

IMPLEMENTATION OF R & D CARBON PRODUCT DURING CRISIS IN INDONESIA

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Introduction

The economy and monetary crisis recently happened in Indonesia cause most industry sectors collapse. One of the main reason is the dependance of industries to imported raw materials and intermediate products from foreign countries. The implication influences many life aspects. Industries, which during production process using imported components, tends to reduce or stop their business.

From our point of view, we are convince that in order to survive, a Nations should conduct research and development as early as possible with priority based on own resources. The aims were imported substitution with local materials so they could run their activity more efficient and resistance against crisis. The R&D in petroleum coke for iron foundry utilization was given the evidence to our country.

Country Experiences

In the last two years, the economy crisis in Indonesia has influenced iron manufacturer activities which located in dense populated area in Central Java. These foundries are small and medium enterprise with total amount of 300 industries and run by one generation to generation. The knowledge and skill accumulated during working and most of technicians have non formal education in metallurgy. Up to now, cokes and part of iron virgin materials were imported and scrap iron as well as supporting materials could be obtained locally. Before crisis, their production covered from automotive components, agriculture equipments, casing and water pumps, textile machine parts, hot plate, gas cooker and brake components for train, etc.

Due to inactive users, most of iron foundries were slow down and job order become scare. Imported materials are unaffordable since local current exchange were depreciated to foreign exchange. Formerly, iron industries are able to produce 3,000 tonnes/months

contrary to one and half of production at the moment. Workers decreasing became unavoidable, nearly 1500 skilled people were fired and they represent about 50% from total workers. The survivals are industries that have collaboration to *Koperasi* which organize and help their members to get job order.

During this unlucky situation, an opportunity to offer national capability emerge. Pertamina, The State Oil and Gas Enterprise, conducts research and development of carbon product derived from Indonesian petroleum coke in the last ten years and could overcome scarcity of materials by substitution with domestic products. There are 2 (two) products namely : briquetted petroleum coke and carbon raiser, were accepted by iron foundries. Both R & D carbon products were used successfully and become component for export oriented moulded iron. The next challenge is scaling up from pilot plant to industrial scale. The role of investor is needed in order to anticipate and fulfil domestic requirement by using green petroleum coke which locally produced. We believe it could become long term solution technology to our country and recover the iron manufacturer to normal condition.

Conclusions

1. Briquetted petroleum coke and carbon raiser, which produced locally, could be used as substitution of imported materials.
2. Research and Development is a powerful way to a Nations who want to become survival and growth and one step ahead in mastering technology.
3. Research and Development is important role in the development of economy and social welfare for Indonesia.

References

1. Industrial Survey by University of Indonesia. 1994.
2. Kompas Newspaper, April 14, 1999.
3. Republika Newspaper, April 14, 1999.

Table 1. Typical Properties of Briquetted Petroleum Coke

NO	PARAMETER	VALUE
1	Moisture, % w/w	max 2
2	Volatile matter, % w/w	max 7
3	Fixed carbon, % w/w	min 90
4	Ash content, % w/w	max 1
5	Calorific value, kcal/kg	min 8000
6	Size, cm	8x8

Advantages : high heating value, low ash content, environmental friendly, efficient.

Table 2. Typical Properties of Carbon Raiser

NO	PARAMETER	VALUE
1	Moisture, %	< 1
2	Volatile matter, %	< 1
3	Fixed carbon, %	< 0.5
4	Ash content, %	min 95 % up
5	Sulphur, %	< 0.5