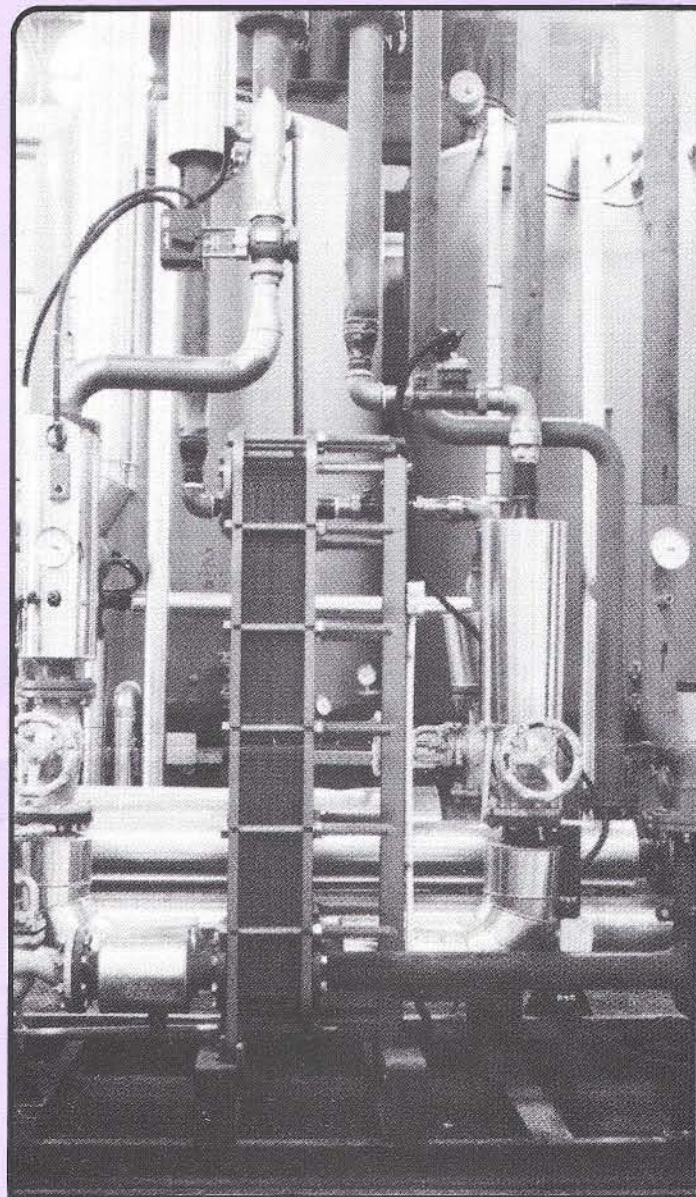
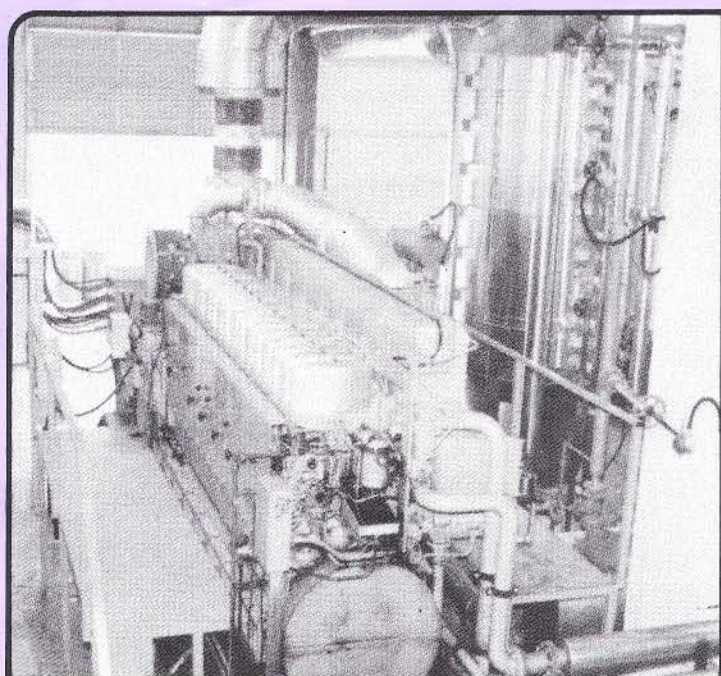


# **COGENERATION SYSTEM AT THE K.A.N. TEXTILE FACTORY - IN RISHON LE-ZION**



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**Demonstration subject:** Cogeneration system for electricity, steam and hot water production in the K.A.N textile factory in Rishon Le-Zion - Israel.

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**Process:** Operation of diesel generator for electricity production and thermal energy utilization. The steam and hot water are produced by utilizing waste heat recovery of the engine flue gases, the lubricating oil and the engine cooling system.

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**Site:** Rishon Le-Zion - industrial zone.

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**Design of system:** Dynaf - Holland.

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**Engineering:** Dr. Moshe Hirsch, consultant - Zafaria, Israel.

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**Construction:** Bnei Meir Ltd. Israel. Dynaff - Holland (Turnkey).

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**Date of Startup:** March 1992.

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**Investment:** U.s \$1.397,100

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**Annual saving:** 636 ton heavy oil + 5,830,000kwh

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**Support by the Ministry  
of Energy &**

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**Infrastructure:** A grant of 15% of investment.

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## 1. General:

K.A.N is an industrial factory in the field of textile sheets painting and consumes heat at various temperatures in the forms of water, steam, thermal oil and electricity for operation of the production machines and equipment.

With support from the Ministry of Energy and Infrastructure the factory constructed a plant for the combined production of electricity and heat.

This cogeneration system is planned to save fuel consumption and provide steam production without using a conventional boiler.

## 2. Cogeneration Unit

Mechanical power - engine:	1200 kw
Electrical power on generator outlet:	1138 kw
Available heat for the process:	1190 kw
Overall thermal efficiency:	81%
Availability:	93%
Fuel consumption:	1388 ton heavy oil/year

## 3. Waste Heat Utilization:

The waste heat from the engine is used to produce hot water in various temperatures and steam in the following processes:

Charge air cooling: production of 14.2 cub.m/hour of hot water at 40°C (283,800 Kcal/hour).

— Lubrication oil cooling: production of 2 cub.m/hour of hot water at 85°C (132440 Kcal/hour).

— Jacket water cooling: production of 2.7 cub.m/hour of hot water at 85°C (172,860 Kcal/hour).

— From engine flue gas at temperature of 405°C in full load, 0.7 ton of steam/hour (8 ata pressure) is produced.

The planned total saving in fuel by the waste heat utilization of the diesel engine is 636 ton/heavy oil per year.

## 4. Production and Saving in Electricity Consumption:

Overall annual production of electricity: 5.83 million KWH.

Saving in electricity otherwise to be purchased from the Israel electric Corp.: 1.93 million KWH/year.

Excess electricity sales to Israel Electricity corp. (as a private producer): 3.9 million KWH/year.

Saving in peak demand: 490 KW.

## 5. Expected Annual Balance of Saving:

Cost of replaced electricity and fuel: 501,771\$

Operation costs: 268,381\$

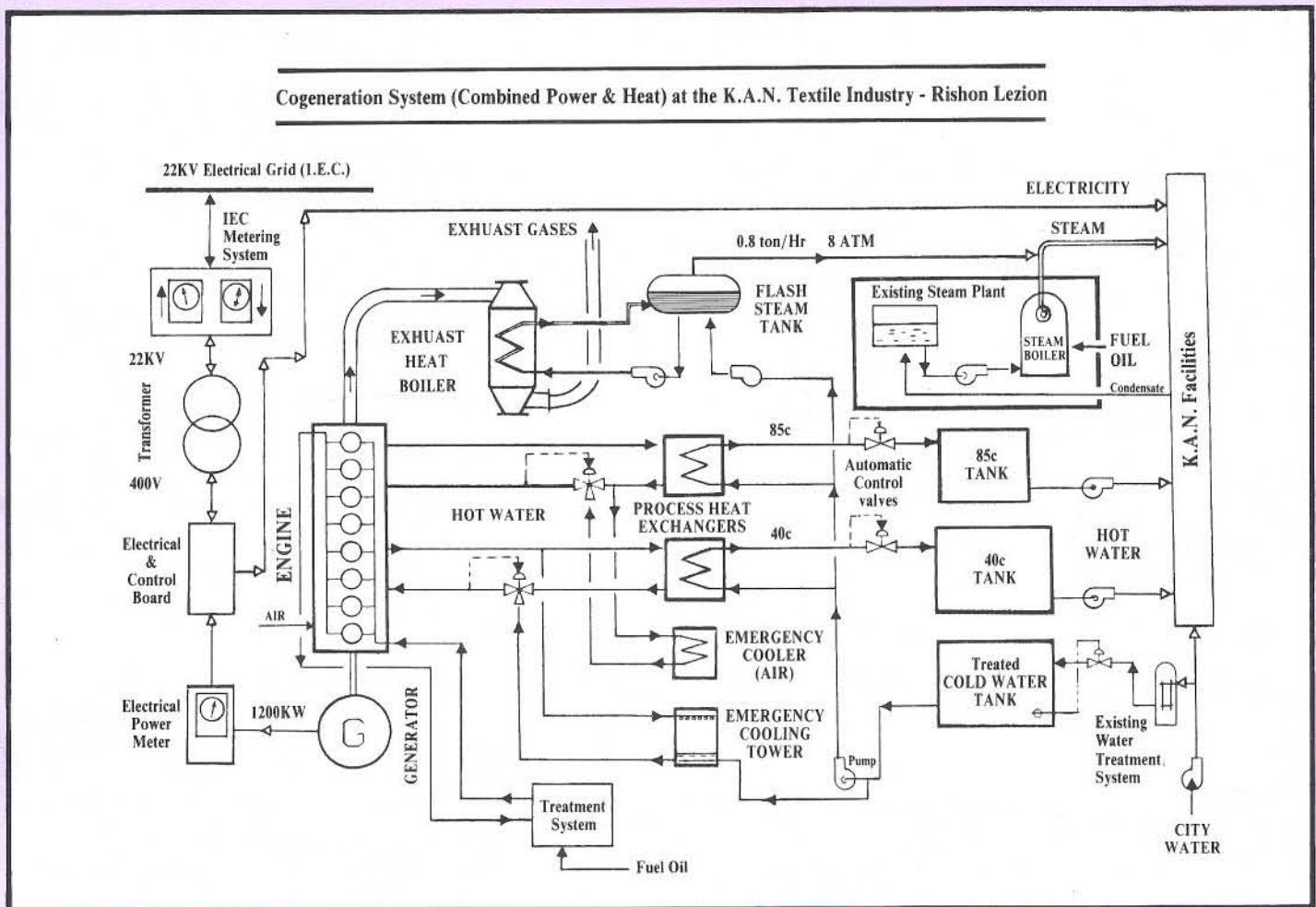
Net annual savings: 233,390\$

## 6. System Operation:

The infrastructure works for constructing the plant started in the summer of 1990.

Installation of the system started in September 1991.

Connection to the electricity grid and startup: March 1992.



FOR FURTHER DETAILS ABOUT THIS DEMONSTRATION PLANT PLEASE CALL THE REFERANT FOR ENERGY CONSERVATION IN INDUSTRY - THE ISRAELI INSTITUTE OF PETROLEUM & ENERGY, 26 LEVANON STR. (UNIVERSITY RD.) RAMAT-AVIV, TEL-AVIV, 61170 ISRAEL TEL: 03-6426823 FAX: 03-6428832

THE MINISTRY OF ENERGY & INFRASTRUCTURE