



**ERMATECH**  
**GROUP**

**From saving the oceans.  
To safeguarding the planet.**

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**NaviPULSE**

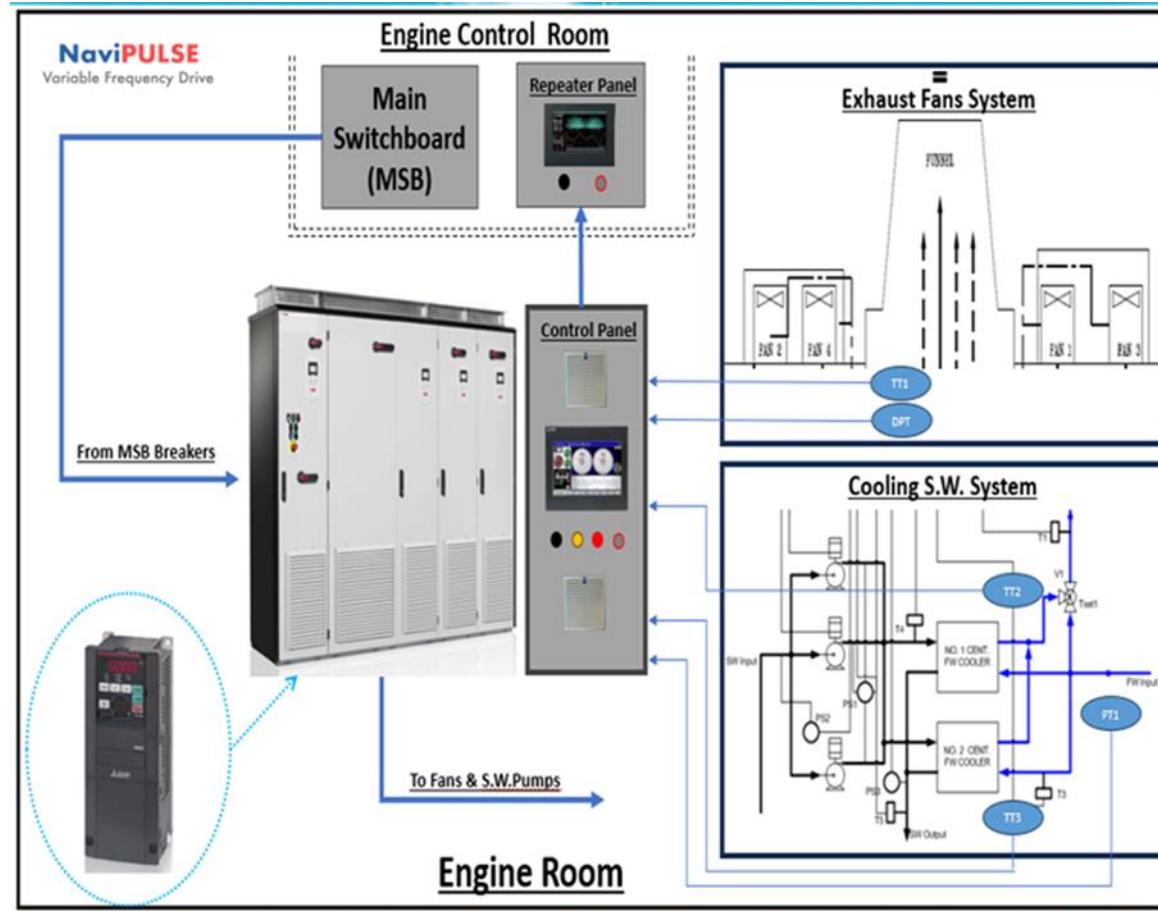
Variable Frequency Drives (VFD)

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# NaviPULSE

## Variable Frequency Drives (VFD)



# NaviPULSE

## Variable Frequency Drives (VFD)

DECARBONISATION



With **NaviPULSE VFD UPGRADE**, vessels can now achieve significant savings in the operation costs and power consumption of any kind of motor.

- Energy saving up to 75% on motors equipped with NaviPULSE
- Less fuel consumption, lower emissions
- Reduced maintenance costs and Improved motor life

**APPLICATIONS** Engine Fans, Cooling Systems, Winches, Hatches, Cranes, BWTS

### Complete turnkey solution, including:

- ✓ Project management
- ✓ Class approval engineering work
- ✓ Installation material procurement
- ✓ Worldwide or afloat installation or installation supervision
- ✓ Worldwide commissioning
- ✓ Worldwide spare parts availability at ERMA TECH GROUP's spare part hubs
- ✓ Extended warranty options



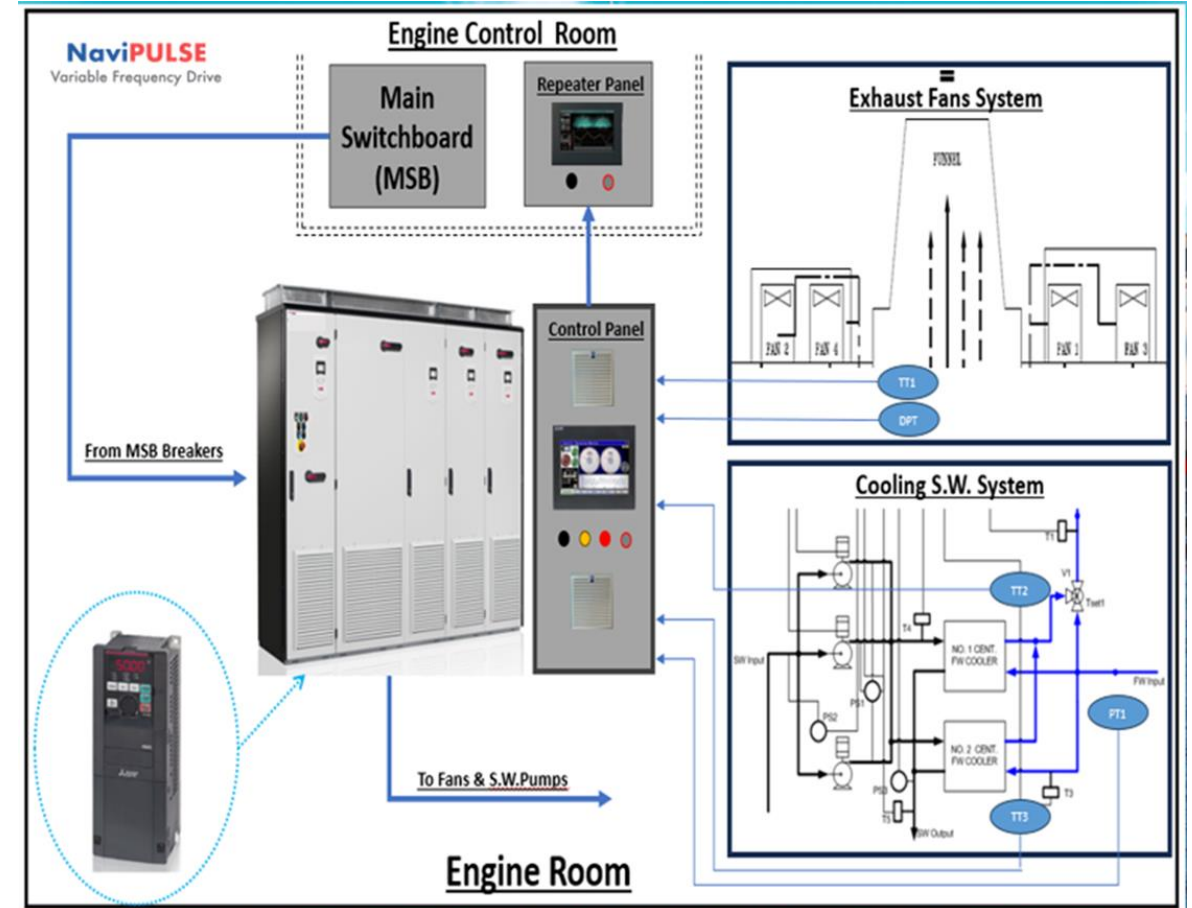
**NaviPULSE**  
Variable Frequency Drive

# NaviPulse VFD APPLICATIONS

## Fans



## Cooling Pumps



# NaviPulse VFD APPLICATIONS

Winches - Controls the raising/lowering of a ship's anchor and/or winding/unwinding mooring ropes



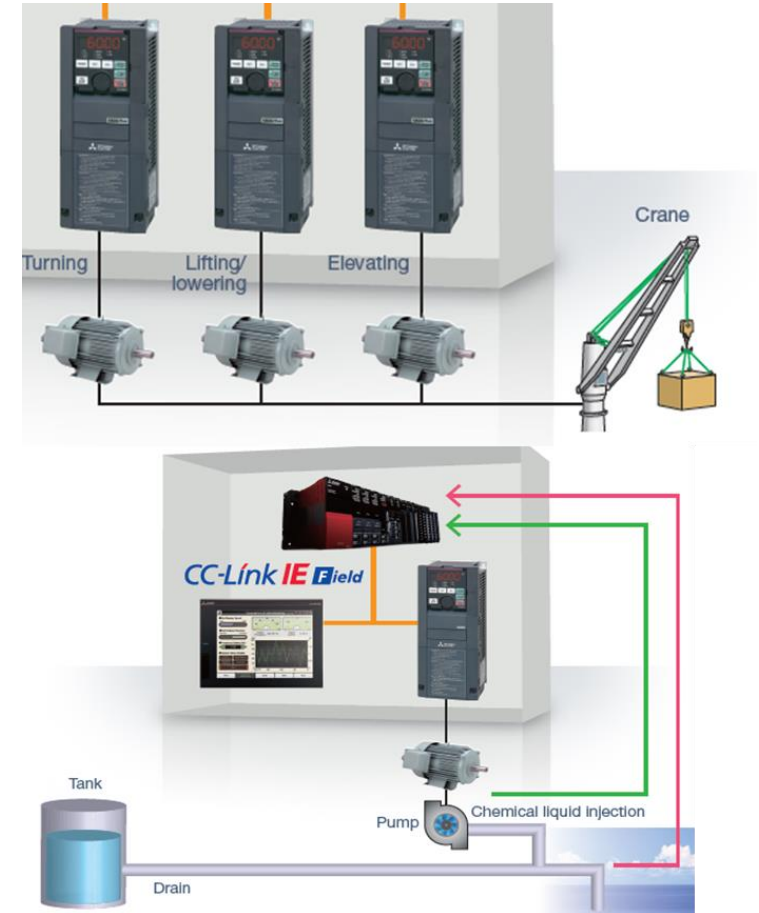
Hatches - Controls the opening/closing of a hatch, smoothly, when loading/unloading





# NaviPulse VFD APPLICATIONS

Deck Cranes - Controls the turning, lifting/lowering & elevating movement of a crane for cargo handling



BWTS - Controls the optimum flow rate of chemical liquid for the vessel's Ballast Water Treatment System



# NaviPulse VFD SAVINGS



## Boost Efficiency with NaviPulse

- Save up to 70% in Energy Costs
- Reduce Operational Costs by 40%

NaviPULSE VFDs offer cutting edge technology designed to maximize efficiency & minimize costs.

Perfect for marine applications, these drives are engineered to provide unparalleled savings while reducing your environmental footprint.

# Operating Scenarios for Energy Saving (on Cooling Pumps and Fans) for 1 year operation

## Motors details

	No.	Capacity (EA)	Pressure	RPM	Motor Power Output
Main Cooling SW Pumps	2	365 m <sup>3</sup> /h	20 m	1800	30 kW
Sea Water Service Pump	1	195 m <sup>3</sup> /h	30 m	1800	30 kW
Main ER Fan	1	42000 m <sup>3</sup> /h	400 Pa	1800	18.5 kW
Auxiliary ER Fans	2	27000 m <sup>3</sup> /h	400 Pa	1800	7.5 kW

Operating Scenario	No. of Sailing days	No. of In/Out Port days	No of days In Port/Anchoring
OS1	270	20	75
OS2	190	20	155
OS3	151	22	192

Operating Scenario	Min Seawater Temperature	Max Seawater Temperature	Port/Anchorage Seawater Temperature
TS1	7	13.5	12
TS2	19.5	32	21

## SW Cooling Pumps( 2 main+ 1 Service pumps)

		SW Temp increase →				SW Temp increase →	
Non-sailing days increase ↓		TS1	TS2	Non-sailing days increase ↓		TS1	TS2
	OS1	87,5%	76,1%		OS1	28671	24941
	OS2	87,5%	77,5%		OS2	32705	28975
	OS3	87,5%	79,3%		OS3	34672	31412
Estimated savings (%)				Estimated savings (USD)			

## Fans ( 1 Main and 2 Aux)

		Air Temp. increase →				Air Temp. increase →	
Non-sailing days increase ↓		TS1	TS2	Non-sailing days increase ↓		TS1	TS2
	OS1	72,8%	58,3%		OS1	14279	11441
	OS2	75,9%	58,7%		OS2	13107	10136
	OS3	77,6%	58,9%		OS3	12415	9432
Estimated savings (%)				Estimated savings (USD)			



# REQUIREMENTS FOR TECHNICAL AND COMMERCIAL OFFER

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Winches

Hatches

Cranes

## Ballast Water Treatment Systems

- ✓ Electrical Drawings of existing starter panels
- ✓ Electrical Drawings & details of existing Circuit breakers
- ✓ Pumps & Motors Technical specifications(curves etc.)
- ✓ Photo of each existing panel and pumps

Ideally, attendance on board by a SE for investigation.

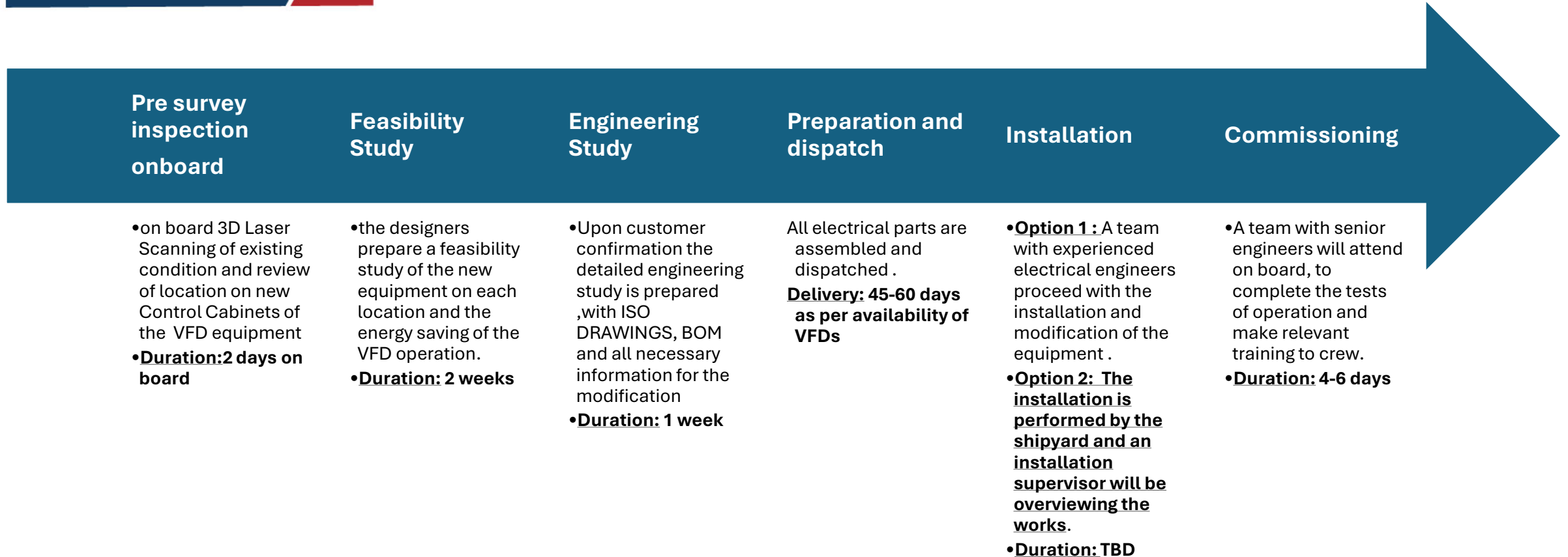
Engine Fans

Cooling Systems

- ✓ Electrical Drawings from existing starter panels
- ✓ Electrical Drawings & details from existing Circuit breakers
- ✓ Pumps & Motors Technical specifications(curves etc)
- ✓ Details of existing piping diagram for cooling system
- ✓ Drawings and technical details of existing temperature controllers of existing cooling system
- ✓ Photo of each existing panel , pumps, FAN's Motors and controllers

**It is imperative to have an attendance on board by SE for investigation and 3DLS of Engine Room**

# STEPS FOR TURNKEY SOLUTION ER FANS & COOLING PUMPS



## Important Notes:

**1: Cables , Packing and Shipment arrangements will be charged separately , as extra.**

**2: Any Class Engineering Approval must be done by Customer side.**

# NaviPULSE VFD MODELS

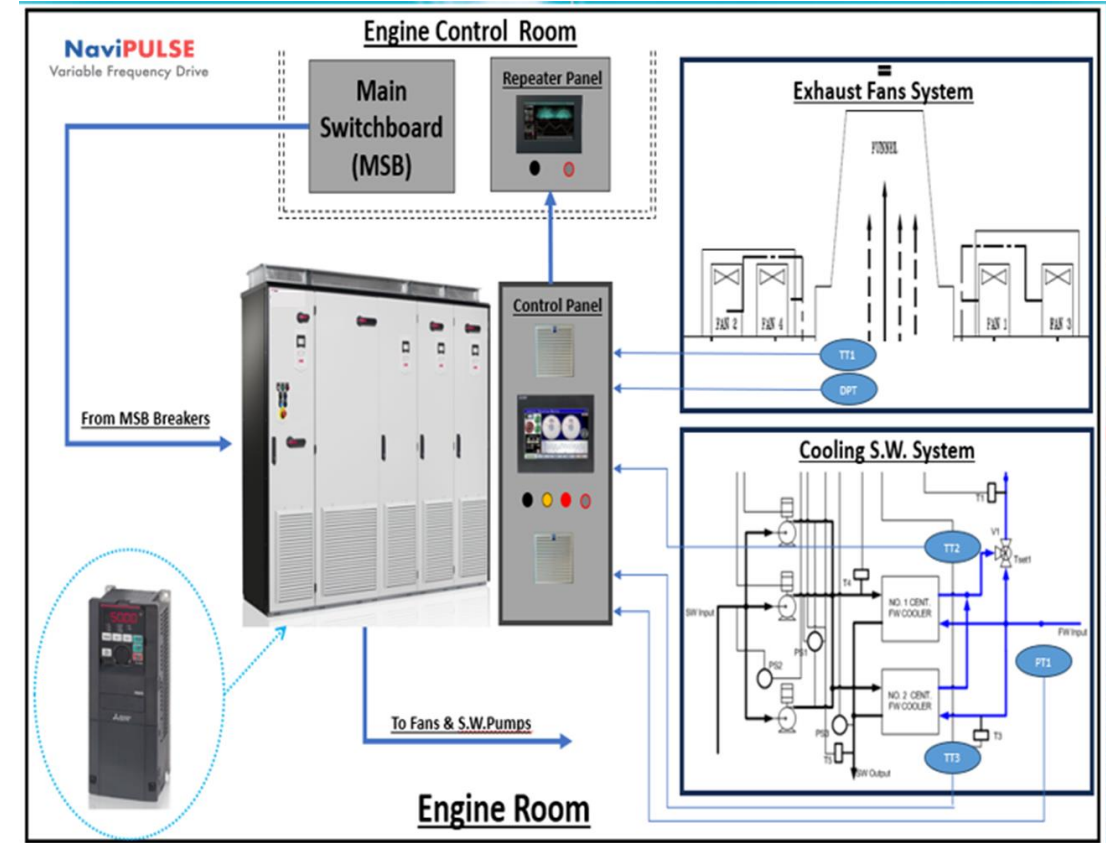
Product Range	VFD 15	VFD 22	VFD 30	VFD 45	VFD 75	VFD 90	VFD CP
Motor's Power Consumption per pump (kW)	< 15 kW	< 22kW	<30kW	<45kW	<75kW	<90kW	-
Input	440V / 60hZ						220V / 60hZ
IP Rating	55						
Cabinet Main Dimensions/Pump	1000*600 *400	1200*600 *400	2000*600*400				800*800*400

# WHY NaviPULSE

- Enclosed air-conditioned configuration suitable for vessels operating in warm climates, where saving is higher (longer cooling water pump & fans operating hours).
- Loose supply configuration with special selected connecting cables ensuring compliance with EMC rules.
  - ✓ Competitive offering
- Selection from wide variety of configurations, off the shelf products from the standard model's portfolio.
- Custom made configuration based on the large in-house engineering, automation and production capacity.
  - ✓ Smaller footprint
  - ✓ No cooling
  - ✓ Bypass option
  - ✓ Fast installation

**NaviPULSE**  
Variable Frequency Drive

DECARBONISATION





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**THINK DECARBONISATION ...**  
**THINK ENVIRONMENTAL PROTECTION ...**  
**THINK ERMA TECH GROUP!**



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