



Tackling Oils, Soils and Recycling for Wastewater Treatment & Aqueous Cleaning Operations...



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Defining Your Objectives

What limits the life of your cleaning solutions or compromises discharge now? Diminished cleaning effectiveness... Exceedances...

Typical issues often include:

- Oils?
- Free, Emulsified
- Soils?
- Particulate, Dissolved
- Something Else?
- Water Quality, Biologicals



Oils

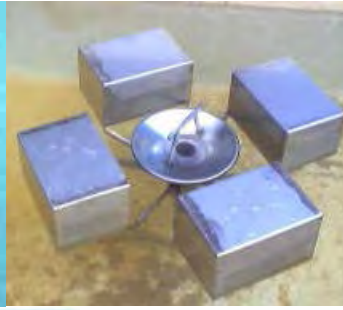
Do yours always float to the top?



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Oil Skimmers

Floating Suctions



Ropes



Tubes



Mops, Belts, Etc.

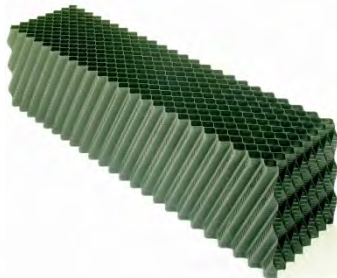
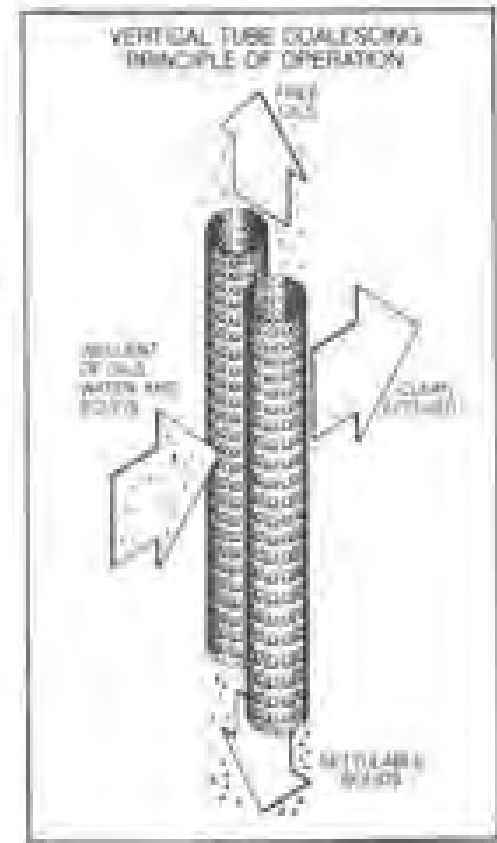
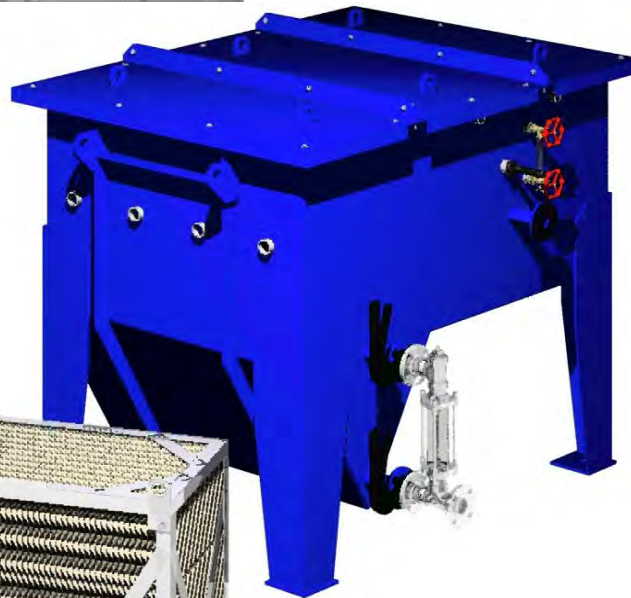
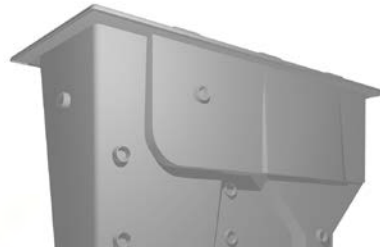
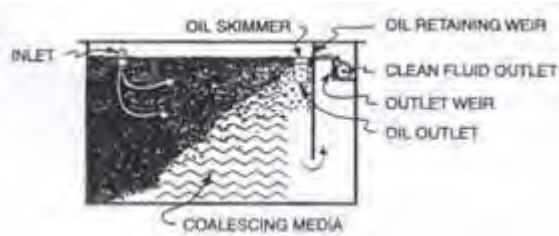


Oils

**Do yours come and go...
move around... sorta emulsify...
and then split out again?**

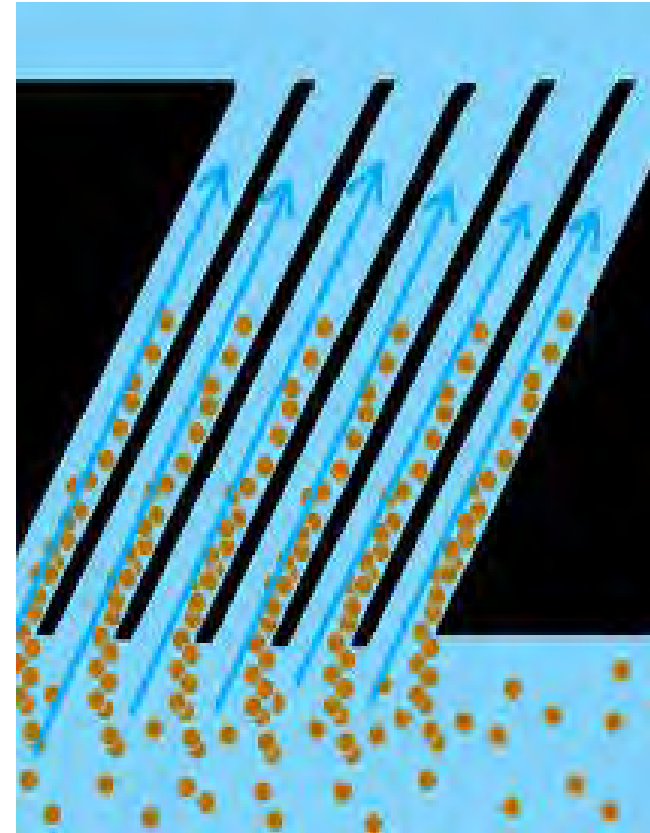


Oil/Water Separators AKA Coalescers



Soils

Are you familiar with the concept of lamella clarification?



Soils

Are your solids entirely, or essentially magnetic?

Magnetic Filtration

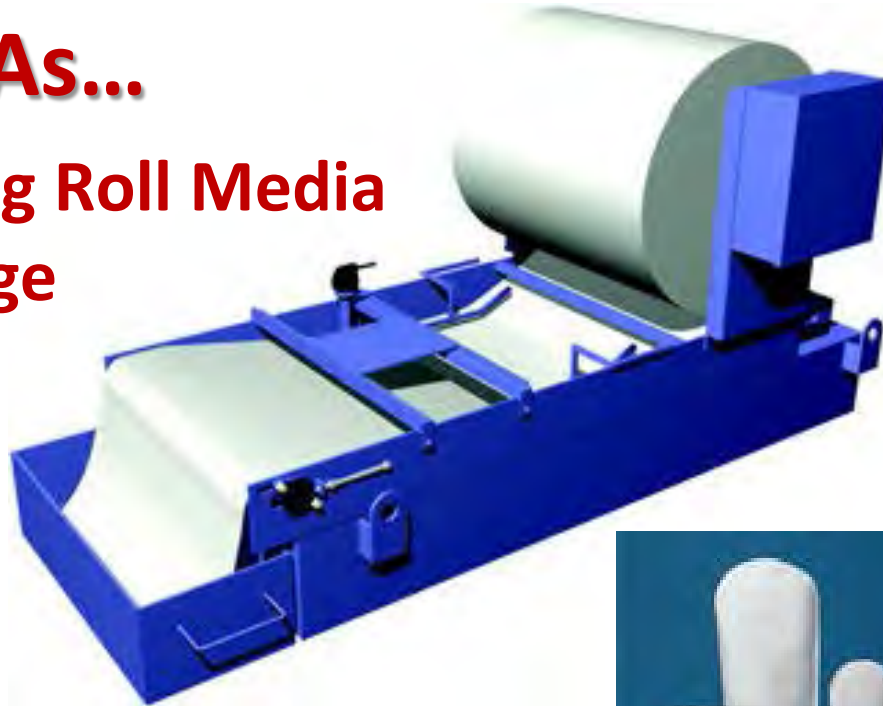


Soils

Guessing that you are already familiar
with “conventional” filtration, right?

Such As...

Indexing Roll Media
Cartridge
Screen
Basket
Bag



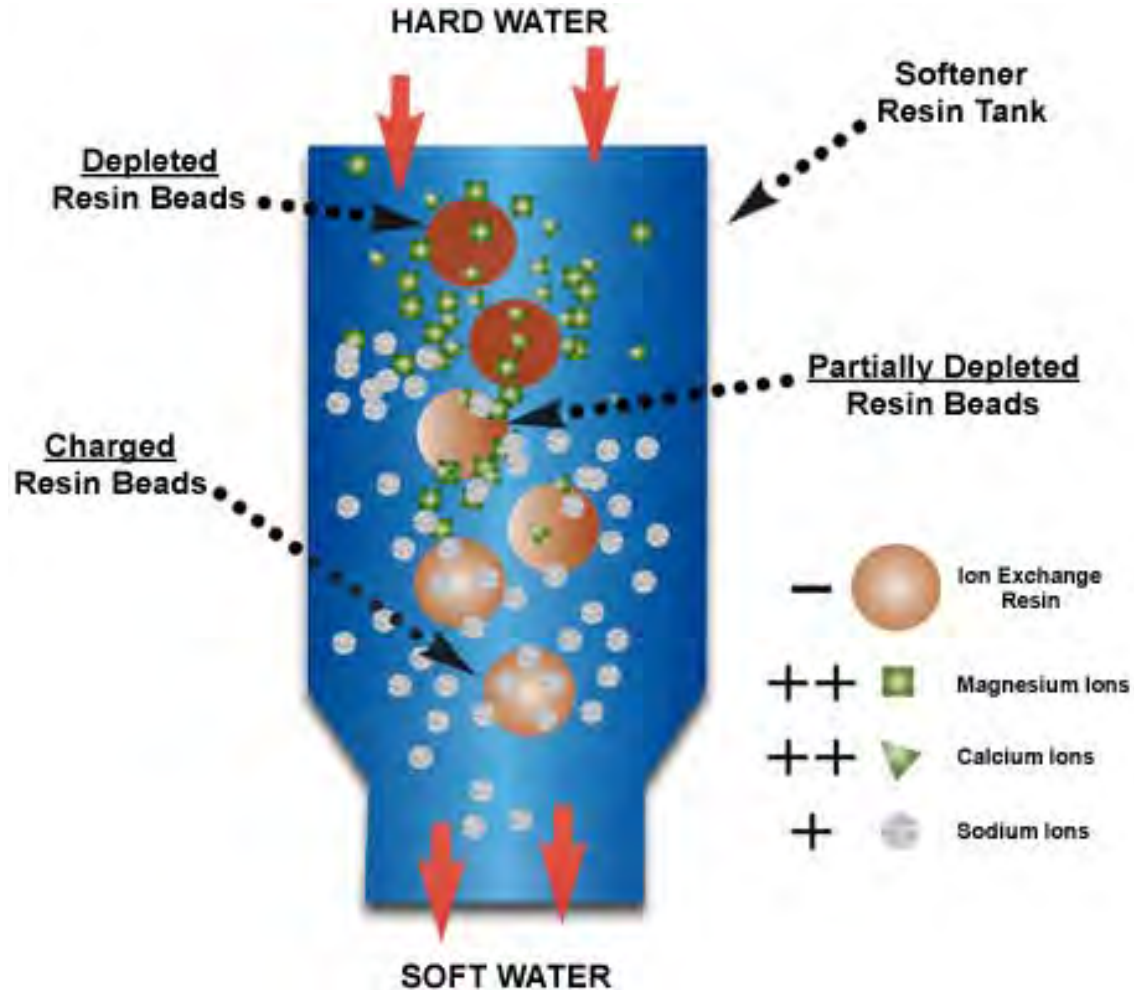
Water Quality/Biologicals

Already using any of these?

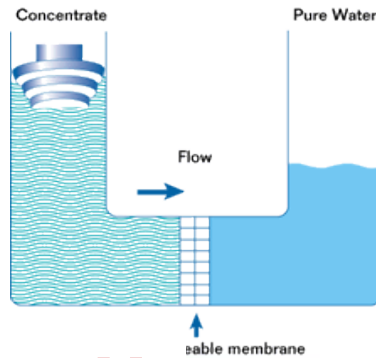
- Ion Exchange Resin / DI = Deionized Water
- Reverse Osmosis Membranes / RO
- Activated Carbon / GAC
- Biocides



Ion Exchange...



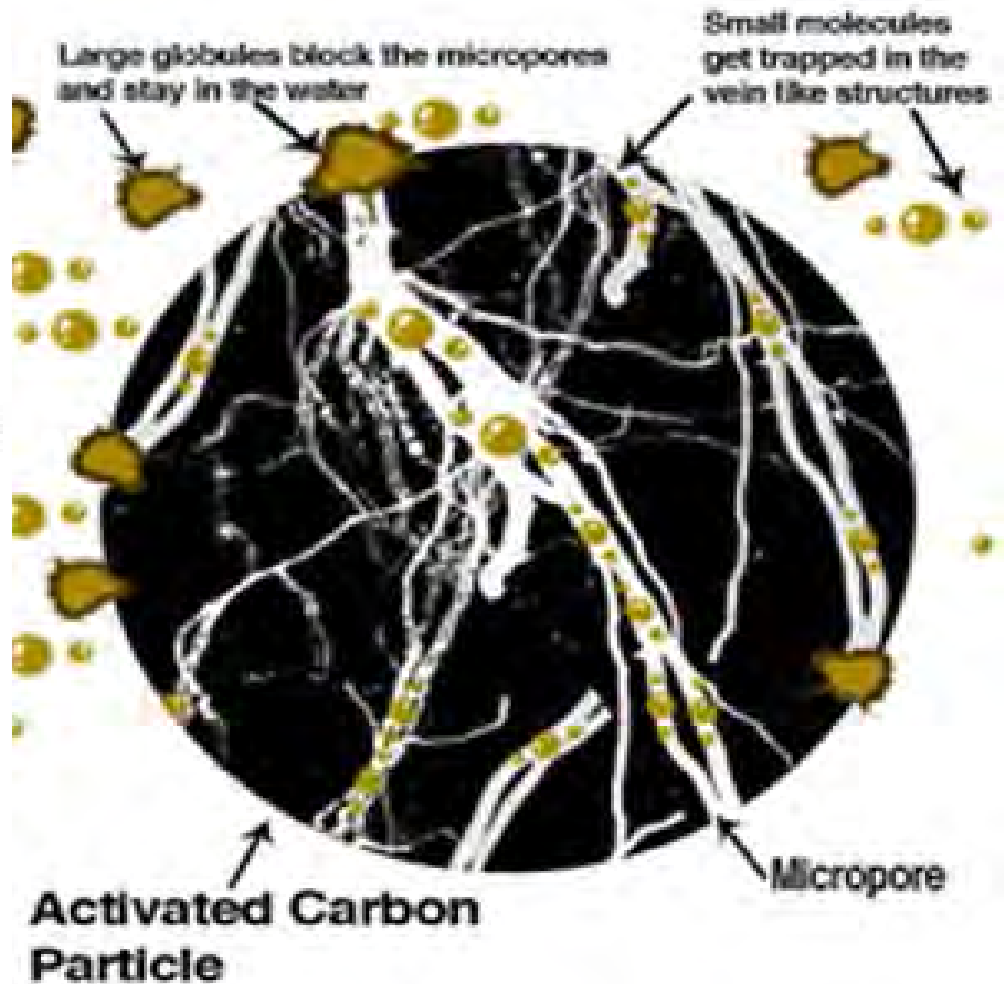
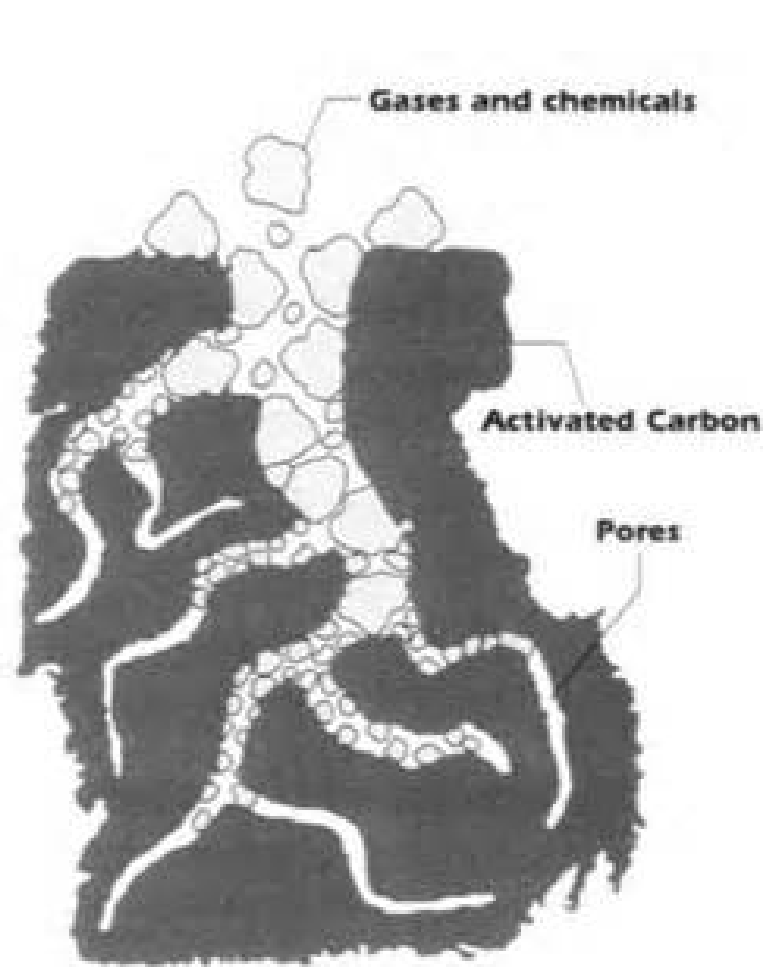
Reverse Osmosis...



Magnified 100,000,000X



Granular Activated Carbon...



Biocides...



But What If I Have... This?



And What I Need is... This?



In Other Words:

You are already covered or at least pretty knowledgeable regarding all the data in the prior slides and came to hear about recycling your aqueous (water-based) cleaning solutions, right? OK, then – let's revisit...



**Floating Suctions
Coalescers
Rope Skimmers
Tube Skimmers
Mop Skimmers
Belt Skimmers**

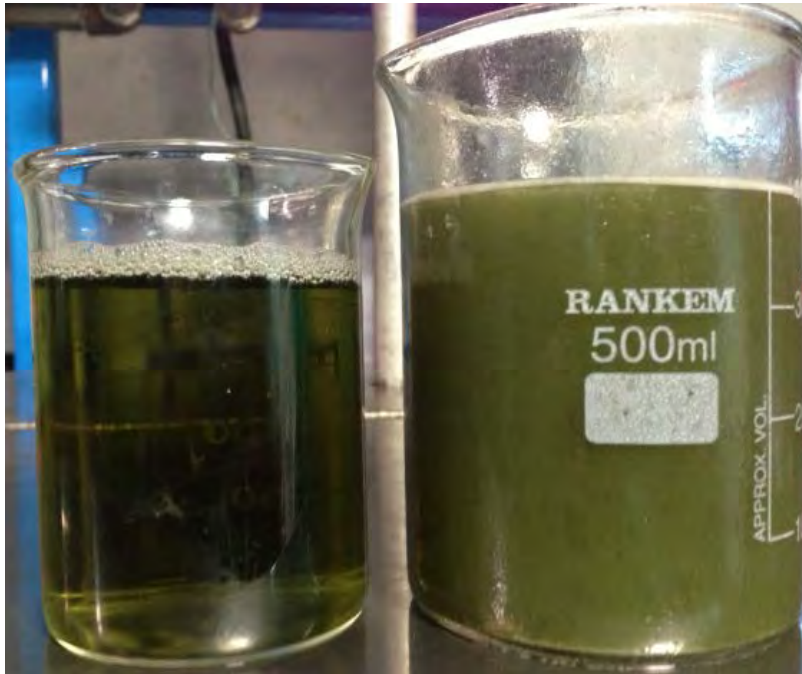
Membrane Technologies...



**Bag
Basket
Screen
Cartridge
Magnetic
Indexing Roll Media**

Membrane Technologies!

Albeit, Tight Enough to Remove Oils/Soils, but...



**Loose Enough
To Restore My
Cleaning Solution
(Cleaner & Water)!**

What We'll Tell You...

- 1) What can membranes do for you and how might they positively impact your operations and the planet
- 2) How the technology works
- 3) Typical parts' and/or floor cleaning processes – understanding your needs
- 4) How membrane filtration has helped your peers
- 5) Parts' washing/floor washing/WWT apps
- 6) Results & Benefits
- 7) Questions & Answers



What Membranes Can Do

- ✓ Help industry meet local, state and federal (EPA) compliance standards, often preventing WWTP operator heartburn
- ✓ Concentrate waste residuals for easier, more efficient, less expensive and less frequent haul away
- ✓ Improve parts' cleaning operations' process control by using consistently high quality, clean wash solution
- ✓ Recycling saves money; payback when recycling wash water can approach or even be under one year
- ✓ Less labor, water, and energy required to maintain cleaning operations (*save the planet*); Cleaning chemistry usage slashed; Potentially significant waste reduction; Lower WWTP operating costs; Etc.



How Does It Work...

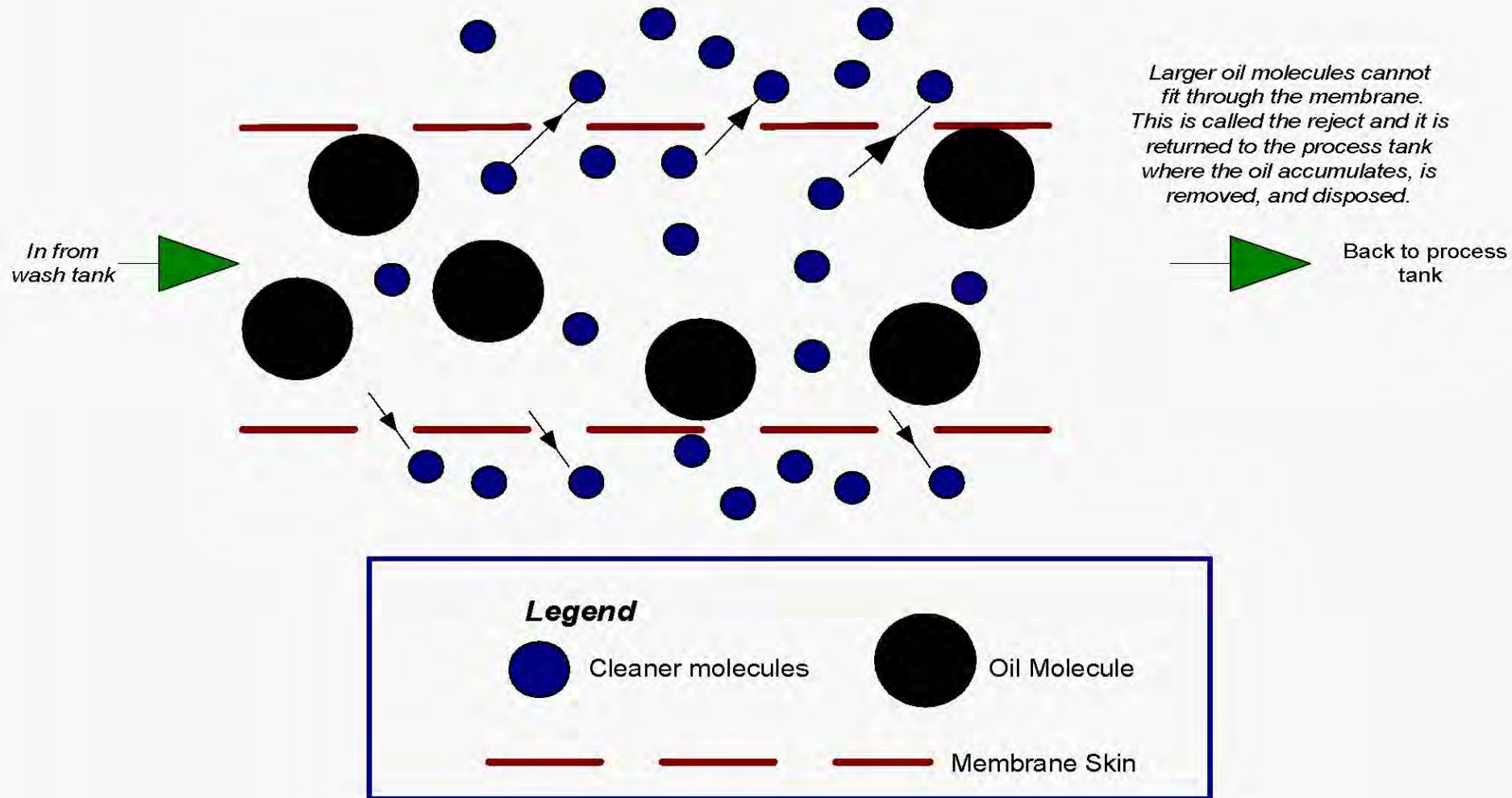
Do You Believe in Magic?

Small dissolved molecules, like water and unspent cleaner, pass through the membrane. This processed solution, called permeate, is discharged or, where recycling is the objective, can be returned to its feed stream, such as your wash tank. Makes sense, right?

Nope...
Next slide please!



How Does It Work... THE SEQUEL!



How Does It Work... THE VIDEO!



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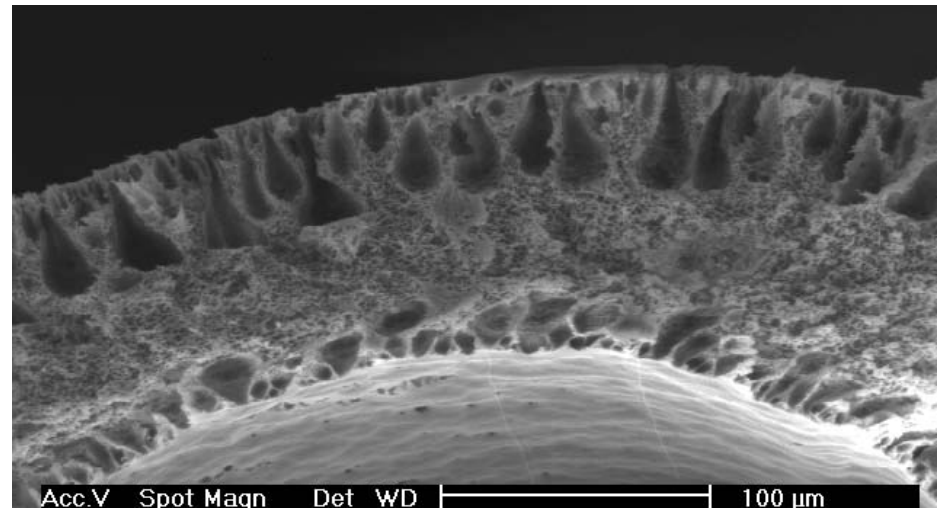
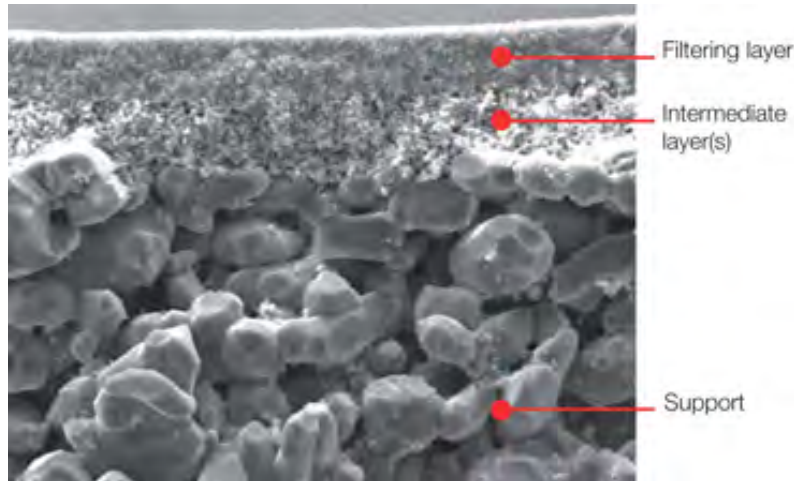
Membrane Construction



Ceramics (C)

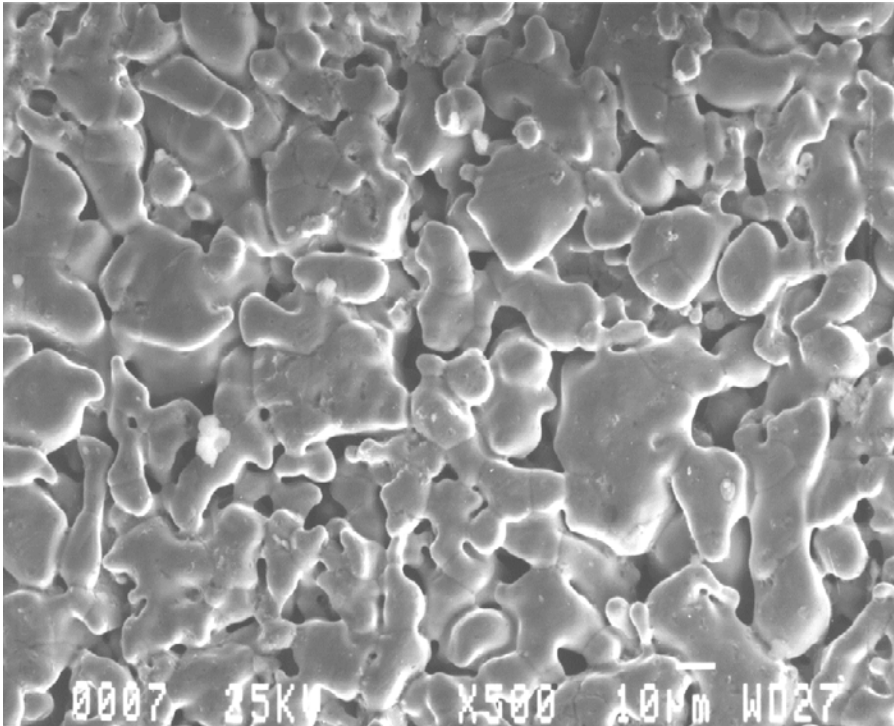


Polymeric (P)

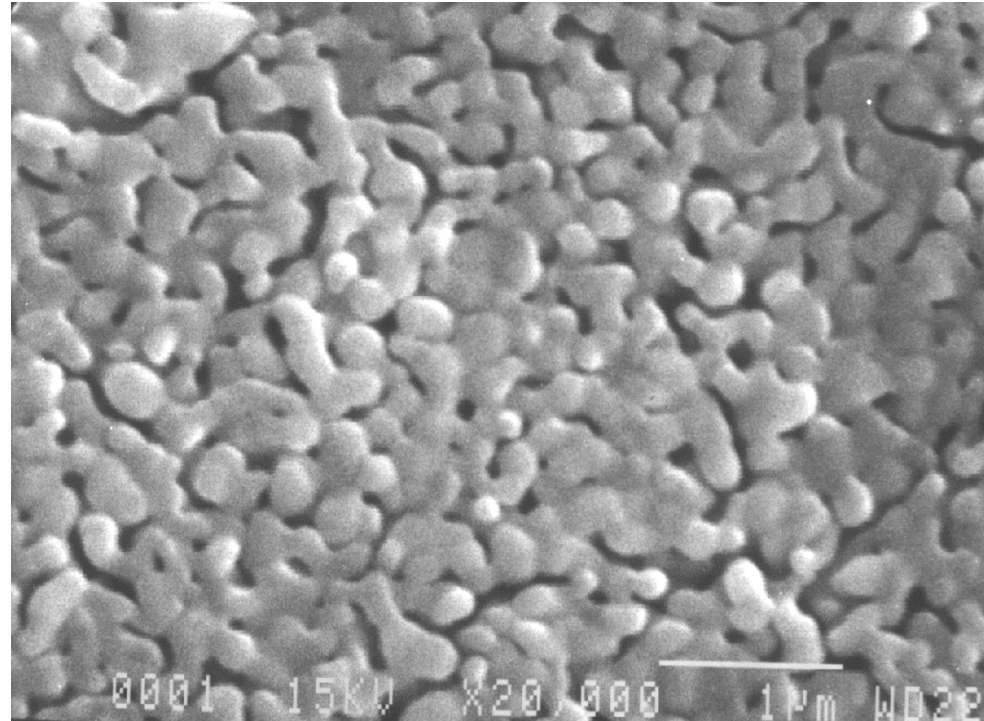


Membrane Construction

(... continued)



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



**Metal Oxide (MO) Membrane
(20,000X)**

Comparative M.O.C. Summary

(Materials of Construction)

- Rugged Ranking = #1 MO, #2 C, #3 P
- Temp Range = >200°F – MO & C* {} ~140°F – P
- pH Range = 0-14 – MO, C {} ~4-10 – P
- Back-Pulse/Deadhead = MO, C – yes {} P** – no
- Long-lived = #1 MO, #2 C, #3 P

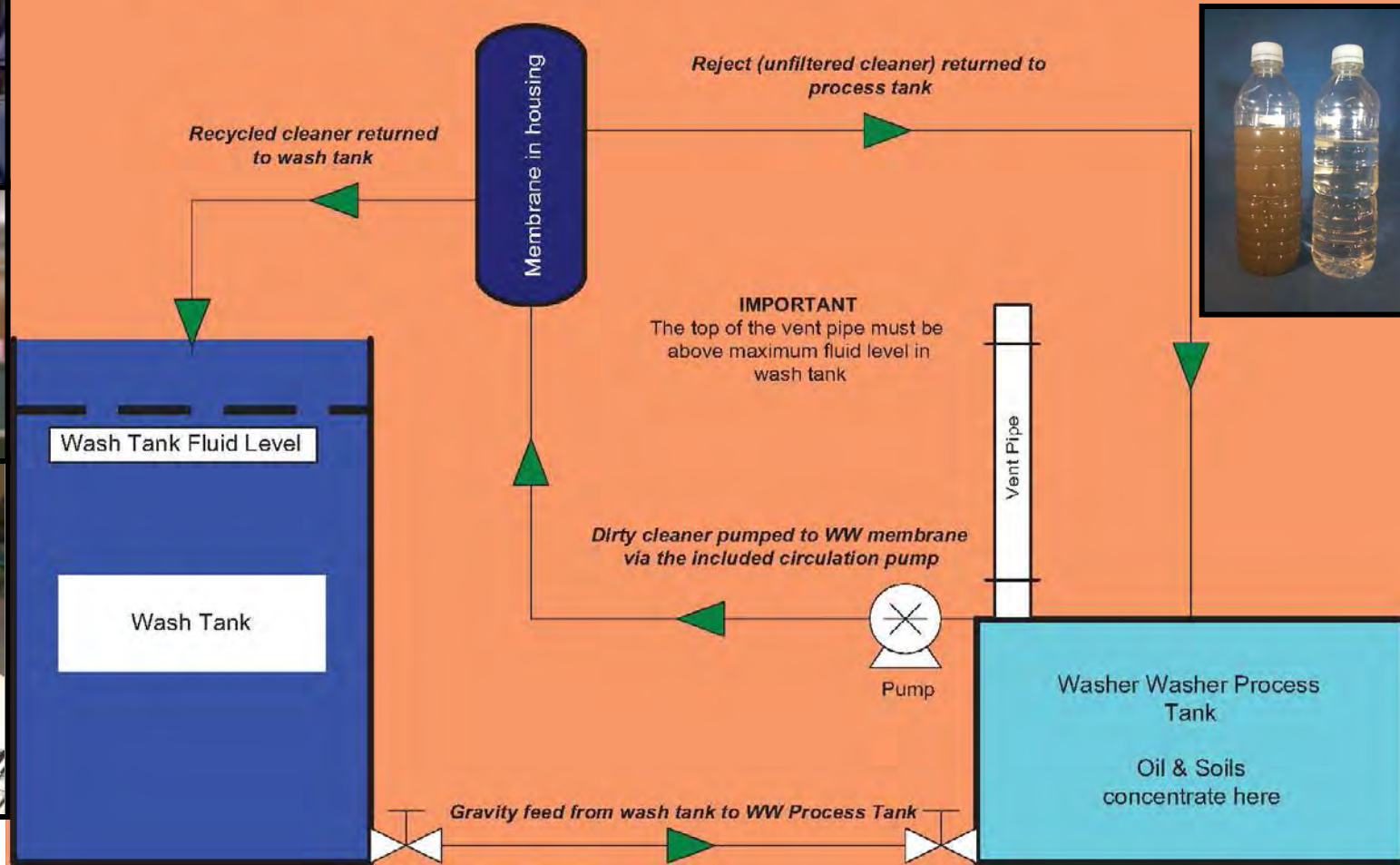
* Thermal fracture risk possibility

** Supported membranes could delaminate;
hollow fiber membranes are typically OK



Solving Cleaning Issues

Typical Membrane System Flow Schematic



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, 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 wash tanks had to be dumped and recharged (d/r) bi-weekly (26 d/r per year).



Problem? No Problem!

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

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



Chromate/E-Coat Paint Line Midwest Engine Manufacturer

2005 Costs – Verified & Published

• Membrane Recycling	\$39,512.00
• Stands	\$ 2,080.00
• Miscellaneous (Install Parts & Labor)	\$ 4,000.00
• Total	\$45,592.00

Client Documented Savings

• Cleaner Chemistry	\$37,901.74
• Waste Treatment	\$ 7,108.92
• Total	\$45,010.66

R.O.I.

R.O.I. = Cost of Implementation vs. Savings

R.O.I. = \$45,592.00/\$45,010.66

R.O.I. = 1.0129 years





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



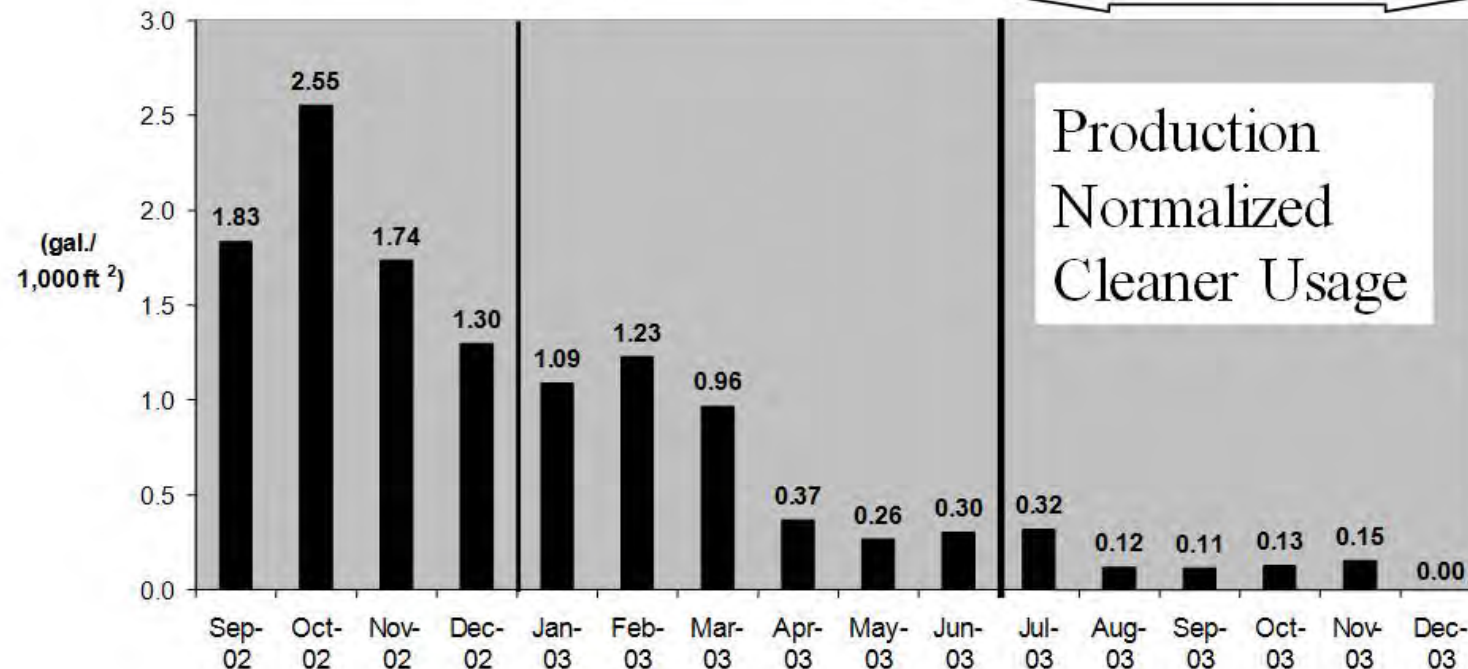


Long-Term Results

Before Project

During Piloting

After WW Purchase

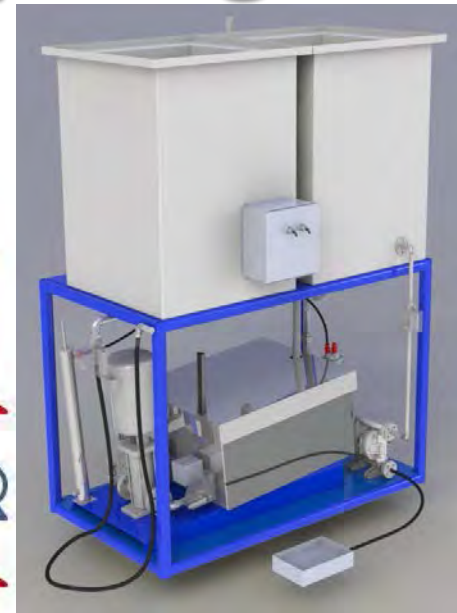
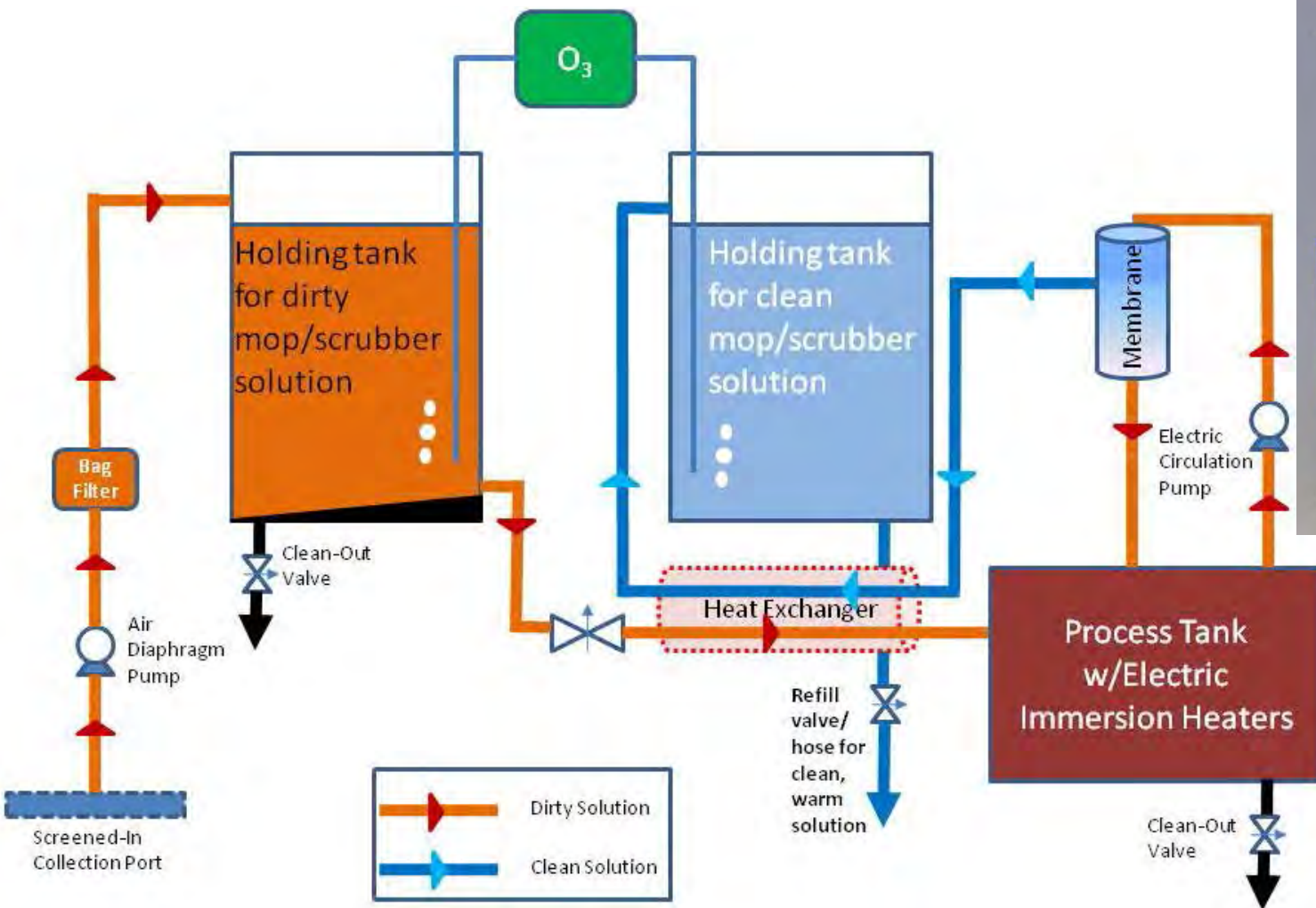


CleanTech 2004
International Cleaning Technology Exposition
Chicago, IL



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Floor Wash Solution Recycling...



Recycling Results & Benefits

- Extend cleaning solution life, 4-6X, sometimes 10X+
- Fewer washer-related rejects – 50%+ reduction in reworked parts reported = higher yields
- Substantial savings in cleaning chemistry purchases – as much as >80% reported
- Concentrated and much less waste = disposal fees drop
- Lower dump/recharge labor costs – perhaps threefold (or more) reduction in worker hours
- Cut manufacturing line down situations
- Short payback time – often ~1-2 years
- Treatment complications from cleaning chemistries minimized in your WWTP!





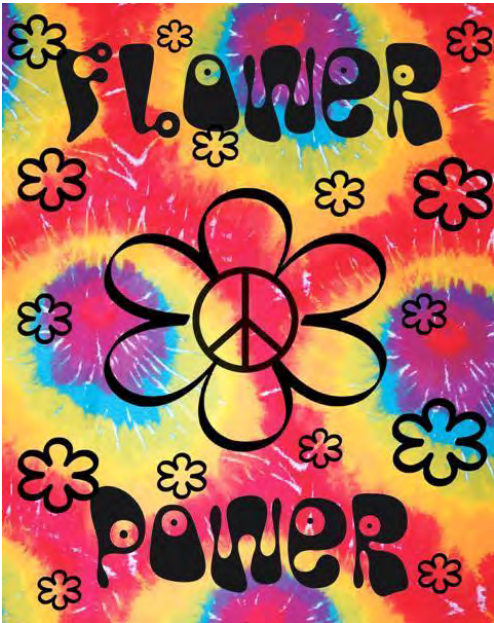
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sales@arbortech.com

Questions & Answers



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**If we Google you, what skeletons
will we find in Ray Graffia, Jr.'s
closet? You remind me of one of
those “hippie tree huggers”!**



WENE

FROM AN ANALYSIS OF
LOCAL AND NATIONWIDE TRENDS

May 7, 1966

THIS WEEK	LAST WEEK
1 I CONFESS — New Colony Six	1
2 KICKS — Paul Revere and The Raiders	2
3 MONDAY, MONDAY — Momma and The Poppas	3
4 GOOD LOVIN' — Young Rascals	5
5 RHAPSODY IN THE RAIN — Lou Christie	6
6 TRY TOO HARD — Dave Clark Five	7
7 A GROOVY KIND OF LOVE — Mindbenders	17
8 LEANING ON THE LAMPPOST — Herman's Hermits	4
9 TIE ME DOWN — Dino, Desi & Billy	20
10 SWEET PEA — Tommy Roe	12
11 SIGN OF THE TIMES — Petula Clark	14
12 CAN'T GROW PEACHES ON A CHERRY TREE — Just Us	16
13 GEORGIANNA — The Princetons	9
14 TIME WON'T LET ME — The Outsiders	8
15 GLORIA — Shadows of Knight	11
16 BANG BANG — Cher	10
17 BALLAD OF IRVING — Frank Gallop	19
18 CRUEL WAR — Chad & Jill Stewart	21
19 DUM DE DA — Bobby Vinton	22
20 PETER RABBIT — Dee Jay	24
21 GREEN GRASS — Gary Lewis & Playboys	--
22 BAND OF GOLD — Mel Carter	29
23 I AM A ROCK — Simon & Garfunkle	37
24 YOU'VE GOT THE POWER — Everly Brothers	25
25 DISTANT DRUMS — Jim Reeves	26
26 HOW DOES THAT GRAB YOU — Nancy Sinatra	27
27 THE A TEAM — S/S Barry Sadler	28
28 MOUNTAIN OF OUR LOVE — Leslie Miller	30
29 COME ON LET'S GO — The McCoys	31
30 A PIECE OF THE SKY — Verdelle Smith	35
31 EVOL — NOT LOVE — The Five Americans	34
32 NAME — Louie Armstrong	36
33 LOVE IS LIKE AN ITCHING IN MY HEART — Supremes	38
34 SO SOFT, SO WARM — The Nu-Luv's	40
35 PAINT IT BLACK — The Rolling Stones	--
36 LOVE ME WITH ALL YOUR HEART — The Bachelors	--
37 WHEN A MAN LOVES A WOMAN — Percy Sledge	--
38 THAT DON'T DO ME NO GOOD — Buddy Knox	39
39 DIDDY WAH DIDDY — The Remains	Sh. Pick
40 THE IMPOSSIBLE DREAM — Jack Jones	St. Pick

Jon Read Pick — HEART'S DESIRE — Bill Joe Royal

Station Pick — DON'T BRING ME DOWN — The Animals

"Instant Radio" — Dial 1430

Guilty as charged...

WLSRADIO 89 abc HIT PARADE

THIS WEEK MARCH 25, 1968 LAST WEEK

1. I'll Always Think About You	New Colony Six—Mercury	3
2. Lady Madonna/The Inner Light	Beatles—Capitol	8
3. Valerie/Tapioca Tundra	Monkees—Colgems	1
4. Young Girl	Union Gap—Columbia	13
5. Since You've Been Gone	Aretha Franklin—Atlantic	18
6. La La Means I Love You	Delphonics—Philly Groves	8
7. Dock Of The Bay	Otis Redding—Volt	2
8. Kiss Me Goodbye	Petula Clark—W.B.	7
9. Simon Says	1910 Fruit Gum Company—Buddah	4
10. The Ballad Of Bonnie & Clyde	Georgie Fame—Epic	17
11. Dance To The Music	Sly & Family Stone—Epic	11
12. The Mighty Quinn	Monfred Mann—Mercury	18
13. Up On The Roof	Cryan Shames—Columbia	19
14. Cry Like A Baby	Ben Taps—Mala	22
15. Love Is Blue	Paul Mauriat—Philips	8
16. Just Dropped In	First Edition—Reprise	5
17. Summertime Blues	Blue Cheer—Philips	25

WCFM SOUND 10 SURVEY

WEEK ENDING APRIL 4, 1968

1. I Will Always Think About You	The New Colony Six	2/11
2. Lady Madonna/Inner Light	The Beatles	5/4
3. Valleri/Tapioca Tundra	The Monkees	1/6
4. Young Girl	The Union Gap	6/7
5. (Sittin' On) The Dock Of The Bay	Otis Redding	3/10
6. Honey	Bobby Goldsboro	18/4
7. La-La-Means I Love You	The Deltonics	9/9
8. Cry Like A Baby	The Box Tops	14/4
9. Since You've Been Gone	Aretha Franklin	8/7
10. Summertime Blues	Blue Cheer	16/4
11. Up On The Roof	Cryan Shames	11/10
12. The Good, The Bad and The Ugly	Hugo Montenegro	20/6
13. Ballad Of Bonnie & Clyde	Georgie Fame	17/10

WKLO KENTUCKIANA COUNTDOWN

RADIO 10-8-0 PICK HIT
"Turn On Your Love Lights" — Human Beins

March 15, 1968

This Week	Last Week
1. CRY LIKE A BABY	Boxtops 1
2. ALWAYS THINK ABOUT YOU	New Colony Six 3
3. SOUL COAXIN'	R. LeFevre Orch. 13
4. LOVE IS ALL AROUND	Troggs 5
5. MIGHTY RUIN	Manfred Mann 7
6. VALERIE	Monkees 4
7. HONEY	Bobby Goldsboro 23
8. SINCE YOU'VE BEEN GONE	Aretha Franklin 11
9. YOUNG GIRL	Union Gap 21
10. COUNTRY GIRL-CITY MAN	Billy & Judy 9
11. Playboy	Gene & Debbie 6
12. Hey Bunny	John Fred/Playboys 16
13. Kiss Me Goodbye	Petula Clark 2
14. I Cannot Stop You	Cherry Slush --
15. Scarborough Fair/Fifta	Simon & Garfunkel --
16. Everything That Touches	Assoc. Association 10
17. Too Much Talk	Paul Revere 20
18. Little Green Apples	Roger Miller 18
19. Lady Madonna	Beatles --
20. Stay Away	Elvis Presley 28
21. Love Machine	Roosters 30
22. Something I'll Remember	Sandy Posey 29
23. Baby, You Come Rollin'	Peppermint Trolley --
24. Words	Bee Gees --
25. The Last Goodbye	Dick Miles 25
26. High Muddy Water	Stone Poneys Pic
27. Time to Know Her	Percy Sledge --
28. Call Me Lightening	The Who --
29. Gentle On My Mind	Patti Page --
30. I Got The Feeling!	James Brown --

FR 99.7 PICK ALBUM
"Love Is Blue" — Johnny Mann Singers

OFFICIAL PLAY LIST

THE
R
a
d
i
o
WKLO
a
i
r
Force

Ask your grandparents if they recall my '60s rock band = New Colony Six!



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THE NEW COLONY SIX

"The Sound Heard Round The World"



Ray Graffia

Pat McBride

Jerry Kollenburg

Chic James

Craig Kemp

Wally Kemp

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 blasted past the Beatles and the Beach Boys to hit #2 on Chicago's WLS radio Silver Dollar Survey.

Nationally, the single hit #80 in *Billboard*, and #71 on the *Cash Box* surveys. The overwhelming impact of "I Confess" prompted Ray Graffia (lead vocals, tambourine), Pat McBride (harmonica, vocals), Jerry VanKollenburg (lead guitar), Wally Kemp (bass), Chic James (drums), and Craig Kemp (organ) to return to Sound Studios in Spring 1966 to begin work on their first album. Two of the tracks, "At The River's Edge" and "I Lie Awake," were paired as the second New Colony single (Centaur 1202). Although "At The River's Edge" was the A-side, disc jockeys refused to play it due to references to suicide in the lyrics. "I Lie Awake" became the new plug, but just as the platter hit the charts, Centaur Records President Ray Graffia Sr. was threatened with a lawsuit concerning ownership of the Centaur name. After two spelling changes (Sentaure to Sentar) the matter was resolved, but amidst the confusion "I Lie Awake" fell asleep on the charts.

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



Pat and Ray in the studio.

WLS

PERSONALITY RADIO IN CHICAGO

SILVER DOLLAR SURVEY

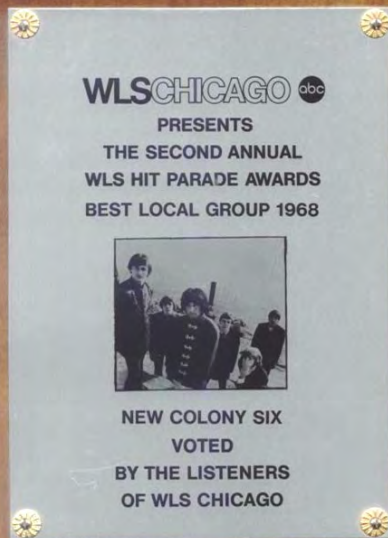
CHICAGO'S OFFICIAL RADIO RECORD SURVEY

THIS WEEK FEBRUARY 4, 1966 - WEEKS PLAYED

- *1. Lightning Strikes * Lou Christie - MGM 7
- *2. I Confess * New Colony Six - Centaur 10
- *3. Barbara Ann * Beach Boys - Capitol 7
- *4. We Can Work It Out/Day Tripper * Beatles - Capitol 11
- *5. Sounds Of Silence * Simon & Garfunkel - Columbia 10
- *6. Lies * Knickerbockers - Challenge 10
- *7. No Matter What Shape * T-Bones - Liberty 10
- *8. My Love * Petula Clark - WB 6
- *9. These Boots Are Made For Walking * Nancy Sinatra - Reprise 4
- *10. Sandy * Ronny & Daylonas - Mala 8
- *11. I Fought The Law * Bobby Fuller - Mustang 7
- *12. Andrea * Sunrays - Tower 6
- *13. Zorba The Greek * Herb Alpert & TJB - A&M 5
- *14. California Dreaming * Mama's & Papa's - Dunhill 7
- *15. Georgiana * Princetons - Colpix 9
- *16. She's Just My Style * Gary Lewis - Liberty 10
- *17. My World Is Empty * Supremes - Motown 5
- *18. Jenny Take A Ride * Mitch Rider - New Voice 8
- *19. I See The Light * 5 Americans - HBR 7
- *20. Second Hand Rose * Barbara Streisand - Columbia 7
- *21. At The Scene * Dave Clark 5 - Epic 4
- *22. Ballad Of Green Berets * Wally Berry Sadler - RCA 3
- *23. Big Bright Eyes * Danny Hutton - HBR 6
- *24. It Was A Very Good Year * Frank Sinatra - Reprise 5
- *25. Answer To My Prayer * Neeli Sedaka - RCA 5
- *26. Batman * Markettes - WB 4
- *27. What Now My Love * Sonny & Cher - Atco 4
- *28. Listen People * Herman's Hermits - MGM Album 5
- *29. Uplight * Stevie Wonder - Taima 7
- *30. Hard Days Night * Ramsey Lewis - Cadet 5
- *31. Going To A Go-Go * Miracles - Tamla 5
- *32. Don't Mess With Bill * Marvolettes - Motown 4
- *33. Long Live Our Love * Shangri-La's - Red Bird 5
- *34. When Liking Turns To Love * Ronnie Dove - Diamond 4
- *35. Homeward Bound * Simon & Garfunkel - Columbia 3
- *36. Crying Time * Ray Charles - HBC 6
- *37. Night Time * Strangeloves - Bang 4
- *38. My Ship Is Coming In * Walker Bros. - Smash 4
- *39. Hide & Seek * Sheep - Boom 4
- *40. My Baby Loves Me * Martha & Vandellas - Gordy 3

FEATURED ALBUMS

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







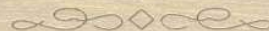
2015



1965

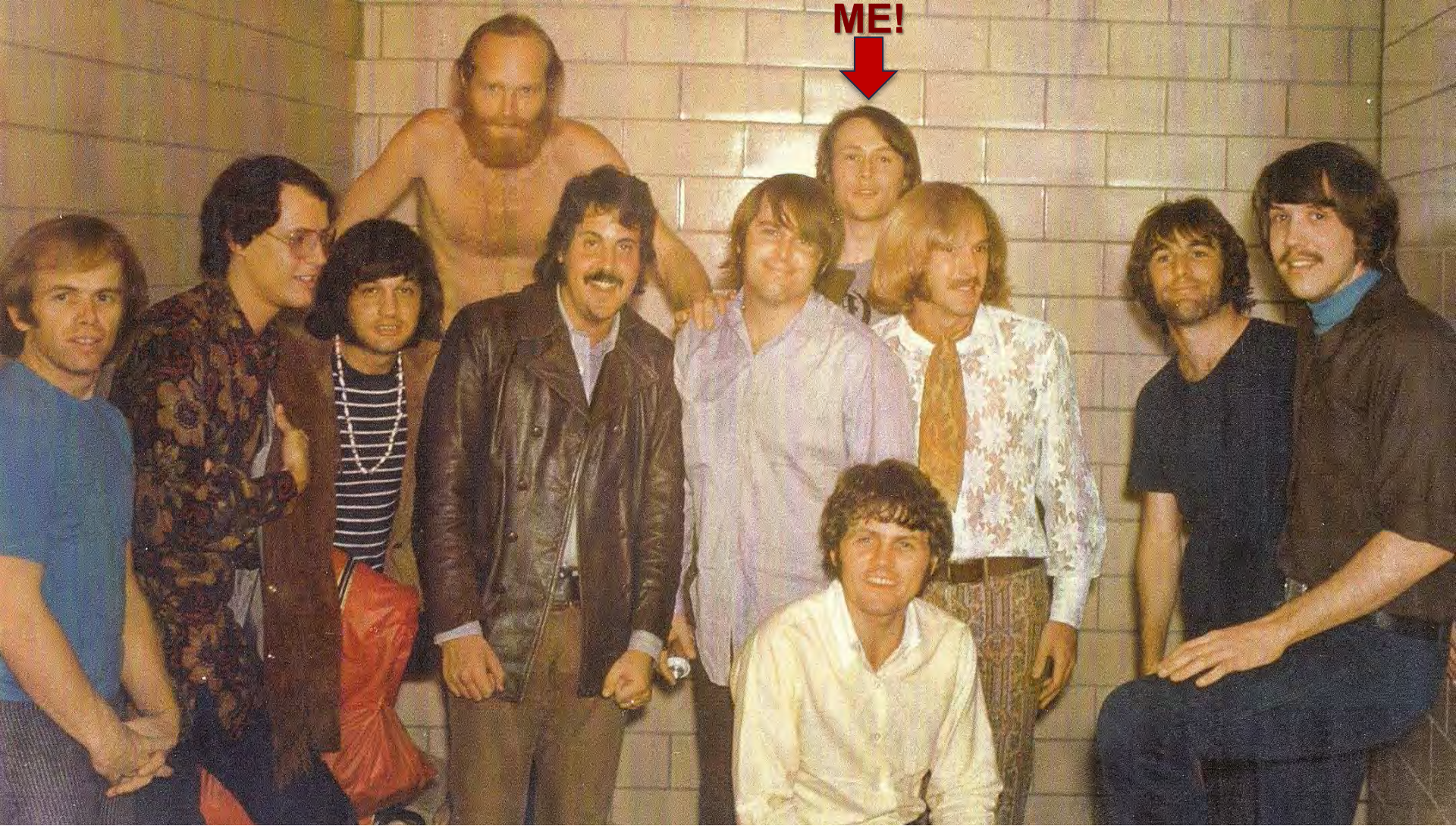


2002 INDUCTEE



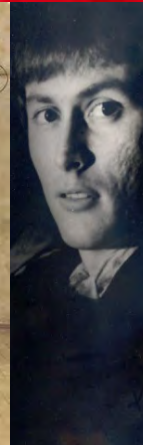
Ray Graffia

New Colony Six



New Colony Six = Touring with the Beach Boys in 1968 <> L to R:
Al Jardine, Chuck Jobs, Les Stewart, Mike Love (up), Ronnie Rice,
Carl Wilson, Ray Gaffia, Jr. (up), Bruce Johnston (down),
Pat McBride, Dennis Wilson, Gerry Van Kollenburg

**For more about oily WWT or membrane technologies,
please contact Ray Graffia, Jr. --- for '60s rock & roll
yadda yadda yadda? Contact me too!**



**R&R Facebook: [search for --- New.Colony.Six.Ray.Graffia.Jr.r](#)
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Thank You!!!!!!



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