



Products For a Better Environment

**Manufacturers of Recycling Equipment
& Industrial Wastewater Treatment Systems**

The Washer Washer

... a simple and green approach to recycling water-based cleaning solutions! How to save money, improve parts' cleanliness, minimize rejects, increase salt spray, reduce waste hauling, cut utility bills & lower chemical usage – by extending the life of your aqueous cleaners.

But First:

Let's start by defining your oils/ soils,
so we know how to attack those contaminants!

Beginning with your oils, are they:

- All/Part free oil? **Skimmers / Shop Vac.**
- All/Part dispersed? **Coalescers / Other O/W Separators.**
- All/Most/Any emulsified? **Chemicals / Membranes.**

And how about your soils, are they:

- Large or small? **Conventional Filtration – Bags, Cartridges, etc.**
- Primarily/exclusively ferrous or magnetic? **Magnetic Filters.**
- Abundant or few? **Clarifier / Settling Tank / Side-Stream Filters.**
- Dissolved or particulate? **Chemicals / Membranes.**

Oil Skimmers

Floating Suctions

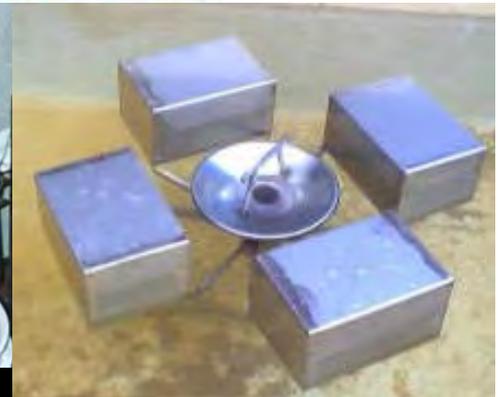
Ropes

Tubes

Mops

Belts

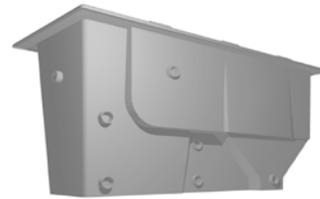
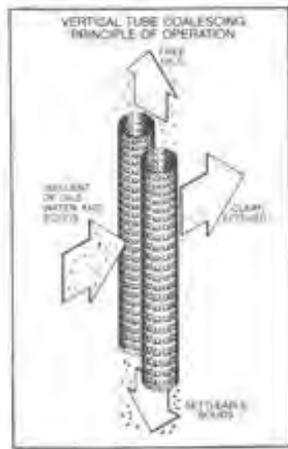
Etc.



Coalescing Oil/Water Separators

Offered In A Variety Of:

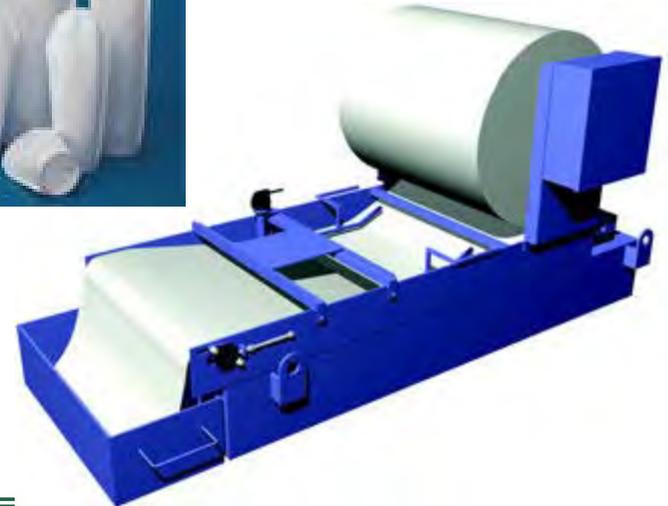
- Tank Configurations
- Tank materials of construction
- Media spacing
- Media materials of construction



Liquid/Solids Filters



Indexing Roll Media
Magnetic
Cartridge
Screen
Basket
Bag



And Now... Membrane Filtration

- What can this technology / Arbortech do for you?
- How the technology works
- Typical cleaning process – do we understand your needs?
- How membrane technology has helped your peers
- Equipment in coating applications
- Results / Benefits
- Key facts
- Questions / Answers

What Does Arbortech Do?

We design, manufacture and service equipment & systems to recycle aqueous cleaning solutions, with benefits like:

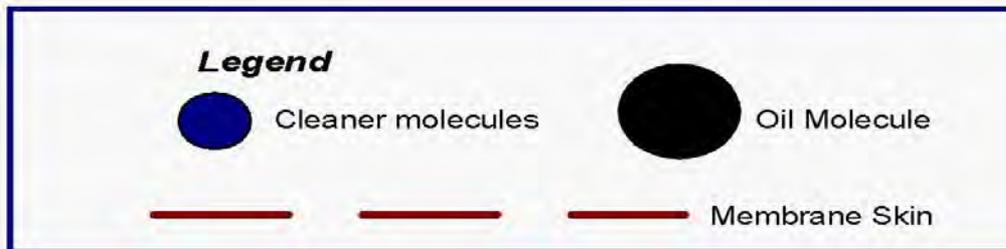
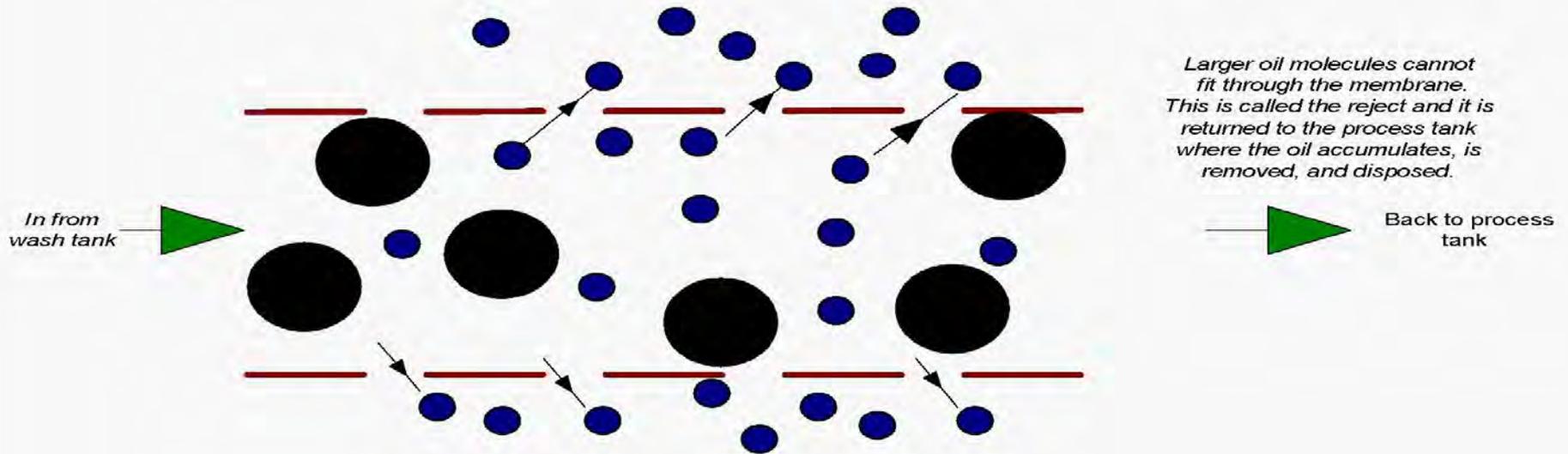
- Helping you meet local regulatory and federal EPA compliance standards
- Concentrating your waste for easier, more efficient, less expensive and maybe less frequent haul away
- Improving process control by washing your parts in consistently high quality, continuously “treated” cleaning solution
- Saving you money; payback ~1 year
 - less labor, water, energy needed
 - cleaning chemistry usage slashed



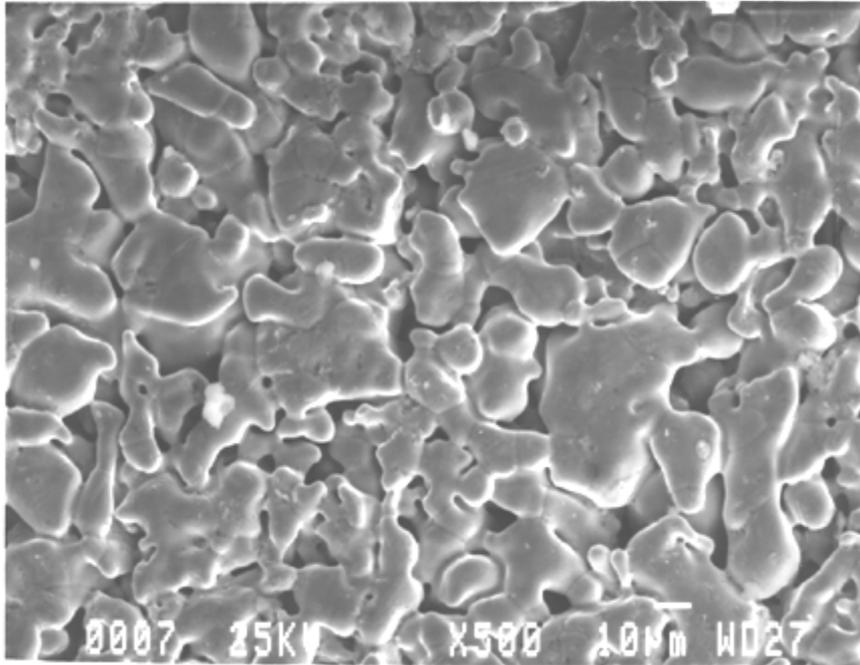
How Does It Work? **MAGIC!**

The Washer Washer Membrane - How it really works.

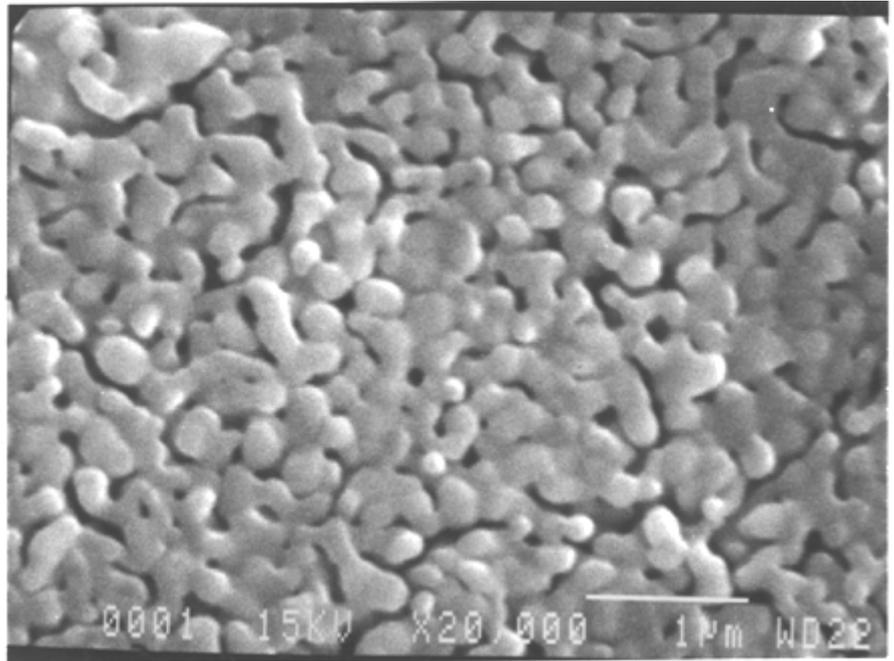
*Small cleaning solution molecules pass through membrane.
This recycled solution is called permeate and it
is returned to your wash tank.*



Membrane Construction



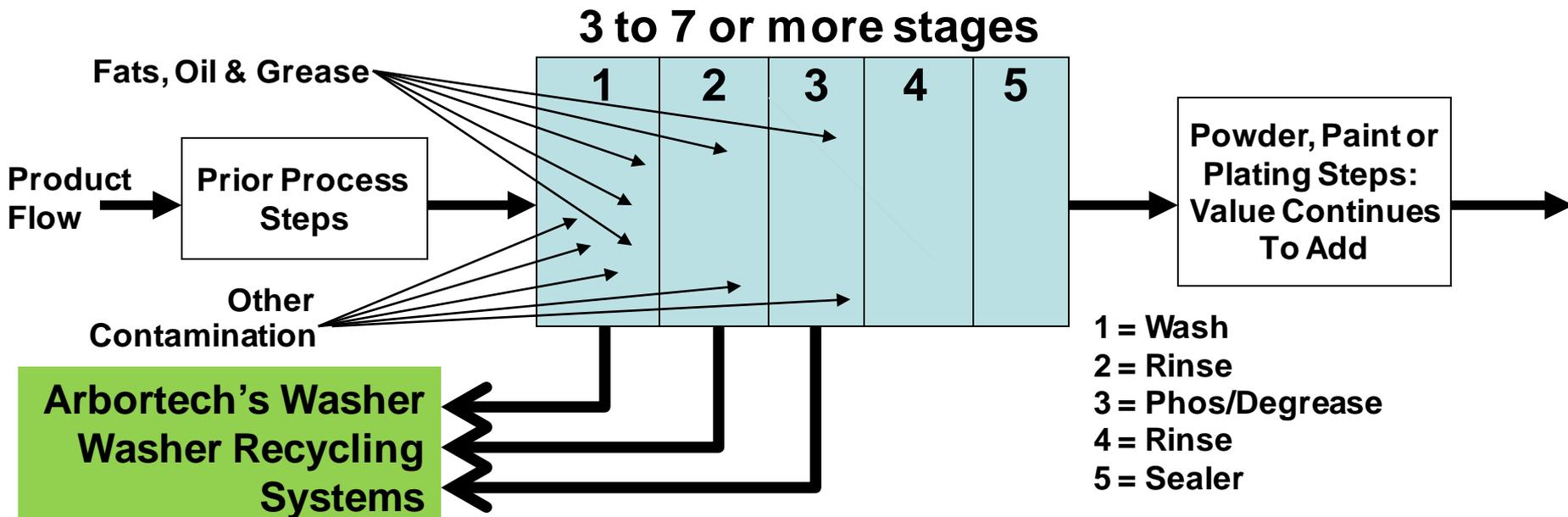
**316L SS Substrate
(500X)**



**TiO₂ Membrane
(20,000X)**

- Rugged – for tough industrial applications – no harm if dropped, kicked around or over-tightened**
- Temperature range compatibility – up to 200+ degrees Fahrenheit – without thermal cracking**
- Thrives under both highly acidic and extremely caustic conditions, pH range = 0-14**
- Easily serviced, fast membrane exchanges / CIP... with almost anything**
- Long-lived – a decade so far without a single field failure**
- Capable of being back-pulsed or deadheaded**

Multi-Stage Cleaning Process



Arbortech's Washer
Washer Recycling
Systems

Results/Savings:
Payback ~ 1 year



*The difference:
it's as clear as... night from day!*

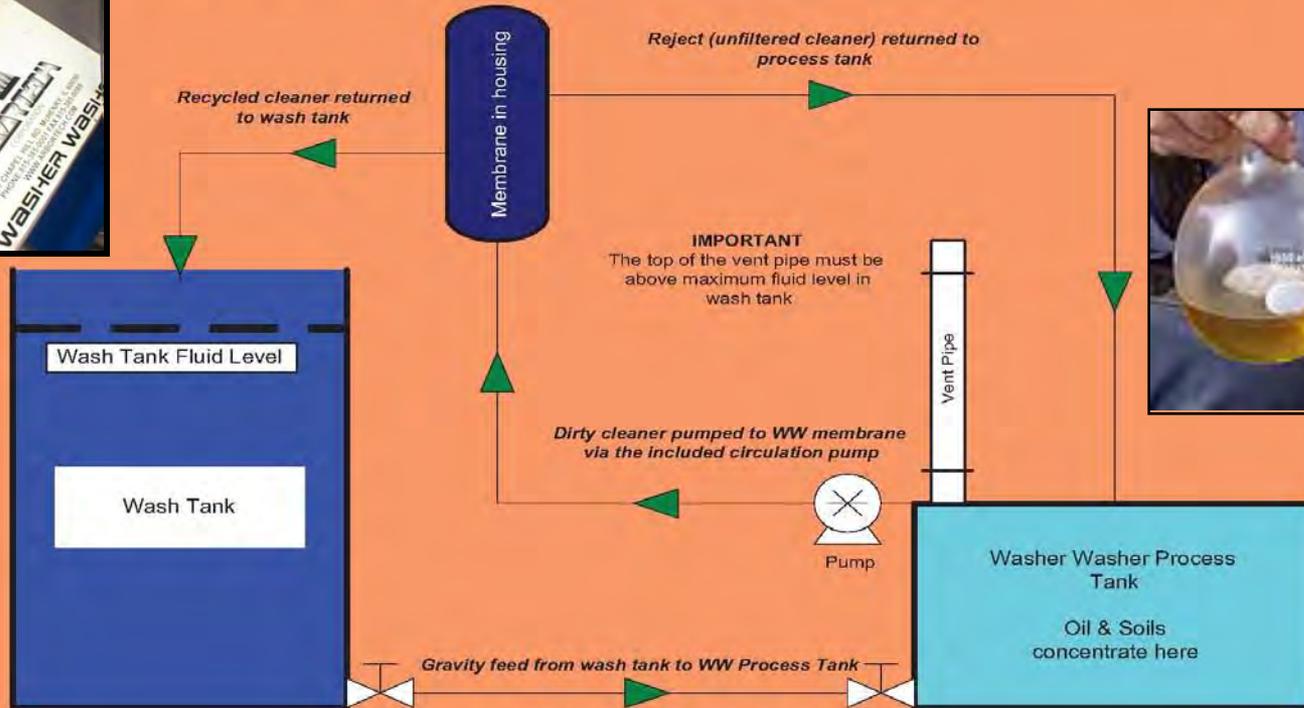
Cleaning Process Issues:

1. Cleaning solution dump / recharge frequency?
2. Line down?
3. Costs associated with change-out?
4. Quality issues related to cleaning process?

Solving Your Cleaning Issues



Washer Washer Schematic



Washer Washer Flow Diagram

Dirty cleaning solution is continuously gravity fed to the WW process tank where it is pumped through a membrane. There, portions of the dirty cleaner are purified (recycled) by passing through the S.S./TiO₂ membrane and sent back to the wash tank. This recycled cleaner is called permeate. The remaining, uncleaned or reject solution is returned to the WW process tank. This is a perpetual process - continuous removal of oily waste from the cleaner tank, 24/7, and greatly extends the useful life of the cleaning solution. The process tank is periodically emptied of concentrated oily waste.

Problem? No Problem...

A Midwest engine manufacturer suffered paint defects in its chromate / e-coat paint line in 2005. The symptom was a series of pin-hole dots, all the way down to the surface of the substrate, raising concerns over corrosion protection. Daily testing eventually led to the discovery that cleaning chemistry additions necessary to maintain sufficient free alkalinity to clean the parts raised total alkalinity so high that a white residue was deposited on the parts from the increasing level of spent chemistry. As a result, these cleaning tanks had to be dumped and recharged bi-weekly.

Arbortech technology removed the spent fractions, oils and soils, without disturbing the solution's cleaning effectiveness; in fact, it improved! With recycling equipment in place, first year benefits included:

- Wash tank life nearly tripled
- Cleaning chemistry purchases dropped significantly
- Waste treatment costs fell from less frequent tank dumps
- Savings experienced in water usage, energy and labor
- Payback was essentially 12 months – specifically...

Recycling Results

(verified & published...)

Chromate/E-Coat Paint Line - Midwest Engine Manufacturer

2005 Costs

Client Documented Savings

R.O.I.

R.O.I. = Costs of Implementation/Benefits

R.O.I. = \$45,592/\$45,010.66

R.O.I. = 1.01 years

Washer Washer Systems



Floor Scrubber Recycler: Compatible With Virtually All Floor Wash Solutions

Temperature from ambient to 200°F
Entire pH range @ 0-14

Small Footprint; Fits
Most Anywhere

88" x 41" x 90"H

Power It Up;
Start Saving Money

3/60/230-460 electrical service

Floor Scrubber Recycling Systems



Before / After
...seeing is believing; let us prove it!

Benefits

- Decrease Chemical Usage
- Reduce Hauling Charges
- Minimize Waste = P2
- Extend Cleaner Life
- Conserve Water
- Meet EPA Compliance!



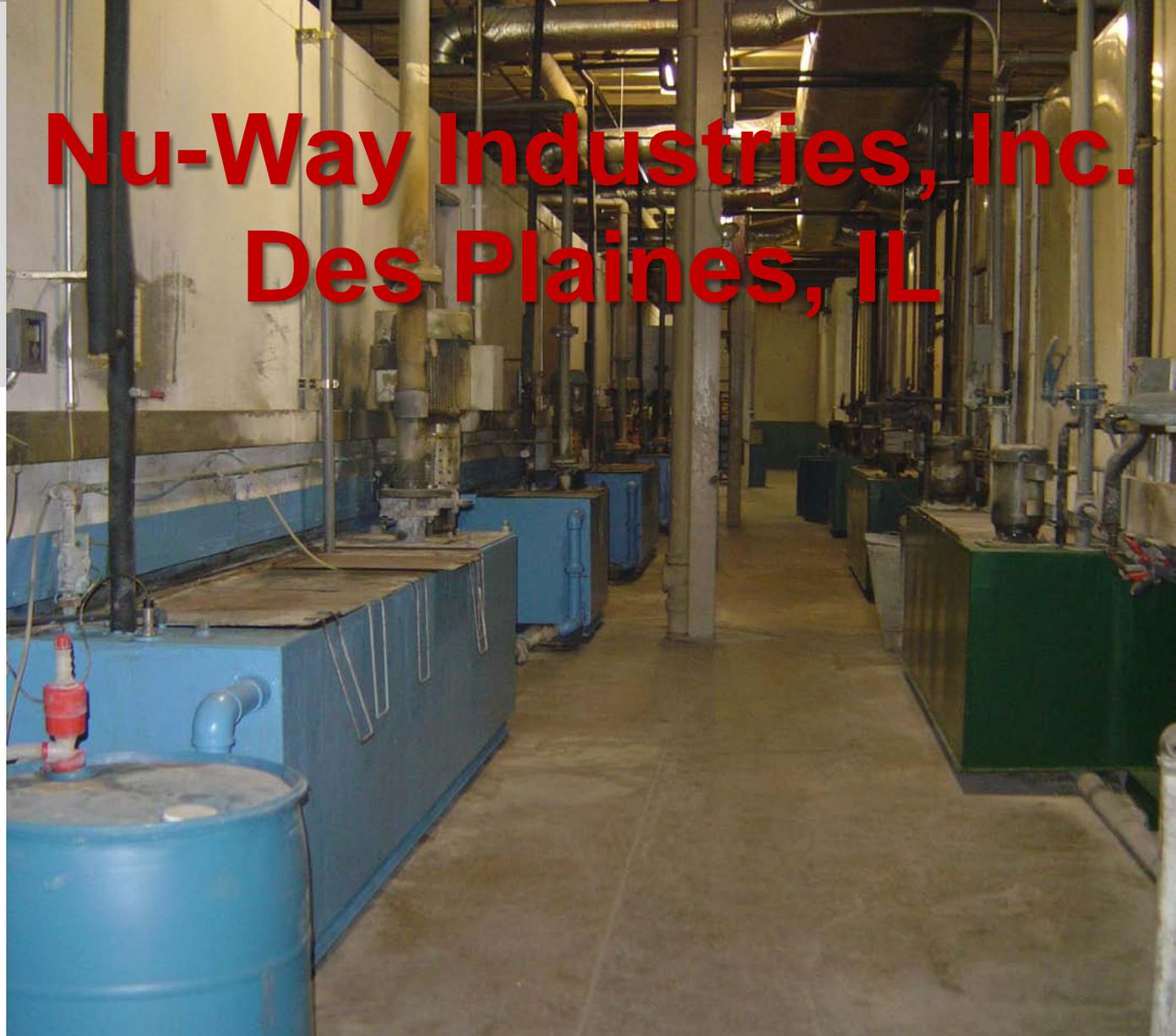
...GREEN CLEANING
SAVES MONEY!



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Nu-Way Industries, Inc. Des Plaines, IL



With high levels of zinc, fats, oil and grease in the cleaner and other process tanks in its 2 powder lines, this coater was forced to consider options for wastewater treatment. Membrane filtration was the solution for their solutions.

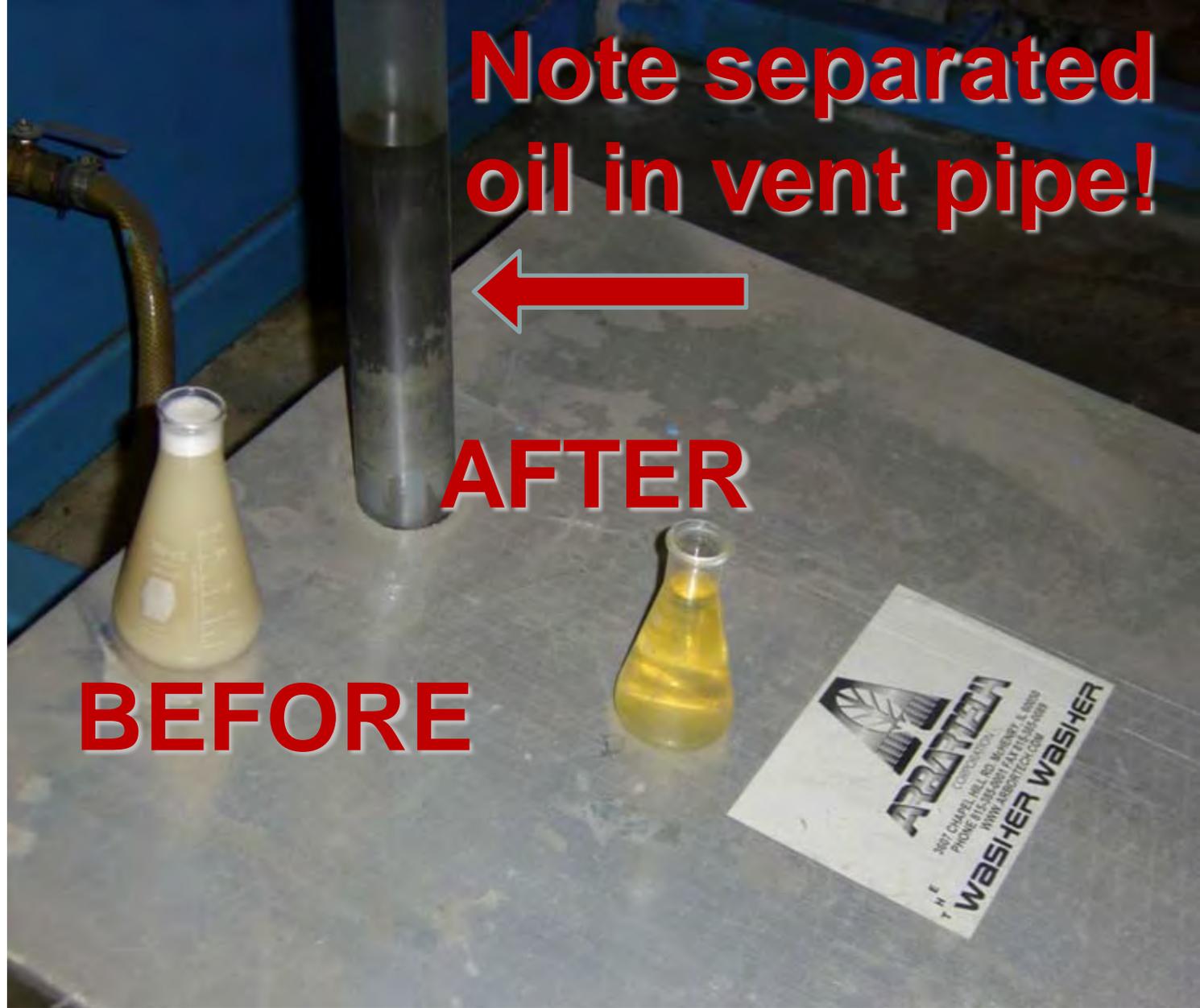
Joe Bappert, facilities manager at Nu-Way, says that they chose membrane filtration as an alternative to a waste treatment system that would have cost more than \$150,000 and taken up considerable floor space with no return on investment. Among the benefits of operating a recycler, he says, “We not only trapped the oils in our solution, but we also significantly reduced the zinc count in our alkaline cleaning tank solution!”



“Turbidity in the tank is lower; our process operators find it much easier to clean the tank; we have better bath quality and have improved the bottom line,” says Bappert. Levels of zinc had stopped Nu-Way from discharging their overflow, but with the recycler, they no longer have a problem.



Although zinc was not a primary target for the recycler, it turned out that enough zinc got tied up with oil removed from the washer solution to keep the cleaner and the rest of the stages in the line much lower in zinc levels.



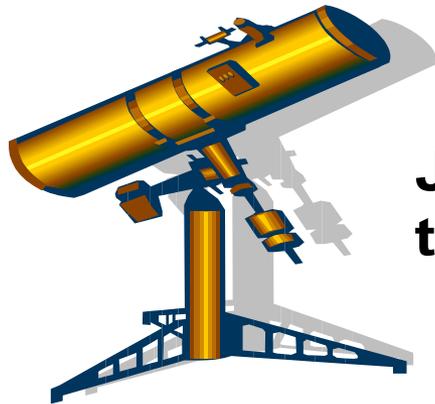
Results & Benefits

- Extended cleaning solution life, often 4-6X or more
- Fewer washer-related rejects – 50%+ reduction in reworked parts = higher yields
- Substantial savings in cleaning chemistry purchases – as much as >80% reported
- Concentrated waste, therefore disposal fees drop
- Lower dump/recharge labor costs – threefold+ reduction in hours
- Cut manufacturing line down situations
- **Short payback time – usually ~1 year**



Pilot Project Results

Technology
Evaluation
Highlights



January 2003
to June 2003

Oil & Grease

= 88% Removal Rate

Suspended Solids

= 93% Removal Rate

Cleaner Chemical Usage

= 64% Reduction

Wastewater Generation

= 94.5% Reduction

W.W. & Cleaner Costs

= 78% Reduction

Washer-Related Rejects

= 51% Reduction



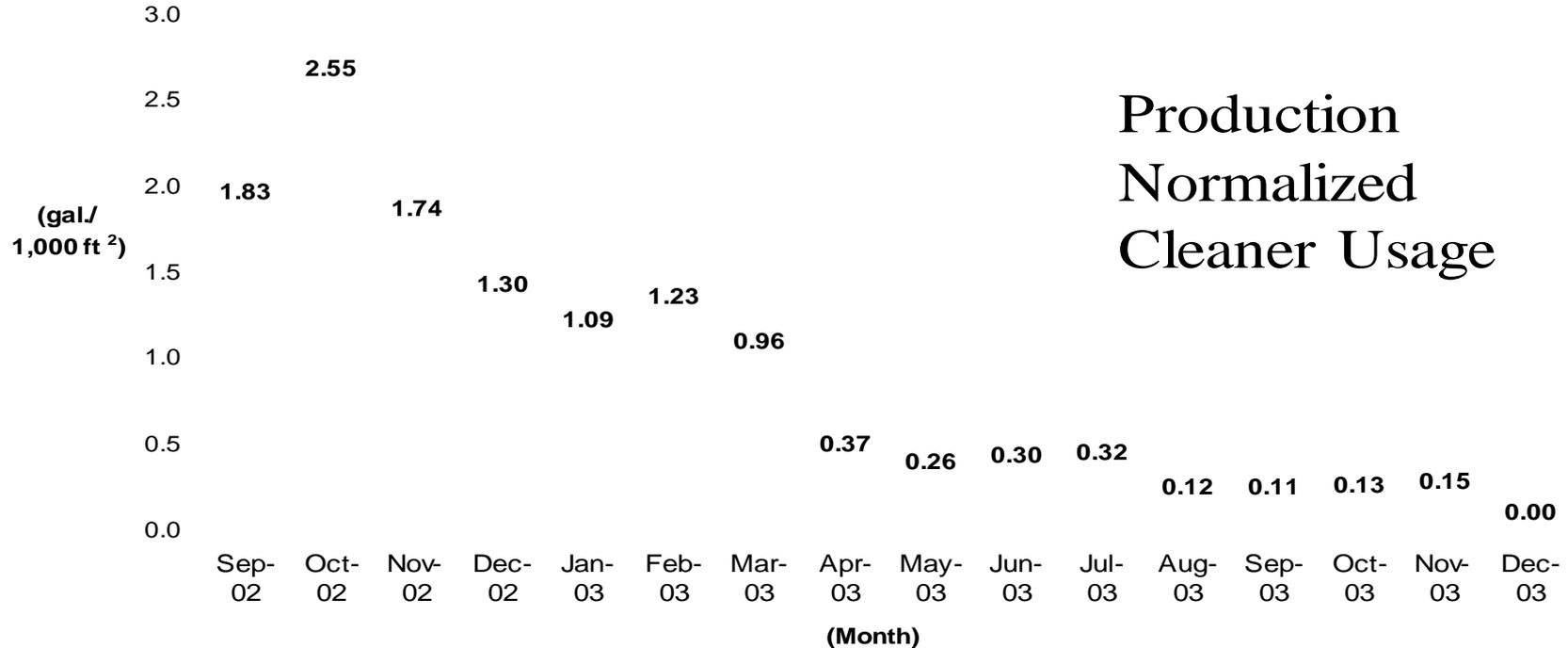


Long-Term Results

Before Project

During Piloting

After WW Purchase



Key Arbortech Facts

- Washer Washers in operation since 2000
 - **NO field failures of filters!**
- Awards
 - Illinois Governor's Pollution Prevention Award
 - CMC Manufacturer That Counts
 - Export Achievement Certificate
- Over 100 systems in the field, including several Fortune 500 companies



Questions & Answers



What's with the hair?

THE NEW COLONY SIX

"The Sound Heard Round The World"



Ray Graffia Pat Mel

Chic James

The sensational sound of "I Confess" brought the beginnings of fantastic success to Chicago's New Colony Six.

Combining basic, raw garage rock with six parts of incredibly diverse musical talent, the New Colony Six broke through the barricades of convention and dared to venture into new realms of creativity and self-expression.

Fall 1965 sessions at Sound Studios, 230 N. Michigan Avenue, produced the Colony's first 45, "I Confess" b/w "Dawn Is Breaking." Released as Centaur 1201, "I Confess" hit the airwaves in November 1965. On February 4, 1966, the record

On August 5, 1966, *Breakthrough* debuted as the featured album on WLS Silver Dollar Survey. Boasting nearly all original compositions, the New Colony displayed some of the most unique and innovative sounds ever laid to wax.

More than 35 years later, *Breakthrough* still retains a life all of its own. Original copies fetch hundreds of dollars, but most importantly, the music continues to amaze, entertain and inspire. Simply stated, The New Colony Six created music for yesterday, today, and certainly tomorrow. Now that's a "Breakthrough!"

- Jerry Schollenberger

WLS
PERSONALITY RADIO IN CHICAGO
SILVER DOLLAR SURVEY
CHICAGO'S OFFICIAL RADIO RECORD SURVEY

FEBRUARY 4, 1966

THIS WEEK	LAST WEEK	PLAYED
1. Lightning Strikes	10	10
2. I Confess	1	10
3. Barbara Ann	2	10
4. We Can Work It Out/Day Tripper	3	10
5. Sounds Of Silence	4	10
6. Lies	5	10
7. No Matter What Shape	6	10
8. My Love	7	10
9. These Boots Are Made For Walking	8	10
10. Sandy	9	10
11. I Fought The Law	11	10
12. Andrea	12	10
13. Zebra The Break	13	10
14. California Dreaming	14	10
15. Georgiana	15	10
16. She's Just My Style	16	10
17. My World Is Empty	17	10
18. Jenny Take A Ride	18	10
19. I See The Light	19	10
20. Second Hand Rose	20	10
21. At The Scene	21	10
22. Ballad Of Green Berets	22	10
23. Big Bright Eyes	23	10
24. It Was A Very Good Year	24	10
25. Answer To My Prayer	25	10
26. Batman	26	10
27. What Now My Love	27	10
28. Listen People	28	10
29. Uplight	29	10
30. Hard Days Night	30	10
31. Going To A Go-Go	31	10
32. Don't Mess With Bill	32	10
33. Long Limb Our Love	33	10
34. When Liking Turns To Love	34	10
35. Homeward Bound	35	10
36. Crying Time	36	10
37. Night Time	37	10
38. My Ship Is Coming In	38	10
39. Hide & Seek	39	10
40. My Baby Loves Me	40	10

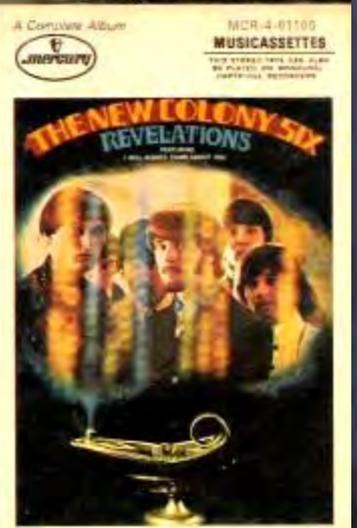
FEATURED ALBUMS
JUST LIKE US! — PAUL REVERE & THE RAIDERS — COLUMBIA
FROM THE WRISTS DOWN — BUDDY GRECO — EPIC

For music "East of Midnight"
Don Phillips
Midnight to 5 A.M. — Tuesday thru Sunday

WLS • DIAL 890 • 24 HOURS-A-DAY
● AN ABC OWNED RADIO STATION ●



Pat and Ray in the studio.



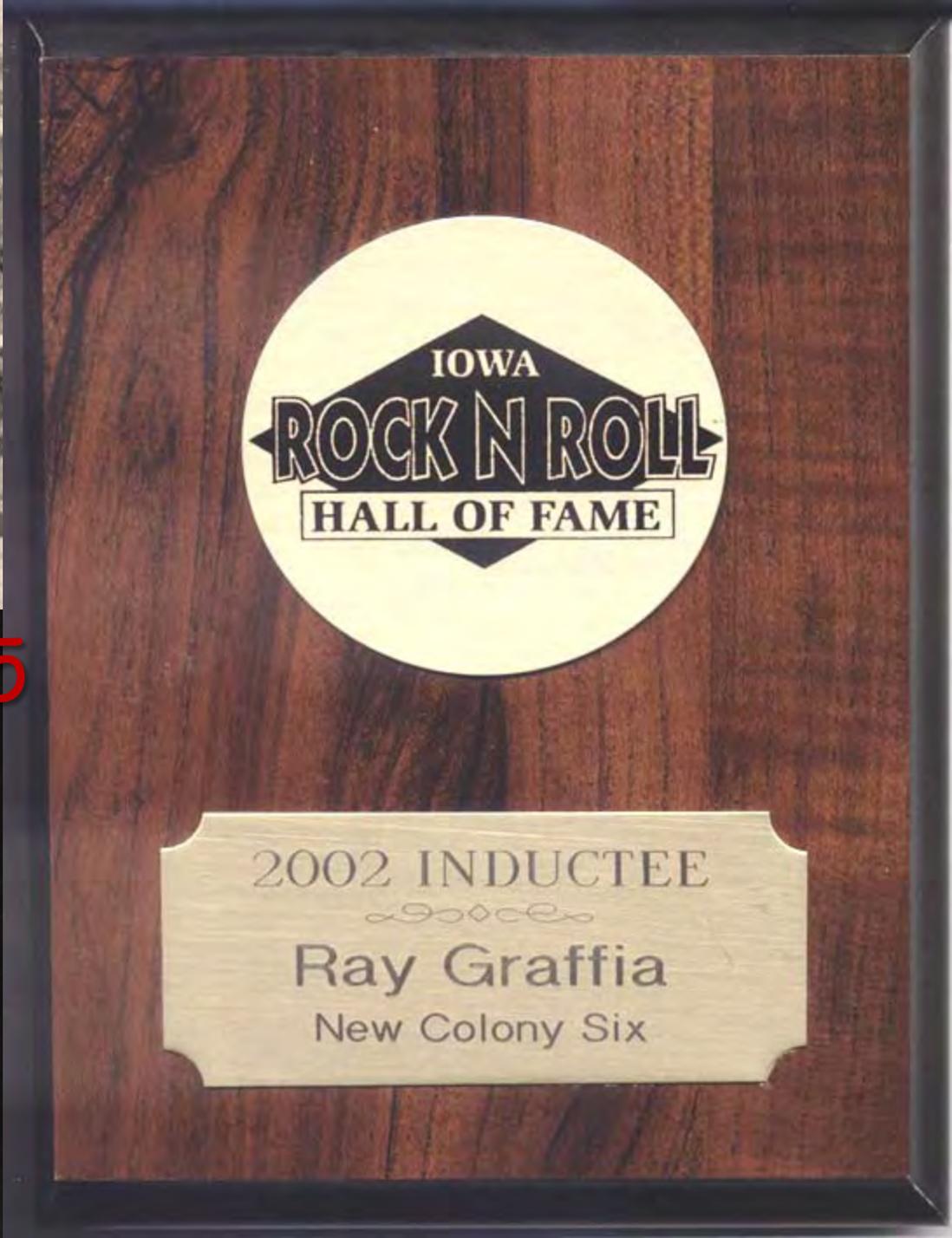
This survey is compiled each week by WLS Radio/Chicago from reports of all record sales gathered from leading record outlets in the Chicago area. Record play on the SILVER DOLLAR SURVEY hits daily from 2:00 to 10:00 P.M. *Denotes record first heard in Chicago on WLS.



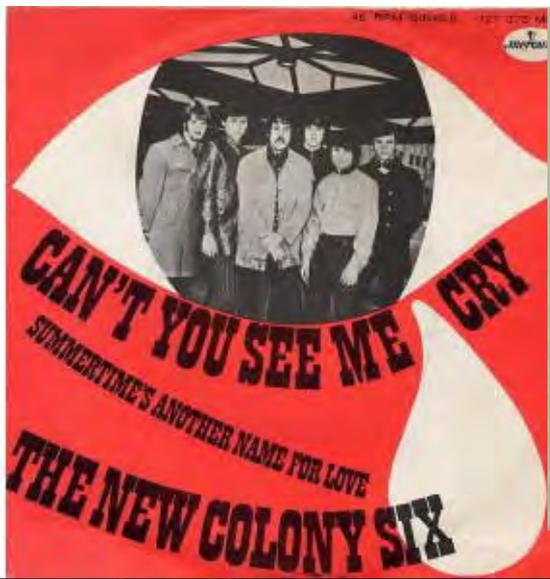
2009



1965



For more info on oily WWT or membrane filtration, contact me @ Arbortech (for '60s rock & roll you can contact me too!)

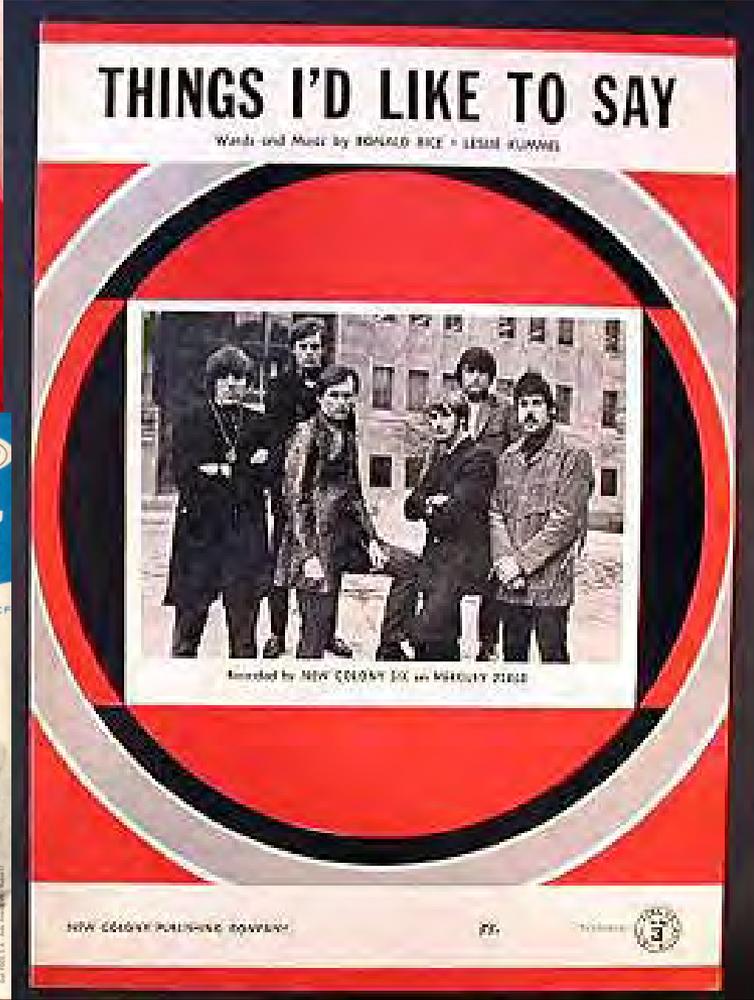


WLSRADIO 89 abc HIT PARADE

MARCH 25, 1968

THIS WEEK	LAST WEEK
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HEAR THE RON RILEY SHOW
MONDAY THRU FRIDAY



<http://www.washerwasher.com>

<http://www.myspace.com/colonyjr>