PROCEEDINGS

4th International Conference on Technical and Vocational Education and Training (TVET)

Theme:
Technical and Vocational Education and Training for Sustainable Societies

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FOREWORD

Welcome for all respected scholars, researchers, post graduate studentsand especially Keynote Speakers to the 4 ICTVET. The theme of the conference focus on Technical and Vocational Education and Training for sustainable societies and consist of six subthemes. i.e Development of learning model on TVET, Workplace Learning and entrepreneurship, Innovationon applied engineering and information technology, Management and Leadership on TVET, Vocational and Technical Teaachers education, and Assessment and Evaluation on TVET.

Sustainable society shoul be followed by the improvement of various factors that have impacts to the quality of vocational and technical education and training, particularly to overcome the competitiveness of the world business. As we have already known the rapid change of technology as well as the change of demography, having a great effects to the life of peoples in this world, The competitiveness need a collaborativeness to survive the life of millions peoples who lost their jobs. Young peoples as aproductive generation have to be creative and innovative to face the competitiveness. So this prociding contents consist of various findings of research in the field of vocational and technical education as well as applied technology and mainly based on the subthemes of the conference.

Finally, we would like to thank a million for all participants of this conference and all parties who support the success of this conference. Hopefully the seminars and scientific work of this seminar can be a reference material for basic education and elementary school teacher education in Indonesia.

Padang, July 2, 2018

Tim Editor

CONTENT PROSIDING ICTVET 2017 REPOSITORY UNP

INVESTIGATION OF CHEMICAL FEASIBILITY AND DISTRIBUTION OF IRON SAND RESERVE REGIONAL AREA OF AGAM DISTRICT FOR CEMENT RAW MATERIAL IN PT. SEMEN PADANG

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ABSTRACT: The purpose of this research is to know the mineral content of iron sand and its spreading both vertically and horizontally with the purpose of providing information and data for local government of Agam district for the development and arrangement of the environment along the coast.
In order to obtain information about the depth of iron sand can be used the geoelectric method because one of the physical properties of metal elements including iron is to have low resistivity. In this study used resistivity mapping method that aims to determine the variation of the arrangement of soil layers vertically and horizontally. The configuration used in this method is Schlumberger configuration. To know the chemical content of iron sand is done by taking samples of iron sand systematically and represented at some point. The sample was analyzed chemical composition by XRF method (X-Ray Fluorescence), then correlated with some surface data so that the depiction of the quality of iron sand of Tiku Regency.
From the interpretation of soil resistivity value on 2 paths, it can be concluded that iron sand in Tiku Beach area is in-depth 0 - 16 m. The chemical content of iron sand from XRF method analysis shows Fe_2O_3 percentage of 10 - 35%, with TiO_2 content of 1 - 3%. The quality of iron sand can be used as raw material for cement maker.

Keywords: Agam iron sand, Resistivity mapping, Iron sand sample, PT Semen Padang

1. INTRODUCTION

West Sumatera has abundant natural resources (SDA), but the natural wealth is much that has not been processed and utilized optimally. One of abundant wealth is iron sand in Agam Regency. One of them that utilizes iron sands as raw material for making cement is PT Semen Padang which raw material of iron sand is imported from Java. So experience some obstacles such as if the season of the big ocean waves hampered to bring in iron sand from Java and the cost of production will be greater.

The purpose of research of physical and chemical feasibility study of iron sand of Tiku Regency area of Agam Regency for cement raw material of PT Semen Padang is to know Fe content and mineral content in iron sand in order to provide information and data for local government of Agam Regency to bring PAD (Royalty) and as one of the solutions for PT Semen Padang in sufficient iron sand needs.

2. Research methods

The methodology is to take a systematic iron sand sample and be represented at some point. The sample was analyzed chemical composition.
Research procedure
1. Data Collection Stage
In this first phase, data collection will be conducted in the iron sand area in Agam, West Sumatera. From this stage will get samples of iron sand that will be in careful levels.
2. Sampling
Samples obtained from the Iron sand research site in Tiku Agam District will be used for analysis purposes and also a direct test of samples, also to find out how much iron sand is available at the site.
3. Phase Data Retrieval
This stage is done at PT Semen Padang to get data of Fe content as cement making mixer to be compared with iron sand type found in Tiku. Besides that, we will get data of iron sand composition used for cement making materials, and also with the use of iron sand how the effect of the resulting cement quality.

4. Data Analysis Stage
At this stage will be analyzed based on data that has been obtained in the field. This stage will be an economic analysis of the Iron Sand, for example by comparing the cost if iron sand imported from Agam with imported from the island of Java to PT Semen Padang, so it can be assessed economy. It will also be analyzed the feasibility of the Iron Sand, is it worth to use as raw material in the manufacture of cement needed PT. Semen Padang
5. Data Processing Stage
The data that have been analyzed is processed again with the existence of additional data from literature study and the result of sample analysis done so that it can form a better and useful output.
6. Conclusions
All data has been obtained and done data processing, so that can be drawn a conclusion about the proper assessment of the feasibility of utilization of Iron Sand as the raw material of cement manufacture in PT. Semen Padang.

RESULTS AND DISCUSSION

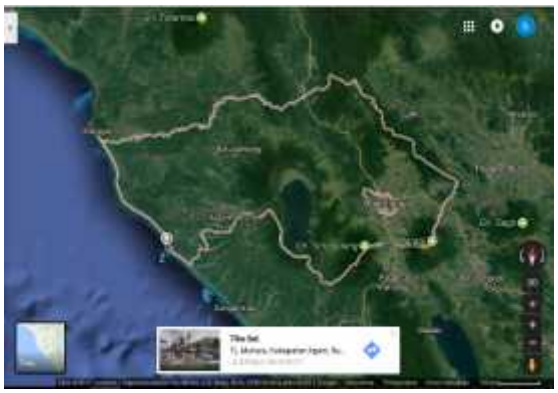

Fig.1 Sampling location

Location of iron sand sampling at Pasir Paneh Beach, Tiku District, Kab. Agam with coordinates:

1. S0 21 01.3 E099 53 25.6
2. S0 21 27.5 E099 53 51.4
3. S0 22 48.5 E099 54 52
4. S0 22 40.5 E099 54 47.6
5. S0 22 32.7 E099 54 43.4

Table 1. Laboratory test results of iron sand samples

Items		Sample				
		1	2	3	4	5
Fe ttl		40.69	38.76	39.87	47.7	43.98
Al_2O_3	%	15.72	15.88	12.13	22.45	22.11
Fe_2O_3	%	19.10	19.10	20.10	10.00	17.10
CaO	%	4.46	3.39	4.04	4.14	2.84
MgO	%	2.74	2.28	3.91	1.41	0.99
SiO_2	%	13.37	13.37	14.07	7.00	4.97
TiO_2	%	1.01	1.70	1.53	0.93	0.68
H2O	%	2.91	5.52	4.35	6.37	7.33

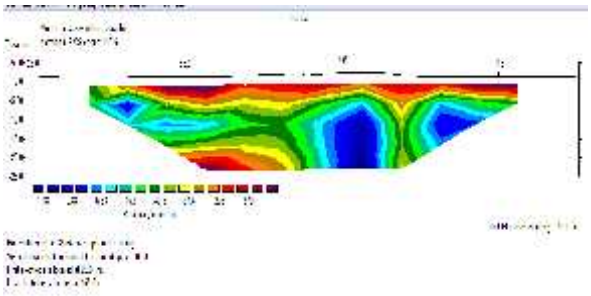

Fig 2. Top layer subsurface section on track 1

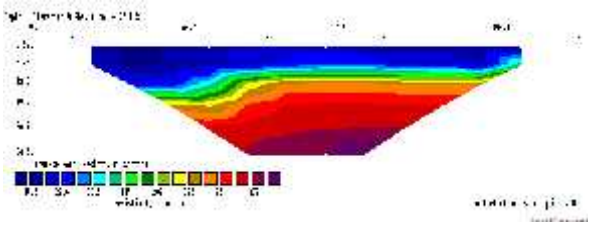

Fig 3. Top layer subsurface section on track 2

3. CONCLUSION

1. Fe_2O_3 content (iron) average iron sand from sample analysis tested in laboratory ranged from 10 - 35%, while the content of TiO_2 between 1 - 3%.
2. The result of the sample analysis shows that iron sand of Pantai Tiku is chemically satisfying PT Semen Padang spec
3. Based on data of Fe and Ti content of laboratory analysis shows the quality of iron sand Tiku area will be much in demand by investors because the quality is good.
4. The measurement result with geoelectricity shows iron sand at Tiku beach located at depth 16 - 18 m with horizontal distance land to beach 100 - 130 m.

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Heri Prabowo is a geomate member of lecturer in the mining engineering department of the Engineering Faculty State University of Padang. S2 from Mining Engineering Department ITB. Research has been done, the spread of iron sand in Pariaman field, coal quality, a method of coal upgrading, iron ore exploration, iron stone reserve in east Pasaman, potency and gold reserve in south Solok, the influence of intrusion of igneous rock to lime quality, metal exploration, coal exploration. His contact E-mail is heri.19782000@gmail.com

6. AUTHOR'S CONTRIBUTIONS

Heri Prabowo: Concepts, design, acquisition, analysis, and interpretation of data and article strengthening. Sumarya: Critical review and conclusion of the version to be filed. The content of articles and content editing also grammer articles.

7. ETHICS

This article material has never been published. All the authors involved in the preparation of this article already exist. The corresponding author confirms that all of the other authors have read and approved the manuscript and no ethical issues involved.