



HCI
Suppliers Club Society

Kaizen Presentation

Productivity
Quality
Cost
Delivery
EHS

Kaizen Theme: Cost saving through VFD Sync with Hydraulic Motor

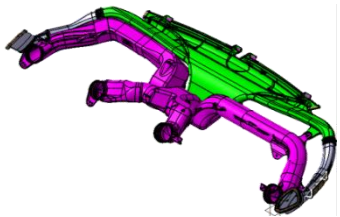
Date of Implementation: 10-08-2024

Company Introduction

Name: Uno Minda Kyoraku Ltd, Bawal

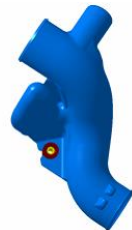


Product Photograph & Function:-



Duct Vent Assy

To supply air from AC to passenger



Air Intake

To supply air to carburettor



Reserve Tank

Storage tank of Engine coolant

Team Introduction



Name: RAJESH KUMAR

Designation: A.M

Department: MAINTENANCE 🧑‍🔧



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BEFORE KAIZEN

AFTER KAIZEN



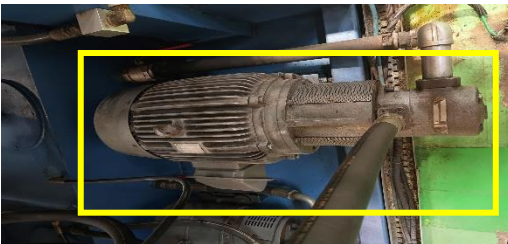
MC Running Load in KWH

MC Idle Time Load in KWH

MC Running Load in KWH

MC Idle Time Load in KWH

Description:- Main Hydraulic Pump of machine runs on load even in the cooling cycle time.



Description:- Idea is to be make this Main Hydraulic Pump of the machine Stop working during the product Cooling Cycle time .

Proposed Idea Step by Step

1. First we have change the control wiring of VFD to the machine control card
2. Change the VFD Parameter (Frequency , Acceleration , deacceleration, Power P Code change Etc.)
3. and VFD interlock with Hydraulic Circuit flow card.



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ENERGY & ESG DATA CALCULATION

All Machine Energy and Cost Saving

Per Hrs. Kwh Saving	56
Per day Kwh Saving	1344
Per Month Kwh Saving	34944
Per Year Kwh Saving	419328
Per Hrs. Cost Saving Rs.	448
Per day Cost Saving Rs.	10752
Per Month Cost Saving Rs.	279552
Per Year Cost Saving Rs.	3354624

CO2 Carbon Emissions Reduction

Per Hrs. Kwh Saving	40	45.92
Per day Kwh Saving	960	1102.08
Per Month Kwh Saving	24960	28654.08
Per Year Kwh Saving	299520	343849
		343.8 TON
<p>The average carbon intensity for electricity generation in India was around 0.82 kilograms of CO2 per kilowatt-hour (kgCO2/kWh).</p>		



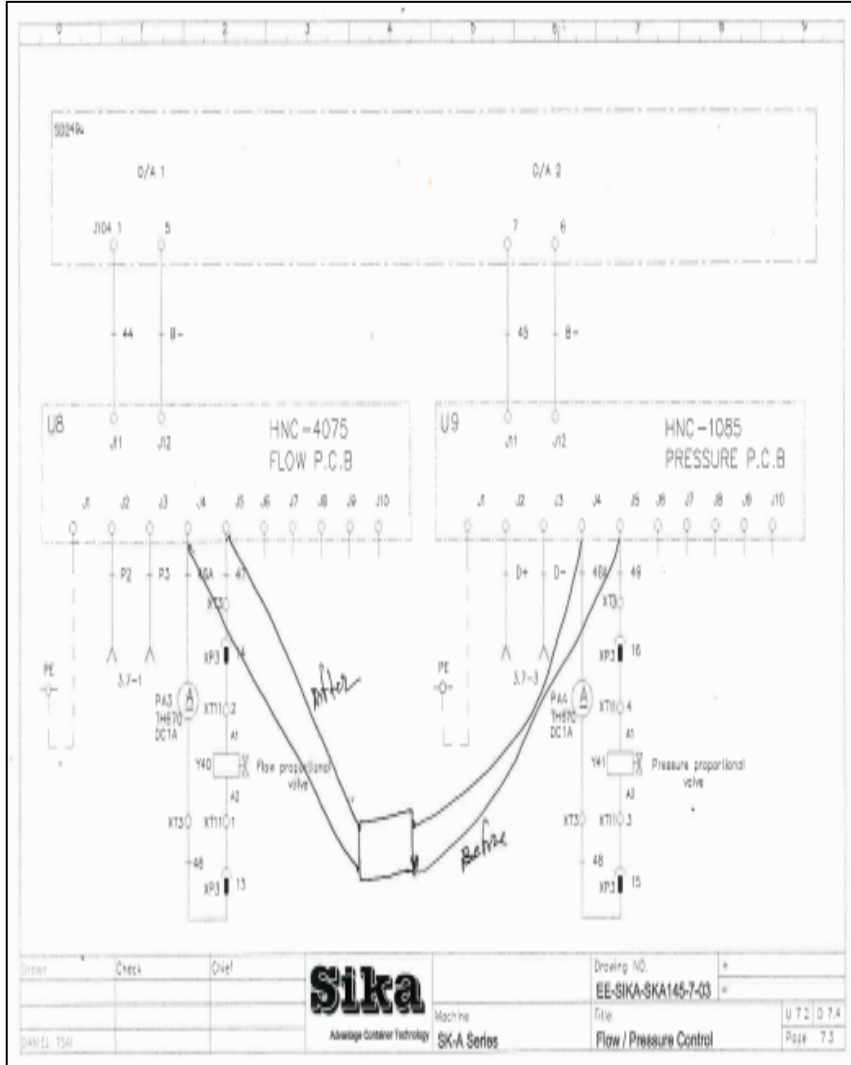
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STANDARDIZATION



M/C CONTROL CIRCUIT DRAWING

The following tables list the function codes available for the FRENIC-MEGA series of inverters.

F codes: Fundamental Functions

Code	Name	Basic setting range	Factory setting	Start setting	Default setting	Over voltage	Over current	Over temp	Over speed	Over torque	Over temp	Over speed
F00	Data Protection	0: Disable both data protection and digital address protection 1: Enable data protection and disable digital address protection 2: Disable data protection and enable digital address protection 3: Enable both data protection and digital address protection	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
F01	Frequency Command 1	0: 0 Hz to 400 Hz 1: 0 Hz to 400 Hz (0.1 Hz resolution) 2: 0 Hz to 400 Hz (0.5 Hz resolution) 3: 0 Hz to 400 Hz (1 Hz resolution) 4: 0 Hz to 400 Hz (2 Hz resolution) 5: 0 Hz to 400 Hz (5 Hz resolution) 6: 0 Hz to 400 Hz (10 Hz resolution) 7: 0 Hz to 400 Hz (20 Hz resolution) 8: 0 Hz to 400 Hz (50 Hz resolution) 9: 0 Hz to 400 Hz (100 Hz resolution) 10: 0 Hz to 400 Hz (200 Hz resolution) 11: 0 Hz to 400 Hz (500 Hz resolution) 12: 0 Hz to 400 Hz (1000 Hz resolution)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
F02	Operation Method	0: FRENIC-MEGA Run on keypad/Remote control operation 1: Remote command FWD or REV 2: Remote command FWD or REV 3: Remote command FWD or REV 4: Remote command FWD or REV 5: Remote command FWD or REV 6: Remote command FWD or REV 7: Remote command FWD or REV 8: Remote command FWD or REV 9: Remote command FWD or REV 10: Remote command FWD or REV 11: Remote command FWD or REV 12: Remote command FWD or REV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

VFD USER MANUAL

UNO MINDA NEW MACHINE PURCHASE DATA SHEET		
SR NO.	NEW MACHINE REQUIRED CHECK POINT	TECHNICAL DATA CHECK POINT
34	Clamping force	40 Ton
35	Daylight	400 - 1200 MM
36	Opening / closing speed pressure	3 pressure / 3 speed
37	Motion Actuated by	Two cylinders and ram for high pressure at 210kg per cm sq
38	Platen movement	On precision roller circulation and linear guides (Rexroth Germany)
39	Max. Mould Weight	Max 2000kg (1000 Kgs. X 2)
40	Mould Fixing Method	T-Groove & T-Nut
41	Balance bar	yes
Hydraulic System		
44	Drive Motor	50 HP (37 kw) (With VFD Controlling Syn.)
45	Drive Motor Make	Tokimec Japan
	Drive Motor type	
47	Pump type	Double Vane Pump-Variable
48	Oil tank capacity	100 gallons / 450 Ltr
49	Operation pressure	Maximum 210 kg per cm square
50	Hydraulic pressure	Proportional and flow system
51	Heat exchangers	Tropicalise for hot climate
52	Mould core Drive circuit	yes
53	Knock out drive circuit	yes
54	Bottom blow pin UP/DN	NO
55	Bottom pin blow circuit	NO
56	Parts by	Vickers or reputed Europe brand
Vacuum System Device		
59	Vacuum Unit	Gardner Denver (V-VC100)
60	Basic Circuits	2 Circuits
61	Reservoir Tank	100 Ltr

NEW M/C PURCHASE DATA SHEET



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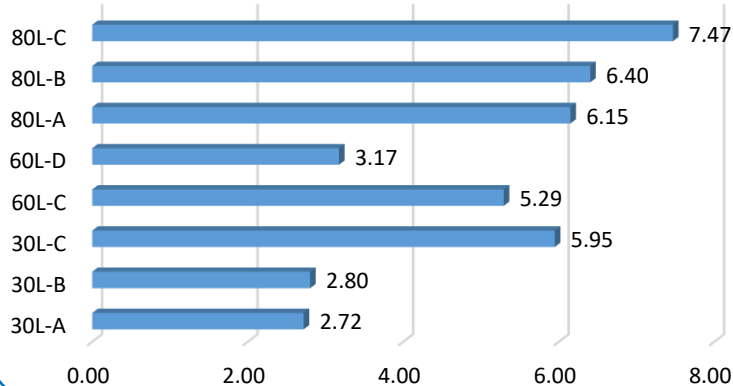
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Benefits

Pls tick ✓ the benefits in below heads

Productivity up %				Quality			Cost Saving In Rs/month		Delivery			EHS			
Process	Material yield improvement	Space saving (sq. ft.)	Other	Rejection reduction (%)	Poka yoke	Others	Direct	Notional	Lead Time reduction	Customer delivery rating improvement	Others	Effect on Environment	Human Safety	Machine safety	Others
							✓					✓		✓	

UNIT SAVE/HRS.



Direct Benefits

Unit Save Per Year :- 4,19,328KWH
Monthly Saving :- ₹ 2,79,552
Yearly Saving :- ₹ 33,54,624
Investment :- ₹ 0
CO2 Emission Reduce Yearly :- 343 Ton

Indirect Benefits

1. Motor Heating Loss Reduction
2. Motor Repair & Maint. Cost Reduction
3. Per Part Manufacturing Cost Reduction
4. Environment CO2 Emission Reduction

Horizontal Deployment:- HD Done at UNO Minda Kyoraku Group and Energy Saving 8,77,952 KWH/Year and Cost Saving 70,23,620/Year and CO2 emission reduction by 720 Ton / Year



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THANK YOU