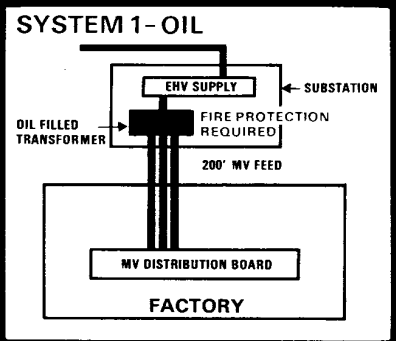
a dielectric fluid

for transformers



Monsanto

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Monsanto Chemicals Limited
10–18, Victoria Street
London S.W.1
Telephone: 01-222 5678

Transformer Costs

Cost Savings

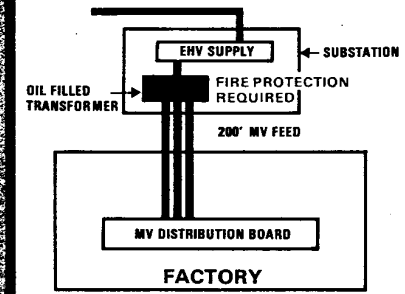
Substantial installation and operating savings can be made by using Pyroclor-filled transformers for load-centred distribution systems. Compare these two systems:

SAVINGS

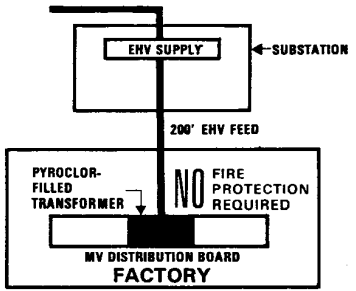
Cost of cable	£945
Annual cost of cable losses	£110
Total Savings	**£1055***

*This figure could represent 50% of the initial Pyroclor-filled transformer cost.

SYSTEM 1 - OIL



SYSTEM 2 - PYROCLOR



Transformer Costs

Compare the costs of transformers at the load centre

Source of cost*	OIL	Dry-type Class 'C'	PYROCLOR
Transformer 1000 kVA	58%	110%	82%
Fire protection equipment	32%	Nil	Nil
Civil Work	10%	8%	4%
	100%	118%	86%

*Estimated cost based on a percentage basis of 100 for total oil transformer installation.

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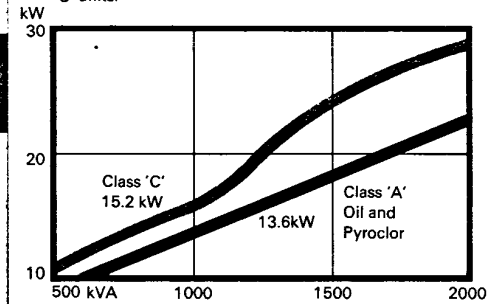
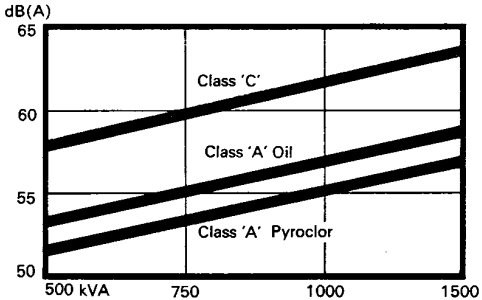
Operating Parameters

LOSS LEVELS Pyroclor-filled transformer loss levels are the same as oil and lower than dry-type Class 'C' units.



NOISE LEVELS are lower than oil or dry-type Class 'C' units.



IMPULSE AND OVERLOAD levels are the same as oil therefore higher than dry-type Class 'C' units. (Built to B.S.171)

Maintenance

NO FLUID CHECKS

NO FLUID FILTRATION

NO FLUID CHANGE

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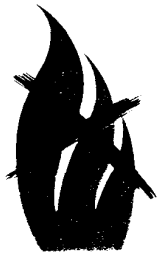
Fluid Characteristics



a **Pyroclor is an askarel**

Askarel is the generic term for a group of synthetic chlorinated aromatic hydrocarbons used as electrical insulating media.

b **Pyroclor as a coolant**

Similar cooling characteristics to top-quality transformer oils BUT it has higher thermal/chemical stability.

c **Pyroclor as a dielectric fluid**

A dielectric breakdown strength better than top-quality transformer oil. BS148.

d **Transient arcing**

If there is transient arcing small amounts of hydrogen chloride gas will be evolved but this will be absorbed by the gas scavenger additive in Pyroclor, thereby preventing pressure build-up in the unit.

e What happens to Pyroclor in the unlikely event of a serious fault and major arcing occurs? Pyroclor, like oil, would form gases.

OIL

Hydrogen which is explosive over a wide temperature range.

PYROCLOR

Hydrogen Chloride Gas.
Non-explosive. No fire risk.

f Are any other gases formed?

NO Independent studies prove that phosgene and chlorine are NOT formed under arc conditions.

FLUID CHARACTERISTICS
SOME USERS of Pyroclor-filled transformers
CASE HISTORIES

Summary of Benefits

	OIL	PYROCLOR	Dry type Class 'C'
Fire precautions	YES	NO	NO
Maintenance	YES	NO	YES
Fire risk	YES	NO	NO
Siting limitations	YES	NO	YES
Low loss levels	YES	YES	NO
Low noise levels	YES	YES	NO
High impulse levels	YES	YES	NO

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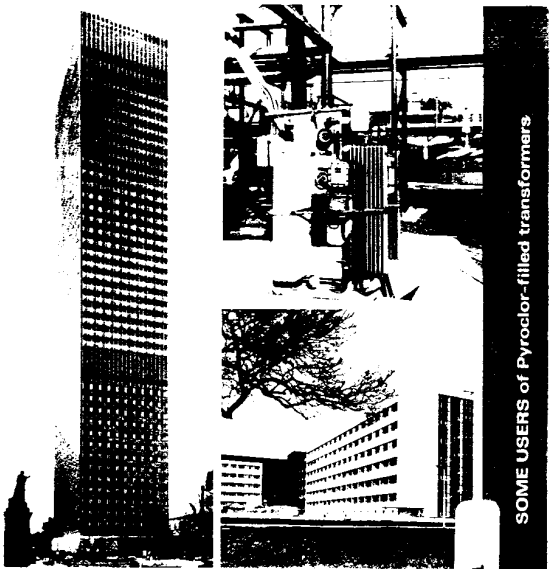
TOWOLDMON0021208

some users of Pyroclor-filled transformers

Aircraft	B.O.A.C. Westland Aircraft Corporation Ltd.
Armed Services	Ministry of Defence
Automotive	Firestone Tyre Co. Ltd. Ford Motor Company Ltd. General Motors Ltd. Goodyear Tyre Co. Ltd. Michelin Tyre Co. Ltd.
Chemical Manufacturing	ICI Ltd.
Electricity and Gas	Central Electricity Generating Board Midland Electricity Board North Thames Gas Board North Western Gas Board South of Scotland Electricity Board
Electronics	The Post Office Decca Radar Ltd.
Food	Alfred Bird & Son Ltd. General Foods Ltd.
Glass	Pilkington Glass Ltd.
Mining	National Coal Board
Oil	British Petroleum
Steel	Richard Thomas & Baldwins Ltd. The Steel Company of Wales Ltd.



case histories

Industrial plants	No siting limitations Fire safety Load centre No maintenance Unaffected by air contamination Low power loss High impulse levels
Multi-storey buildings Schools, Hospitals, Hotels	Load centre Fire safety No maintenance Low noise levels

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SOME USERS of Pyroclor-filled transformers

CASE HISTORIES

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