

**ACE MANUFACTURING SYSTEMS LTD,
BANGALORE.**



**CII NATIONAL AWARD FOR
ENVIRONMENTAL BEST PRACTICES- 2023**



Company Profile

- Over 25 Years of Experience
- Over 18000 machines performing all over INDIA
- Nearly 800 machines performing overseas successfully
- Over 70% repeat customers
- Over 2500 tooled-up solutions provided
- Over 70 Indigenous Designed Products



OUR CUSTOMERS



Project Name:

Reduction of coolant & water consumption by implementing the Coolant Recycle System & Implementation of Hydraulic Oil Filtration System

Objective of Project:

- 1. To improve the life of coolant & reduction of water and oil consumption.**
- 2. Reduction of hydraulic oil consumption & improving the NAS test value.**

Benefits of Project:

- 1. Minimize Environmental Risk due to generation of hazardous coolant waste.**
- 2. Minimize Consumption of Water for fresh coolant preparation and cleaning of coolant tank during machine dispatch.**
- 3. Reduced coolant cost per machine.**
- 4. Conservation of Natural Resources.**

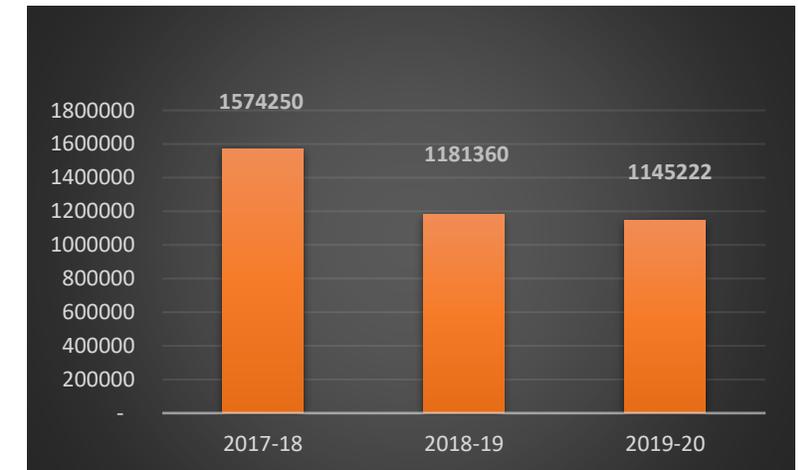
Background of Project



Water Consumption in Ltrs



Coolant Oil Quantity in Litres



Waste Disposal Quantity in Kgs

Water Consumption was more

The coolant oil Consumption was more.

Waste Disposal Quantity was more

Before



Used coolant Stored in under Ground tank near Dispatch area

Disposal to Authorized person From KPCB



After



Fresh Coolant

Used Coolant

Disposal At machine Dispatched Area

Under Ground Pipe line

Used Coolant

Used Coolant collection Tank Capacity-12KLD

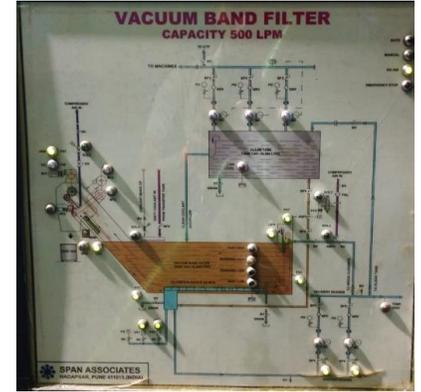


- Tramp oil remove by using vacuum pump and pH and concentration maintaining
- 2 Hr churning Before sending CRS

Fresh Coolant



Coolant Recycle System Capacity -30KLD



Project Journey

2018

Initiation of the project : Justify the need of the project, advantage of project, ROI

Study on project outcome, timeline for completion of project and Budget approval

2019

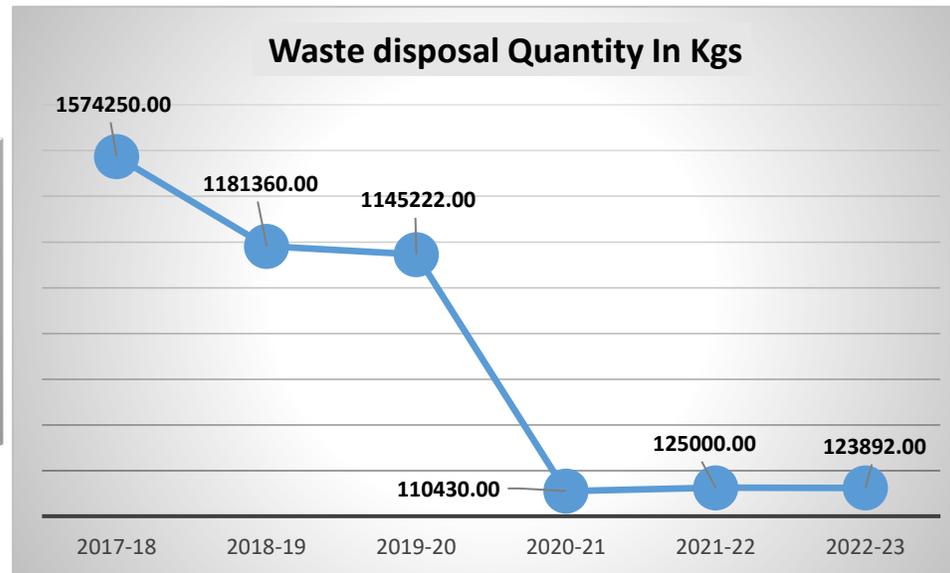
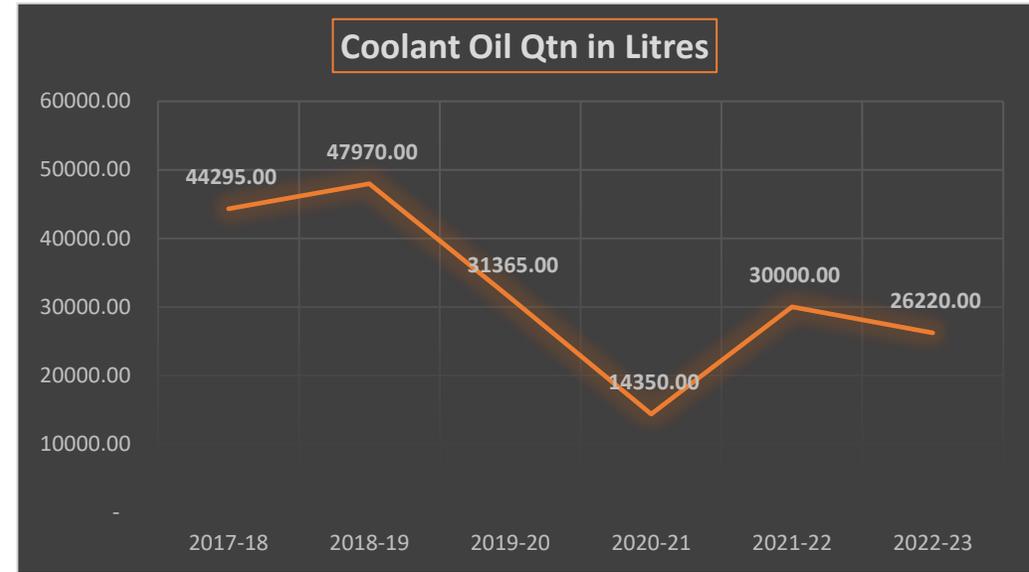
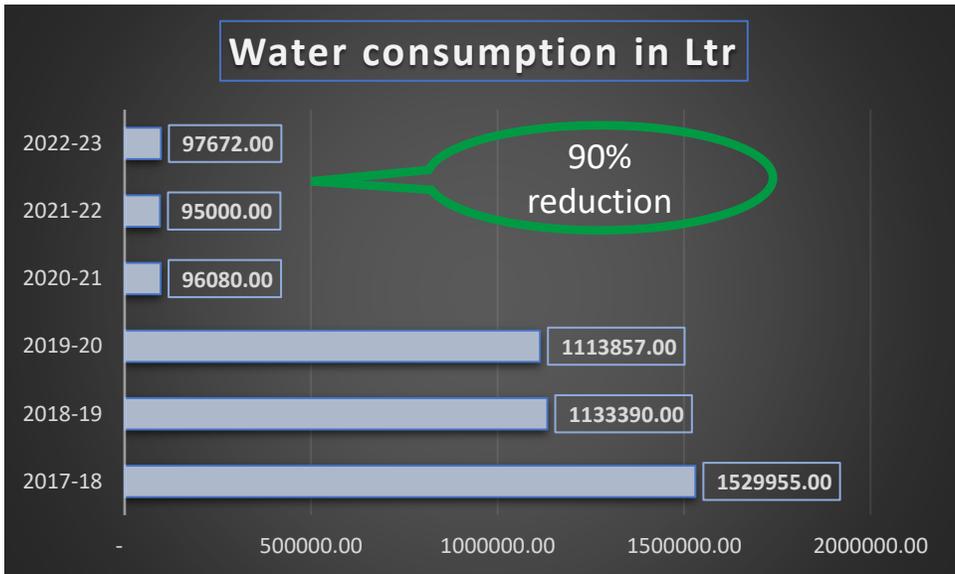
Collection of quotation from multiple suppliers & Finalising the best supplier and model

Installation of coolant filtration system & trial run for 6 months

2020

Completion of project & sustenance of project

Tangible Benefits



Total saving From Last 3 year

Water - 42,99,000.00 Litre Rs = 3,86,910.00

Coolant Oil - 54,000.00 Litre Rs = 1,05,84,000.00

Disposal cost - 11,80,503.00 Kgs = Rs = 29,51,258.00

INVESTMENT
63.57 Lakhs

ROI
1.25 Years

Intangible Benefits

- **People :**
 - Manually Coolant filling in machine coolant tank Activity.
 - coolant tank cleaning activity.
 - Waste disposal activity tedious involves Safety Risks
- **Moral / motivation:** More ownership through learning
- **Skill up gradation :** More in-depth analysis by team and learnings
from experimentation

Uniqueness of the Project

Category	Other Industries	AMS
Coolant management System	CRS to machine and machine to CRS (Online process)	<ul style="list-style-type: none"> • In our case coolant from CRS is Pumped through pipe line to machine assembly shop, coolant will be filled using collection tank. • After trial testing on machine the used coolant will be drained at coolant tank cleaning area which is connected to receiving tank at CRS. • After removing the floating tramp oil the coolant is shifted to CRS for filtration And stored in CRS final tank for next use.
Bacteria growth	Low Because of always coolant in churning CRS to Machine	High Minimum 15 to 30 day coolant stagnant in tank so bacteria growth is more
Rusting Issue	Low	More
Solution		Action plan : To reduce bacteria growth : Running the machine 1 Hour Daily. Provided Aeration for Long stagnant machine. SOP for coolant management in machine. PH and concentration maintain. Regularly Coolant and water test done.

Challenges faced

- Uncontrolled Bacteria growth in machine coolant tank
- Machine getting rusty
- In our case coolant is stagnate in machine by 15-30 days. Due to this bacterial growth will be high.
- Using the recycled coolant for cleaning the coolant tank. Earlier which was clean by fresh water.
- Customized SOP & Specialized actions during the Lockdown Period to ensure health of the Centralized Coolant Systems

Before	After
	
More Bacterial Growth	Bacterial growth eliminated

Before	After
	
Coolant prepared & circulation by separate tank	Coolant preparation is centralized & supply by pipelines

Before	After
	
Lab Test: Total bacteria count during last 48 hrs	Lab Test: Total bacteria count during last 48 hrs

Before	After
Coolant tank cleaning fresh by Water	
	Coolant tank cleaning by recycle coolant

Test report samples

S. No	Parameter	Reference Method	Specification	New + Old Emulsion (10%)	Emulsion Existing from Machine	Emulsion from CRS
1	Appearance	AM-01	Bluish opaque emulsion without cream particles/oil separation	White Opaque emulsion with oil separation	White Opaque emulsion with oil separation	White Opaque emulsion with oil separation
2	Odor	AM-02	Characteristic	Foul smell	Foul smell	Foul smell
3	RI-as such	AM-34	5.6-6.0	Not Visible	Not Visible	Not Visible
4	pH-as such	AM-21	9.2-10.2	5.98	6.09	6.12
5	Foam-as such	AM-22	30 sec Max	1 sec	1 sec	1 sec
7	RI after centrifuge	AM-34	To be Reported	1.0	1.0	1.0
8	Total Bacterial Count-as such- 48 Hrs.	AM-75	Colonies should not be observed	10 ³	10 ³	10 ⁴
9	Centrifuge Test	AM-71	Should be free from oily or foreign particles	Top Separation & Bottom Precipitation Observed	Top Separation & Bottom Precipitation Observed	Top Separation & Bottom Precipitation Observed
10	Alkalinity Concentration	AM-38	For 5%≈ 0.006 M	0.0045 @3%	0.0040 @3%	0.004@3%
11	FTIR	AM-10	Meet the standard	96.88%	96.79%	96.22%

Images:

New + Old Emulsion (10%)



Emulsion Existing from Machine



Emulsion from CRS



Centrifuge:

New + Old Emulsion (10%)



Emulsion Existing from Machine



Emulsion from CRS



Total Bacterial Count:

New + Old Emulsion (10%)



Emulsion from Existing Machine



Emulsion from CRS



ITW India Private Limited, Plot No. 34 to 37, Phase-2, IDA, TSHC, Pashamylaram, Sangareddy Dist.- 502 307, Telangana State., India.
Telephone: +91 - 8455 - 224700, 01, 03, 04, 06, 07, 08. Facsimile: +91 - 8455 - 224705. Website: www.itwchemin.com
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Corporate Identity Number (CIN): U32201HR1979PTC038643
Speciality Chemicals & Lubricants Manufacturers



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Speciality Chemicals & Lubricants Manufacturers

Before

S. No	Parameter	Reference Method	Specification	WS500N(23B144)
1	Appearance	AM-01	Bluish green clear liquid	Bluish green clear liquid
2	Emulsion stability 5 % 400 ppm Hard water	AM-05	Bluish opaque emulsion without cream particles/oil separation	Bluish opaque emulsion without cream particles/oil separation
3	Foam Test 5 % D.M Water (Max sec)	AM-22	30secs	29secs
4	R.I of 5 % Emulsion	AM-34	5.6-6.0	5.8
5	Sp. Gravity @ 27°C gm/ml	AM-24	0.890-0.920	0.919
6	pH 5 % D.M Water	AM-21	9.2-10.2	9.21



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Images:

Emulsion stability:

DM water



500 ppm water



After

Observation:

- All parameters are within the Specification Limit.

Analyzed By

Neha
Executive-QC

Neha

Verified By

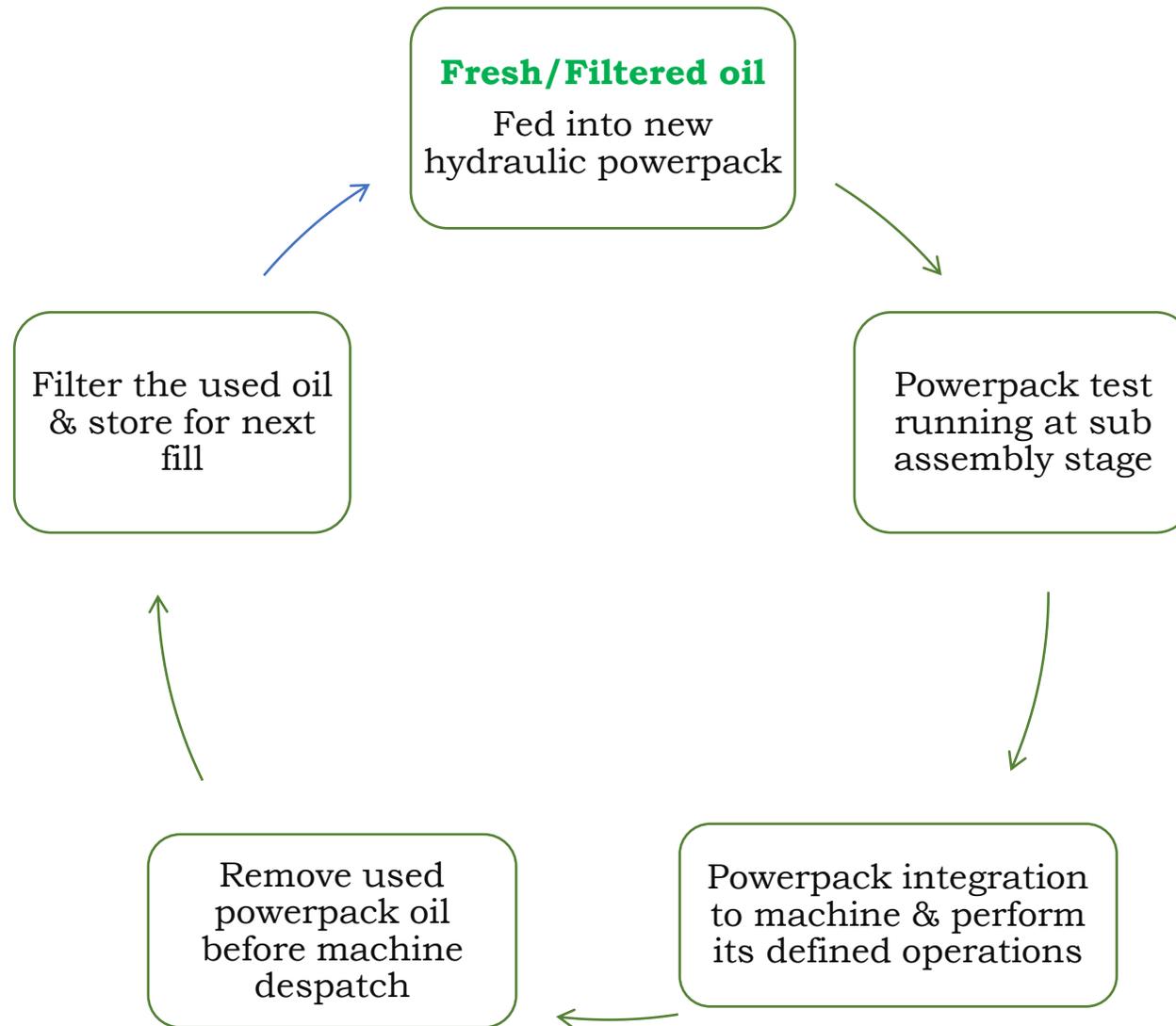
Mary Josephine
Manager - QA

Mary Josephine

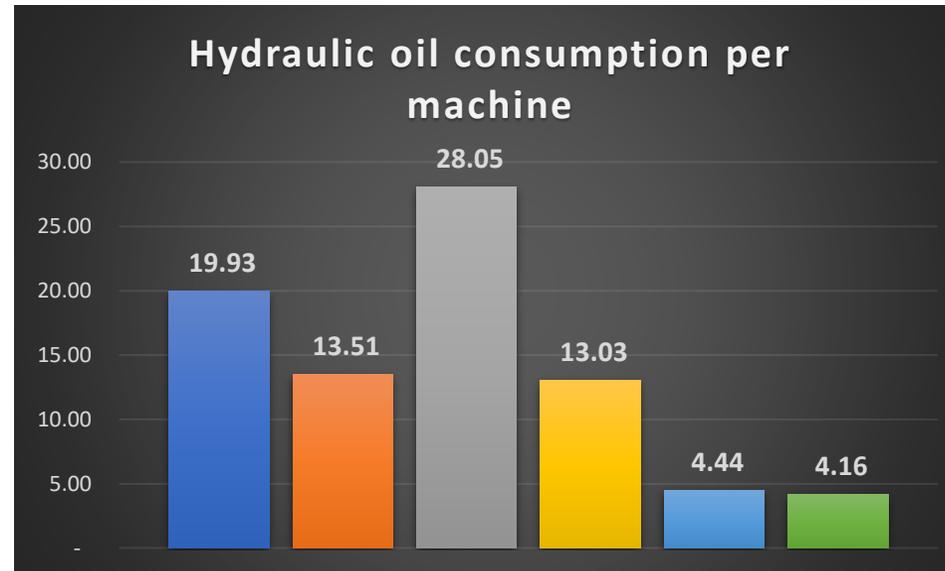
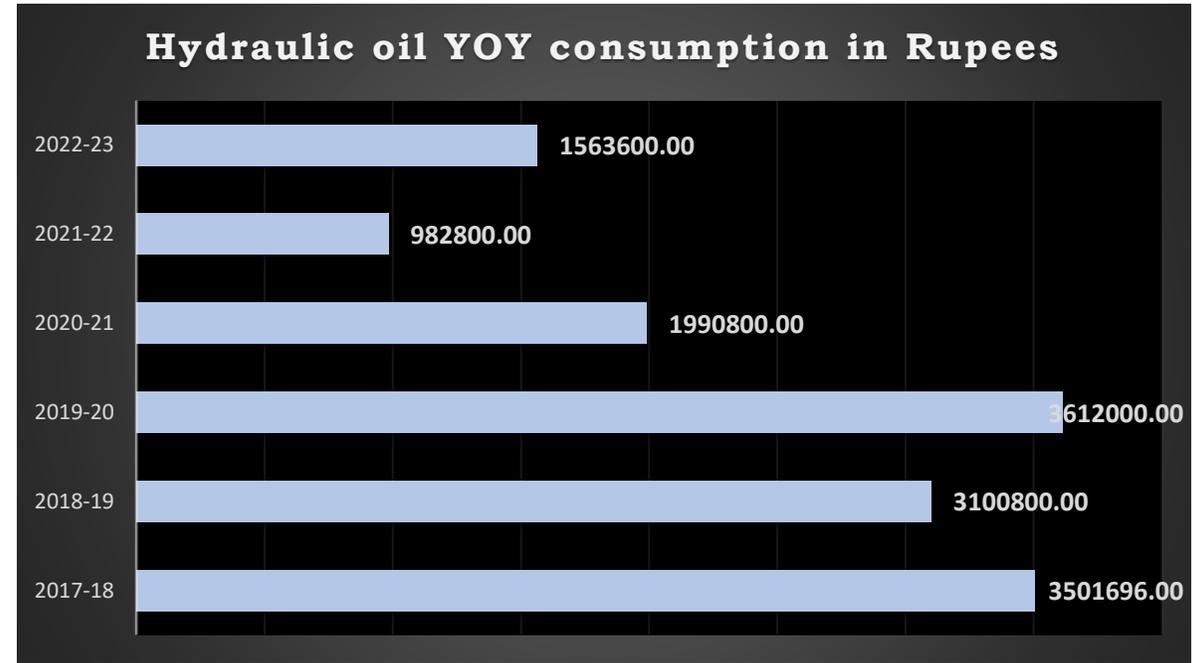
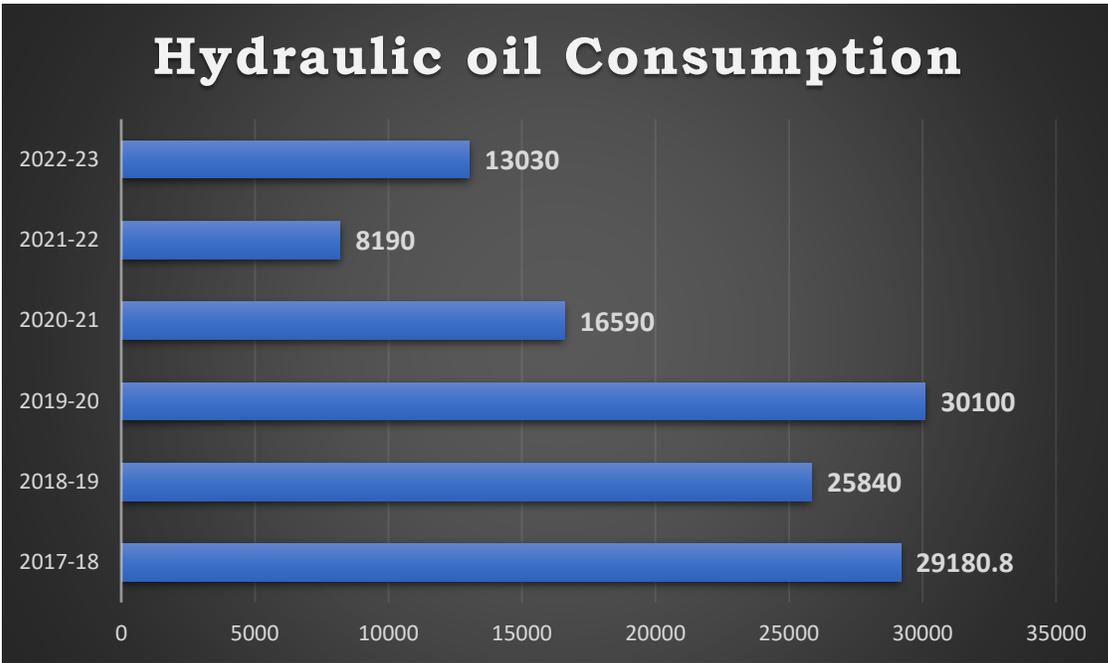


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Hydraulic Oil filtration System



HYDRAULIC OIL FILTRATION SYSTEM TANGIBLE BENEFITS

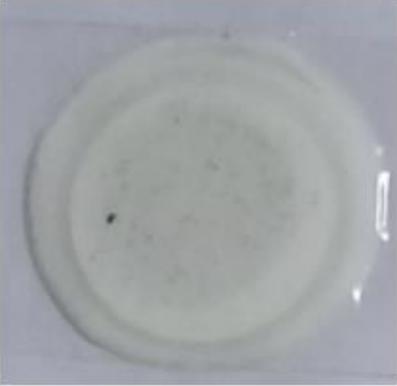


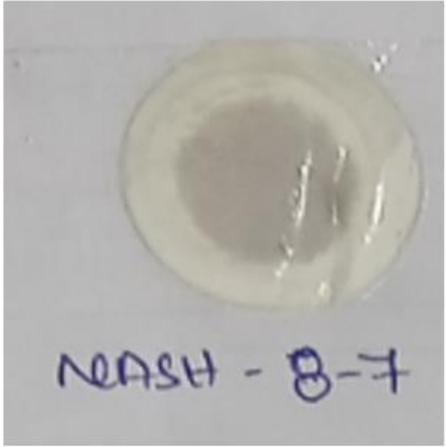
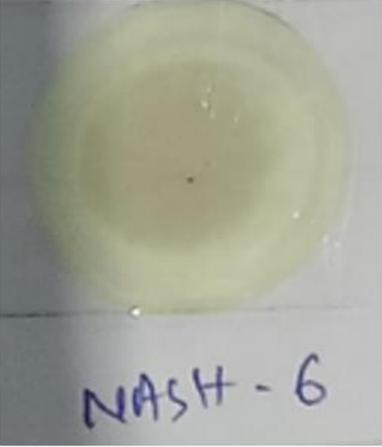
Uniqueness of the Project

- Filter element is CELLULOSE material, it is Bio degradable.
- Triple R filters effectively clean the oil (down to NAS 6 or ISO 15/12) and stabilize the oil condition.
- Triple R has proven that 50,000 hours of operation, or oil usage for up to 10 years can be achieved while maintaining all the oil properties.
- 3-in1 Oil Filtration effectively removes all the solid particles, absorbing water and eliminating sludge and oil oxidation residues.
- Significant increase of oil life and a significant reduction of oil consumption and oil disposal cost.
- Longer life of all hydraulic components, pumps, servo-valves and other equipment.
- Low running cost, easy installation & maintenance

Challenges faced

- We are the manufacture of VMC & HMC Machining centre in India.
- NAS class greater than 7 will lower the efficiency of hydraulic system
- Hydraulic unit filter & pump failures.
- Significant increase of maintenance expenditures

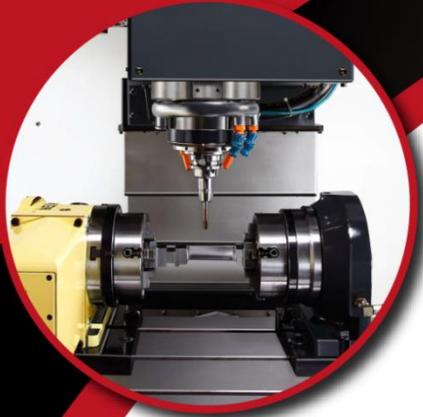
BEFORE	AFTER
	
NAS class 10 to 12	NAS class 6 to 7

Regular filtration system	RRR filtration system-
	
NAS class 8 to 7	NAS class 6

AMS[®]

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AceMicromatic[®]
Group



Thank You

- **To the delegates**
- **To the organizers**
- **To the jury**
- **To all concerned**

