

# Indonesian Electronics

By Lenny Siegel

Since 1963 American electronics manufacturers have been flocking to the Far East to make use of the hard-working, low-wage labor force. They have established assembly plants not to serve the nations where they operate, but to supply the US and other industrial countries. First they set up shop in Hong Kong, Taiwan, and Korea, followed by Singapore and Malaysia. Today the Philippines, Thailand, India, and Indonesia are the new frontiers of the electronics industry.

Indonesia, with its huge underemployed workforce, seems like it might be an attractive location for the electronics assemblers. Its wage rates are the lowest in Southeast Asia. However, government bureaucracy and unreliable infrastructure have discouraged most manufacturers. Only three US firms, producers of solid-state components, are currently operating in Indonesia: Monsanto, Fairchild, and National.<sup>1</sup>

Monsanto originally contracted with Ness Industries in September, 1972, to operate a job shop in Jakarta. Ness hired 500 Indonesians to produce light-emitting diodes (LED's), the numbers that light up on pocket calculators and digital watches. Eighteen months later Monsanto announced the formation of PT Monsanto Pan Electronics to continue to produce LED's. Monsanto now employs 750 in a project capitalized at as much as \$3 million.<sup>2</sup>

National Semiconductor, the first American electronics firm to go into both Malaysia and Thailand, began operation in Indonesia in Spring of 1974. Its integrated circuit plant at Bandung is designed to employ 1500 workers at capacity, but it has never gone above the present 400 because of the depressed state of the semiconductor market.<sup>3</sup>

Fairchild Semiconductor, a division of Fairchild Camera and Instrument, is the firm that began the Asian electronics rush in 1963. It broke ground in 1973 for its integrated-circuits assembly plant in Jakarta. The 100,000 square foot plant came on stream in early 1975, employing a reported 3000 workers. Fairchild has over \$5 million invested in its Jakarta plant.<sup>4</sup>

## CHEAP LABOR

Electronics companies are attracted to Indonesia by the archipelago's reserve of competent, low-wage workers. In early 1974 the Indonesian yearly wage for semi-skilled labor (adjusted for productivity) averaged \$348, substantially below wage costs in Thailand and the Philippines and one third of the rates in Malaysia and Singapore.<sup>5</sup> However, Indonesia has a shortage of skilled, technical, and management personnel. Professional employees switch jobs frequently to take advantage of the islands' petroleum boom.<sup>6</sup> When the average wage cost is computed to include a mix of managers and engineers, it rises to \$505 per year, slightly less than Thailand but still one fifteenth of the comparable US cost.<sup>7</sup>

Despite the absence of education and training, Indonesia's workforce adapts easily to the microscopic task of modern electronics assembly. The Indonesian government brags, "Electronic components manufacturers, for example, are surprised at the aptitude of uneducated Indonesian girls working in their assembling plants."<sup>8</sup>

Like their stateside counterparts (US plants of the three

companies), the electronics plants are not unionized. Industry consultant Gerald Levine claims that unionization makes no difference. He says, "US firms provide better working conditions and pay more money than local firms—all over Asia. This is true for countries with or without unions."<sup>9</sup>

## OTHER ATTRACTIONS

There are other incentives to invest in Indonesia, but their impact is negligible. They are available in many other countries. Indonesia offers several tax advantages to desirable foreign investors—including electronics assemblers—but so do many other poor countries. The World Bank's International Finance Corporation lent \$900,000 toward the Monsanto project, but IFC by no means restricts its promotional activities to Indonesia. And both the Fairchild and Monsanto ventures are guaranteed by the US Overseas Private Investment Corporation, which operates in some eighty countries.<sup>10</sup>

## OBSTACLES

With its cheap labor and comparable incentives, Indonesia could be overrun by American electronics firms. But two major obstacles discourage them: red tape and poor infrastructure.

Indonesia's competing government agencies have developed a reputation for creating a rain forest of red tape. National, which operates in several Far Eastern nations, finds Indonesia the most bureaucratic.<sup>11</sup> Monsanto, on the other hand, found red tape in Indonesia no worse than in Malaysia, where it also assembles LED's.<sup>12</sup> In late 1973 the Indonesian government attempted to centralize the paperwork on foreign investment; it took only one month to clear Fairchild's application.<sup>13</sup> But most potential investors—especially small, high-technology electronics firms—prefer doing business in Singapore and Malaysia, which have a history of reliability.

"Indonesia," says consultant Levine, "has no infrastructure." Communications, electrical power, and transportation are inadequate for the fast-moving electronics industry. National's Bandung plant is hampered by the fact that there is no reliable air service in that area, 190 km. from Jakarta.<sup>14</sup>

## THE FUTURE

Given the soft market for electronics components, it is difficult to say when electronics producers will announce more plants for the Far East. In 1973 Indonesian promotion officer Sowedj Reksoatmodjo said he expected RCA, Texas Instruments, and Motorola to establish plants, but none have.<sup>15</sup>

Assuming recovery, though, one can predict that electronics investment will increase gradually over the next five or ten years, for the wage rate is likely to remain attractive. But a Malaysian-style electronics rush is not likely unless the Indonesian government rationalizes its operations and speeds up the construction of the required infrastructure.

Consultant Levine expects other Asian nations, despite the absorption of much of the available labor, to continue to attract electronics investors for some time. But he also projects diversification into the Caribbean, where the labor force speaks English, air freight costs (for shipment to the US

and Europe) are relatively low, and the time zones are closer to those at US headquarters. In addition, plants in Asia are subject to potentially hostile political influences. Forward-looking companies do not want to place all their chips in one basket.

#### DEVELOPMENT

The present Indonesian government wants electronics investment. Unlike most foreign investment, it provides large numbers of jobs. Unlike most manufacturing investment, it generates foreign exchange. Foreign Minister Adam Malik explains:

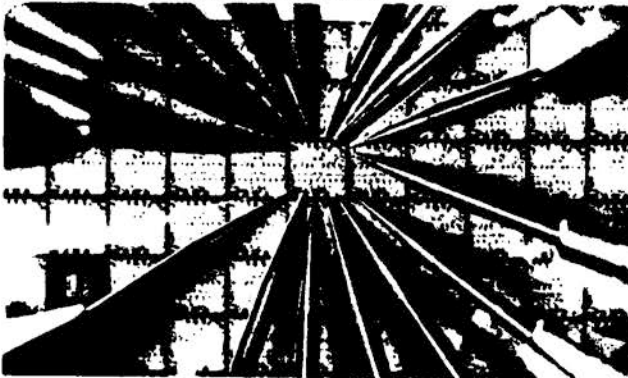
At present the types of foreign investment preferred are those which produce export-oriented goods, are labor intensive so that they provide substantial employment opportunities for Indonesians, and those which introduce technologies that result in increased productivity. . . . In all cases, the government favors joint ventures with an Indonesian partner.<sup>16</sup>

The electronics companies are among Indonesia's largest employers. And the Monsanto project, for instance, is supposed to generate more than \$2 million in foreign exchange annually.<sup>17</sup>

But electronics assembly remains outside the mainstream of the Indonesian economy. Fairchild and National operate wholly-owned subsidiaries. Though an Indonesian businessman, Bambang Trisulo, holds 20% of Monsanto Pan Electronics' stock, Monsanto runs the company.

The companies get most of their parts and equipment from the US.<sup>18</sup> Indonesian plants, like those throughout the Far East, are restricted to assembly. Wafer production, research, development, and management are located in the US—all three ventures are based in the San Jose area of California, known as "Silicon Valley" because it houses so many high-technology semiconductor firms. And, of course, sales depend wholly on economic conditions in the US, Europe, and Japan.

Electronics investment, therefore, meets some of the short-term goals of the Indonesian government, but it does little to develop an independent Indonesian economy. Indonesia's US-trained economic planners do not oppose such dependence, so they will seek more such investment. But they might not have their way. Unless they can alter the hold of self-serving generals and entrenched functionaries over procedure and infrastructure development, electronics firms will choose to build elsewhere.



1. I have been told, but have not yet confirmed, that Fabri-Tek has a core-stringing facility in Jojakarta, as well.
2. Telephone interview with Robert J. Brotherton, Monsanto Opto-Electronics, Palo Alto, California, July 7, 1975; Press

Release, International Finance Corporation, March 14, 1974. The Ness contract was designed to promote a venture by Monsanto. It included an option for Monsanto to purchase the Ness factory after 18 months, but I have not learned whether this in fact happened. ("Indoness OK's Monsanto Pact," *Palo Alto Times*, September 25, 1972.)

3. Telephone interview with Ed Pausa, National's vice-president for international operations, Sunnyvale, California, July 11, 1975.
4. Fairchild Camera and Instrument, *1973 Annual Report*, p. 8; "1975 Annual Meeting of Shareholders," p. 8; William H. Miller, "Indonesia Opens the Door," *Industry Week*, November 19, 1973, p. 52; Overseas Private Investment Corporation, *Annual Report, Fiscal 1974*, p. 52.
5. A.D. Little figures cited by *New York Times*, January 27, 1974, Part III, p. 43.
6. Interview with Ed Pausa.
7. A.D. Little figures in *New York Times*.
8. Ad in *Fortune*, July, 1975, p. 32. By "adapt" I mean industrial capability, not health and safety. In many places the microscopic work has affected the eye-sight of electronics workers, but I have seen no reports on Indonesian working conditions.
9. Levine helped Fairchild move into Hong Kong in 1963. He is now with Mentor International in San Francisco. Telephone interview, July 7, 1975.
10. IFC Press Release; OPIC *1974 Annual Report*, pp. 36, 51, 52.
11. Interview with Ed Pausa. See also *Wall Street Journal*, September 20, 1973, p. 36.
12. Interview with Robert Brotherton.
13. "Indonesia Opens the Door."
14. Interview with Ed Pausa.
15. *Wall Street Journal*, September 20, 1973.
16. OPIC *1974 Annual Report*, p. 36.
17. IFC Press Release.
18. Monsanto, according to Brotherton, buys virtually nothing in Indonesia. It would, however, if the government there found a competitive supplier.

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