situation. These models are used as a medium for discussion in order to bring change in the actual situation. The discussion process allows participants untukberdebat and ask each other such that diversity of

perspective can be revealed. Soft Systems Methodology classic implemented through seven (7) stages, as a process (Martin, 2008).

IV. RESULTS AND DISCUSSION

Here are seven (7) steps being taken in the Soft Systems Methodology (SSM):

➤ *Phase 1 (one): Considered Problematic Situation*

At this stage, in-depth analysis of the existing problem, which is often the urgent demand for goods made by the maintenance team. PT. Pacinesia Chemical Industry produces Poly Aluminum Chloride (PAC), materials used for production are HCL acidic and highly corrosive. Korofis acidic properties and is of particular concern and need special treatment to machinery such as gearboxes, agitators, reactors, electrical and civil construction. Based on observations and interviews of some maintenance, found that at the demand of goods urgent due to the unavailability of the spare parts stock in the warehouse, while the warehouse team also claimed that the spare part is a new item that has never entered the warehouse stock of spare parts. It is increasingly becoming difficult when the maintenance team does not have documentation of drawing and catalog parts of machinery such as pumps, gearboxes, and others. This is due to maintenance teams feel they have no such drawing because the drawings are stored and

documented by the production manager. Often resulting in engine damage resulting demand urgent demand for goods bias caused by the lack of effective preventive maintenance and lack of knowledge of the specific treatments machine against corrosive production environment so the lifespan of the machine becomes very quick and easy to "wear out". This is due to maintenance teams feel they have no such drawing because the drawings are stored and documented by the production manager. Often resulting in engine damage resulting demand urgent demand for goods bias caused by the lack of effective preventive maintenance and lack of knowledge of the specific treatments machine against corrosive production environment so the lifespan of the machine becomes very quick and easy to "wear out". This is due to maintenance teams feel they have no such drawing because the drawings are stored and documented by the production manager. Often resulting in engine damage resulting demand urgent demand for goods bias caused by the lack of effective preventive maintenance and lack of knowledge of the specific treatments machine against corrosive production environment so the lifespan of the machine becomes very quick and easy to "wear out".

➤ *Phase 2 (two): Rich Picture Diagram*

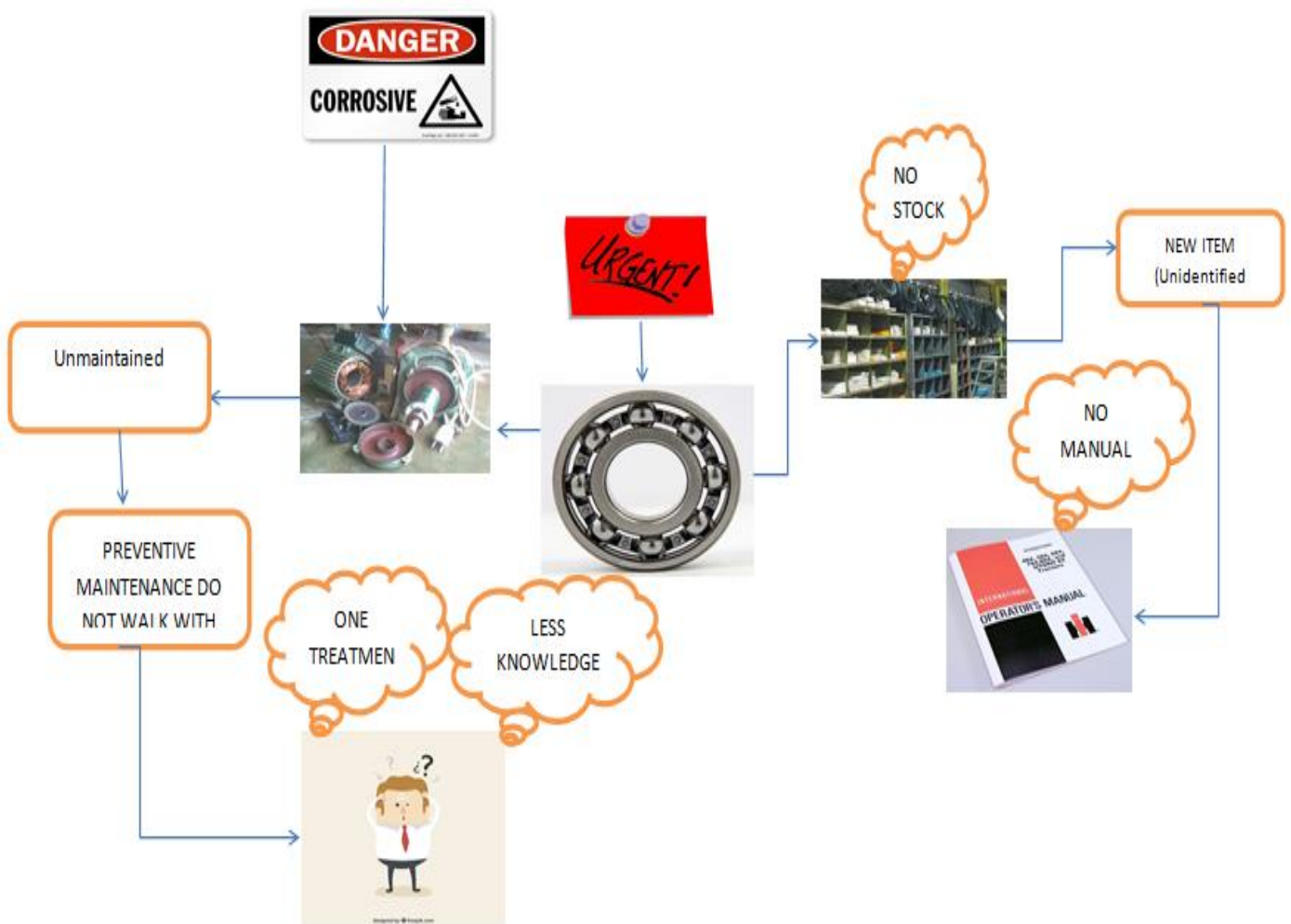


Fig 2:- Diagram Rich Picture

➤ *Phase 3 (Three) Root Definitions of Relevant Systems*

At this stage made Root definition based rich picture diagram, namely:

Reducing the need for urgent spare parts from maintenance items in a way to fix the documentation and filling machine parts and maintenance of special machine against the corrosive environment so that the production process runs smoothly.

- The next step is to define CATWOE as follows:
- C : Customer (purchasing), Production.
 - A : Maintenance.
 - T : Reduced intensity of demand for goods urgent spare parts.
 - W : Activity Production is going well.
 - O : CEO.
 - E : The ability and capacity maintenance man power.

➤ *Stage 4 (four) Conceptual Models*

At this stage created a conceptual model is as follows:

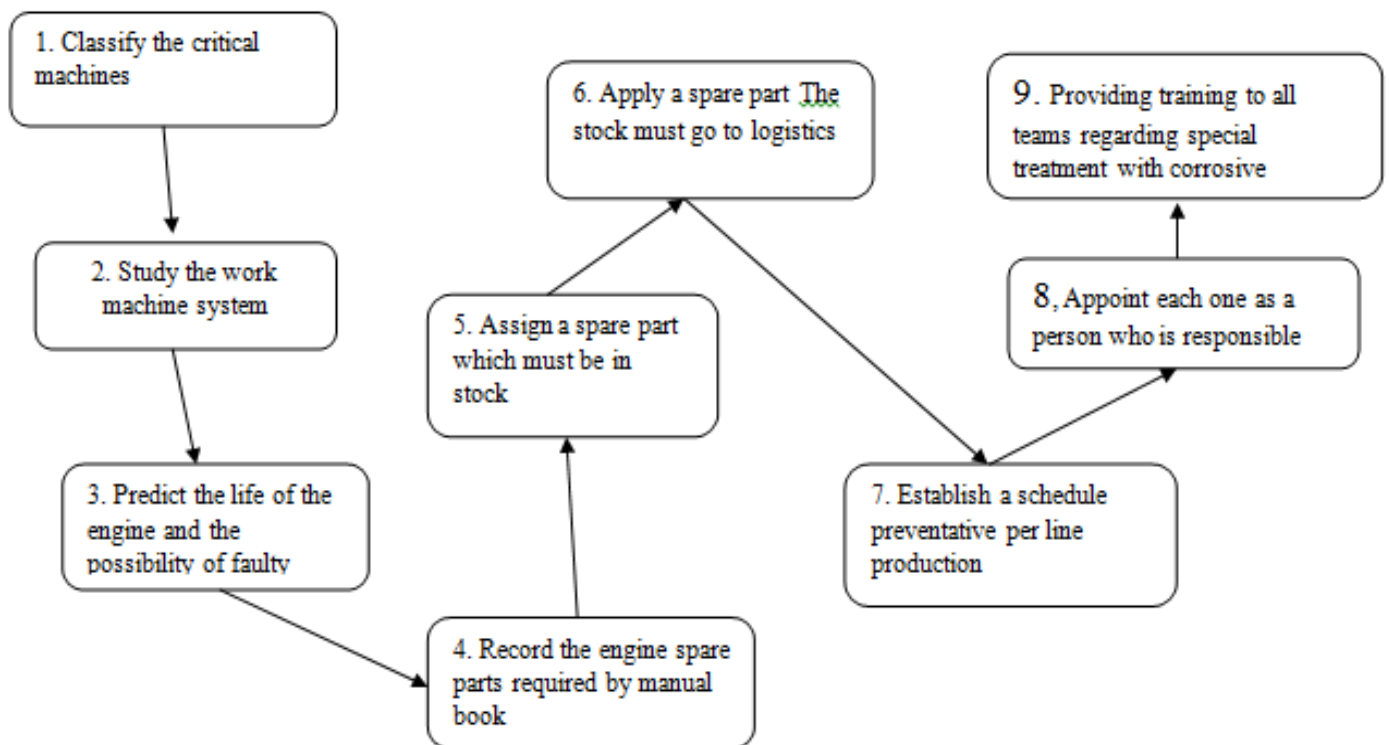


Table 1:- Conceptual Model

The conceptual model is valid for the following criteria:

- efficacy : Education regarding documentation of machinery and machine special care for the environment corrosive able to reduce the intensity of demand urgent items to the purchasing team
- Efficiency : Efficiency can be achieved with the involvement of all actors in the implementation

- Efektifas : Reduced intensity needs urgent goods proportional to the smooth production.

➤ *Stage 5 (Five) Comparisons with Reality*

Comparisons were made to find a mismatch between the state of the running with the desired model and get the possibility of change.

Aktivitas conceptual model	Real world				Reflection by destination
	requirement	Device	Step	result	
Classify the critical machines	the machine is still functioning	sisfem drawing production	discussions with the production team on critical engine	Being able to know the critical machines	grouping machines
Studying the machine working system	the machine is still functioning	manual book machine	read and understand the system of the machine	The machine is able to master	maintenance more productive in repair
predict the life of the engine and the possibility of faulty parts	the machine is still functioning	instrument for measuring vibration etc.	discuss and ask the engine maker	Unknown engine life	maintenance prepare stock likelihood damaged part
record engine spare parts required by manual book	No manual book	manual book machine	read, learn, and make a list of spare parts	able to determine the required spare parts	maintenance have data spare part for easy ordering
set of spare parts that should be in stock	Data spare parts	a data list of spare parts and manual book	analyze and take into account the number of parts ordered	obtained the number of spare parts that should be in stock	spare parts can be directly used as needed
Asking spare part in stock that must be assigned to logistics	Goods can be accounted needs	manual book	discussions with the logistics team regarding the number of items to be in stock	Being able to make a list of items to be ordered	Needs fulfilled when there is a demand for goods
establishing a schedule of preventive per line production	understand the production machines used	manual book and knowledge	studying and analyzing the production machinery	able to make a schedule of preventive	Preventive engine running according to schedule
Appoint each one as a person who is responsible for each line of production of preventive	understand the machine on the line	knowledge	selecting people who could be given specific responsibilities	No PIC preventive per line production	decreased downtime, production goes well
providing training to all teams regarding special treatment with corrosive environments.	aware of the corrosive environmental conditions	knowledge	conducted a workshop on machine maintenance	understand the production machines are well cared for	production machines running smoothly without damage

Table 2:- Comparison with reality

➤ *Stage 6 (six) Debate about Change*

In this stage, the establishment of a viable and desirable changes. The purpose of this phase is to identify and search for the desired changes systemically and culturally feasible. In accordance with the conceptual model that has been made, then the proper changes including the following:

- create a new job description for the maintenance team that is doing the documentation of the production machines in accordance with the conceptual model number 4 (one) up to number six (five).
- conduct training or workshops on special treatment to the engine with the challenge of a corrosive environment, the limited number of human resources,

and capabilities of each individual, and then create a schedule for special treatment by dividing responsibility to the people who believed as PIC preventive maintenance of each plant is based on a conceptual model number 2, 3, 7, 8, and 9.

➤ *Stage 7 Taking Action*

The next step is to take action in order to improve the best action / solution to the problem. In this case the proposed solutions to reduce the demand for goods urgent is to provide knowledge to the team regarding documentation of machine maintenance and special treatment machine against corrosive environments

V. CONCLUSION

As in accordance with the above explanation, it can be concluded that in order to reduce the demand for goods urgent by the maintenance team is to provide knowledge to the team regarding documentation of machine maintenance and special treatment machine against the corrosive environment. Reduced demand for urgent items is expected to also reduce downtime and repairs on production machinery so that the production can run and profitable company.

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