True Cost of Ownership

Initial Purchase Price Vs Long Term Costs of Oil Water Separators

True Cost of Ownership

When evaluating various manufacturers' oil water separator offerings, there are some very important considerations to make in regard to total life-cycle costs of the equipment. Like most industrial wastewater equipment, an oil water separator is not a set-it-and-forget-it system. The initial purchase price of the separator is only the "tip of the iceberg" when it comes to understanding the overall cost during its useful lifespan. Procurement, installation, and maintenance costs are the three main areas that need to be carefully analyzed to help ensure the various manufacturers' equipment offerings are being fairly compared.

Typical specifications for industrial wastewater treatment equipment call for a 20-year equipment operating life span. However, some industries like the Oil & Gas industry have benchmarks of a 30-year expected operational life. One recent nuclear power plant specification called for a 60-year operating life. It is important to consider not only the advantages of choosing superior materials of construction for long-term cost savings, but it is also paramount to find ways to extend periods between required maintenance schedules. By increasing periods between maintenance, it can be seen that very significant savings are realized. In many cases, the after-installation costs on a mid-sized separator can exceed $1,000,000 over the life cycle of the equipment. This represents a significant savings, and we find that it is rarely being scrutinized closely by the end user. Cutting corners during the selection process could either mean exorbitantly high cleaning costs moving forward, or a unit that does not stand up to the test of time; thereby the entire separator needing early replacement.

This document is a review of both the initial and long-term costs that should be considered when comparing oil/water separator designs, and explains how investing in a Compliance Master™ oil/water separator saves its clients substantial operation and maintenance capital. Like anything else in this world . . .you usually get what you pay for…*or less!* Mercer takes great pride in being a leader in oil water separation design. Superior design produces superior results. Superior results make the choice for a premium product easily justifiable to the end user once they clearly identify the long-term benefits and cost savings obtained by a more thoughtfully-designed system. The Mercer advantage offers an end user a better solution with higher performance and substantial operational cost savings over the life of the equipment.

Demonstrating this long-term savings, while protecting the end user from environmental citations and fines, is the focus of this document.

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What to Consider Before Purchasing

Fabrication/Design options and costs:

Oil water separators come in many different shapes and sizes. They also come with varying styles of coalescers. It is the coalescers within the separator that do the "heavy lifting" when it comes to efficient oil removal. When coalescing separators became popular in the early 1980's, many tank fabricators were quick to enter the game. They stepped into the oil water separator business by simply inserting a steel or plastic coalescer in the center of a cylindrical tank and calling the resultant an "oil water separator". The suggestion was that "If you were in the market for an oil water separator, they were in the oil water separator market". This is something a decision maker still needs to be weary of more than three decades later. The foundation for this evaluation is based on above-ground rectangular designs because they are more prevalent in industry than their cylindrical counterparts (though the comparison based on cylindrical units would tilt further in Mercer's favor due to the improved access of the cylindrical Compliance Master™ over other typical designs).

The typical oil separator found throughout industry is a painted carbon steel tank. Mercer International also manufactures a line of painted carbon steel separators. However, our standard materials of construction on our low-flow designs are #5052 aluminum. Mercer often suggests that the client make the initial investment to further upgrade materials of construction to #304L or #316L stainless steel. Mercer has also been recently promoting a tanks design of polypropylene with 1" thick tank walls that requires no coatings as well and is inert to most wastewater up to temperatures of 180F. The aluminum, stainless steel and polypropylene materials are inherently corrosion resistant, and for the proper application will not corrode like carbon steel tanks. Paint coating(s) often present corrosion-related problems: the paint coating is only as good as its application. There are many things that can compromise a sound paint coating application, including: improper blast preparation, not meeting blast ratings and profile requirements, temperature and humidity excursions during the application, improper mil thickness during the application (too much paint can even be an issue on many higher-tech coatings), lag time between blasting and painting and too much time between coats, and even improper cure times. Any one or a combination of these things will lead to pre-mature coating failure and corrosion.

Oil/water separators are specifically prone to corrosion failure due to poor paint applications because separator tanks are simply difficult to paint properly. Separators have multiple compartments, various baffles, internal structural steel components, and various hard-to-reach areas that are difficult to blast and paint properly. As such, corrosion has been the dominate issue in the longevity of a separator. Investing a little more project capital initially to achieve the anticipated lifespan of 20 to even 30 years is a consideration worthy of discussion. Careful consideration of the wastewater characteristics is critical in the consideration of material choices, material thickness (corrosion allowance) and even paint coating options. The temperature of the wastewater is an important factor for paint coating longevity and base material corrosion.

O+S+T=S$_L$

What to Expect After the Purchase

Most oil/water separator designs using modern coalescers are going to be efficient when they are initially put into service. The difficulty is solving the age-old problem that most maintenance departments deal with daily—and that problem is sludge. Most wastewater has some solids present. Since oil in the presence of solids (over time) creates sludge, and sludge is what fouls coalescers, it is important to look carefully at this problem. Even light solids in wastewater will accumulate more quickly than most anticipate. For instance, a light-solids application containing an average of 75 ppm solids loading in a 100 gpm flow running at capacity continuously will produce enough solids volume to produce over 20 cubic feet per week. Most separator designs can't handle that amount of solids without serious fouling issues.

A Clogged Coalescer Leads to Decreased Oil Removal

During the design phase, Mercer always keeps this "formula" in mind:

Oil + Solids + Time = Sludge™

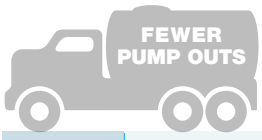
Manufacturers of typical coalescer designs that do not properly address the removal of solids inadvertently cause their customers a more frequent (and costly) cleaning and maintenance regimen.

There are many cheaply priced oil water separators available. Industry has grown to consider the fouling of internal components and coalescer media replacement as the "status quo". Therefore frequent coalescer replacement is simply thought of as part of the typical cost associated with oil water separator maintenance. The truth is that choosing a design that helps eliminate the buildup of solids and allows for longer runs between required cleanings can save more money over time than the entire purchase of the unit itself. When sludge builds up in a coalescer, flow in those areas are reduced and due to the restricted passage the flow is then redirected to other areas of the coalescer, causing an increase in velocity—well above the initial design criteria. Therefore, a unit with fouling leads to significantly decreased oil removal capabilities and the increased likelihood of effluent exceedances for both oil and TSS. The majority of oil/water separator manufacturers have adopted a business model that has created a continuously recurring revenue stream from replacement media sales. As such, you can see why they have little concern for changing the status quo.

Mercer International Inc.

MULTI-PACK FACT

Mercer meticulously fabricates every flat-plate Multi-Pack™ coalescer by hand. Each Multi-Pack has significant enhancements to ensure very long life of the coalescer components. Frames are fabricated out of either 304L or 316L stainless steel and coalescer plate materials are carefully selected to meet the wastewater of each application.



Mercer's patented coalescer system has a superior method of removing solids, enabling the maintenance and cleaning schedules to be drastically extended.

All oil water separators are not created equal. It's not uncommon to see manufacturers sell their separators for just over cost, because they know they will have tens of thousands of dollars every few years in replacement media while their unit is operation. This is much like the cheaply-priced printer you buy for $50, then realize your first replacement ink cartridges cost nearly as much as the entire printer itself. This is why it is important to understand that initial purchase price is only the "tip of the iceberg" when it comes to evaluating cost of equipment relative to the various designs available. **The potential purchaser should always ask themselves two key questions:**

1. **What have we estimated as our total annual maintenance cost?**
2. **What OWS designs and options can we invest in to reduce this cost?**

Equipment Costs vs. Project Costs

When looking at the total project cost for an installation of an oil/water separation treatment process, the extra cost of a well-designed separator verses a cheaper "me too" design is generally a very small percentage. On larger projects, the actual separator equipment may only be 10-20% of the total installation cost when you consider the various project costs, which include: engineering, permitting, purchasing, project management, site work, infrastructure upgrades, structural steel and concrete work, equipment cranes, process piping, electrical service, system integration and commissioning.

Compliance Master™ oil/water separators are most often the premium price when compared to the other designs that don't have the same features and benefits. Mercer's design enhancements were made to properly process out solids, provide field adjustability of the coalescer plates, and extend the time between required cleanings by a factor of at least 2X. This provides the end user with both flexibility and a less expensive long-term cost of ownership. Whenever possible, Mercer brings together the engineering, maintenance, and procurement groups to review the life-cycle costs. With payback being realized in only a couple of years, it's quick to show how Mercer's Multi-Pack™ design easily becomes the less costly option.

Take for example an average-duty oil water separator that may cost $75,000. Then consider Mercer's Compliance Master™ separator with the Multi-Pack™ coalescer that may be up to a third more expensive--due to superior design and materials of construction (all standard with Mercer's Compliance Master). Initially, that appears to be a significant price gap when evaluated in a vacuum. Often times the separators are be placed side by side (in terms of price alone) and compared as apples to apples. If this were the case, purchasers would pick the less expensive option every time. Choosing the 33% less expensive option (leaving out how it actually costs more in the long run) would seem like the prudent purchase. But the difference in pricing begins to fall away when one considers the relatively small price difference in light of the separator's total project costs. As mentioned, the installation of the unit can be many times the purchase price cost of the separator itself.

Total Cost Difference Is Only Around 5%

5% of total project cost

Mercer Unit $100k

Other Unit $75k

Installation costs*

**(Very often 4x the cost of the unit) Example $350k to install.*

5% total project cost differential

Looking at the example, what was initially a 33% more expensive equipment choice when considered outside the total project cost, has now become only 5% more expensive option when the entire scope of the project is considered. (Note: this is merely the initial cost comparison and does not incorporate any of the O&M savings realized by the Mercer Compliance Master™ design, which is discussed later on). The graphic above helps put any differential of pricing in a new perspective, showing that choosing the significantly better equipment is only a modest total project increase. When end user's fully understand the advantages and long-term savings in the operation and maintenance areas of their system, giving them a heightened piece of mind in terms of efficiency and compliance, they choose the Mercer design time and again.

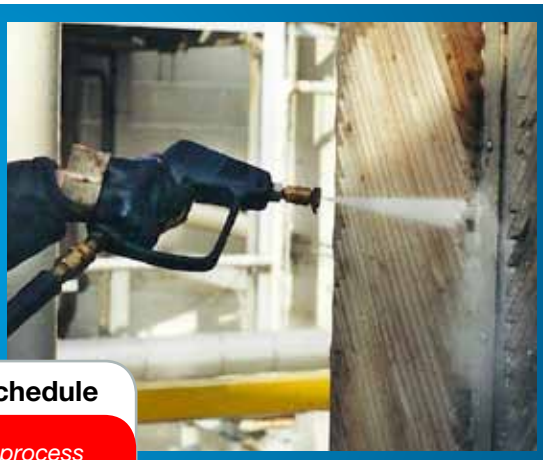
How Frequent is the Typical Preventative Maintenance Schedule for an OWS?

Of course, this varies from application to application. Usually the more solids present the more frequent the preventative maintenance. It truly depends on how much the end user answers these two important questions:

1. **What is your company's tolerance for receiving citations and fines for OWS effluent exceedances?**

2. **How important is it for your company to take care of the equipment to ensure it stands up to the test of time?**

A typical maintenance schedule for properly maintaining an OWS in an industrial application (with medium solids loading) is quarterly. The length of time between cleaning and maintenance ultimately is in direct correlation to an oil water separator's ability to process solids and oil away from the coalescer, allowing it to properly function. If a separator can process both solids and oils well, it can perform for long stretches before required maintenance (assuming there is a place for the removed solids and oil to go). The clogging and fouling that is common place in most traditional corrugated and tube bundled media make it necessary to clean (and often times replace) internals at least every three months. Since Mercer has designed a better way to remove the solids from the flow path, less sludge builds up over time, and cleaning and disposal costs are significantly reduced. Simply by extending the time between required maintenance, there is a direct, immediate and significant savings in the maintenance of the OWS.



Maintenance Schedule

If a separator can process both solids and oils well, it can perform for long stretches before required maintenance.

What Does the Mercer Advantage Provide?

As a general rule-of-thumb the Compliance Master™ Oil Water Separator can run twice as long unattended as a standard unit with typical plastic coalescers. Whether you are purchasing new, replacing an underperforming unit, or retrofitting your existing unit by installing new Mercer Multi-Packs™, this savings over time should be part of the evaluation. Mercer has built its reputation as a supplier of high-performance equipment by installing our separators in some of the worst heavy-solids applications within the electric utility, oil/gas industries and chemical industries. Over the years, Mercer has provided solutions that have allowed our environmentally-conscious clients to extend their costly separator maintenance burden from monthly to quarterly. In many cases, we have saved our clients as much as $80,000 per year in maintenance cost savings for a single unit.

Our knack for supplying extended efficiency (ensuring compliance), while reducing required maintenance schedules and costs, works for companies both large and small. In the more common maintenance regimen, which includes a quarterly cleaning schedule, Mercer's design can easily extend maintenance to a semi-annual basis, translating to a savings of around $20,000 annually, as described on the next page.

For over 50 years there has been a "tension" in coalescer design within the wastewater industry. Traditionally, coalescers that were designed with tight plate gaps in order to get the best efficiency fouled very quickly. Conversely, those geared towards requiring less maintenance and cleaning are unable to meet today's removal requirements. Mercer International's design provides a time-tested solution that combines the highest possible efficiency with the lowest practical maintenance in one coalescer system.

At the heart of this solution is Mercer's removable plate coalescer, a patented system utilizing flat parallel-plate coalescer modules with removable and adjustable plates. Another important evolution in the oil water separation arena came when Mercer incorporated unique dedicated zero-turbulence chambers within the coalescer for independent solids removal and oil extraction.

Other features allowing for ease of maintenance include a steep-angled, full-length "V" solids hopper with multiple sludge outlet ports, completely removable two-stage inlet & outlet distribution baffles, automated oil skimming, full-width EZ-adjust weir plates, and their coalescer's signature herring-bone plate design.

One major metropolitan Electric Utility company in the greater NYC area found itself up against a difficult application due to a corrosive wastewater with very high solids. After purchasing an oil/water separator from another manufacturer, they found themselves forced to clean and maintain the unit on a monthly basis. Even monthly cleaning was not always enough to keep the client in compliance. The original vertical tube design they had purchased was not meeting their needs due to cost of excessive maintenance requirements, so they came to Mercer for a solution. The client purchased and installed a new Compliance Master™ separator and was very successful in extending the utility company's maintenance schedule to a quarterly basis. What had been more than $120,000 in annual maintenance costs was now reduced to $40,000 annually after installing the Mercer's solids-friendly design. The new $150,000 separator had paid for itself in 2 years and the customer will end up saving more than a million dollars over the lifespan of the unit.

"Even monthly cleaning was not enough to keep the client in compliance."

Savings Options: Retrofit Your Under Performing Separator

Upgrade coalescers and components with high-performance Multi-Pack™ coalescers and efficient flow distribution baffles.

Mercer International has a knack for providing cost-efficient solutions for existing "under performing" separators that prematurely fail due to fouling from solids. If the client's separator tank is in good condition, Mercer can typically custom design a solution to replace the internal coalescers and components with high-performance Multi-Pack™ coalescers and efficient flow distribution baffles systems.

API Separators

Mercer has retrofitted many existing inefficient American Petroleum Institute (API) type units into state-of-the-art "enhanced gravity" separators. This is done by incorporating our engineered inlet and outlet flow distribution systems in conjunction with our world-class field-adjustable ***Multi-Pack***™ coalescers. We custom design the components to snuggly fit into the existing concrete or steel API tanks. Automated oil skimming equipment and controls can also be incorporated. Mercer can easily design a system to upgrade your existing API unit to increase both efficiency and capacity.

Existing Separators

Mercer can retrofit most brands' separators when they are not meeting the end user's performance needs. Often times the most cost effective way we've been able to provide the higher performance of the ***Compliance Master***™ separator is when we have placed our "guts" in another brand's existing separator and the client have seen the vast improvement with our internal components *in the very same application that they were experiencing problems!* If the original tank shell is in sound condition, we can design our internal components to slip into place and start supplying high-performance results at a fraction of the cost of removal and installation of a brand new system.

The Multi-Pack in Concrete API Pit

Retrofitting of Existing Tank

API Retrofit

How a Mercer Unit Can Save a Company **$725,000** Over 25 Years.

To calculate how much savings can be realized by purchasing a Mercer International Compliance Master™ oil/water/solids separator, let's look at a 400 gpm unit. This is the flow rate at which Mercer has made its mark in the electric utility and oil /gas industries (400-600 gpm). Let's compare this to a standard Vertical Tube Coalescer (VTC) unit of the same size.

There are 5 major areas of the maintenance process that needs to be considered. These include: cost of labor, size and costs of vacuum/pumper trucks and pressure washing truck, PPE (gas monitoring equipment, confined-space harnesses and lifting equipment, level "C" suits, respirators, gloves, gas monitoring devices, etc.), environmental and oil absorbent materials, various cleaning equipment, hose and accessories and finally the disposal costs.

Example:
In most cases, an end user relies on an environmental maintenance service company to handle the maintenance of their oil water separators due to wastewater and oily sludge disposal needs. Let's consider the average electric utility company's application as an example. With a moderately heavy solids applications it is reasonable to need anywhere from monthly to quarterly maintenance requirements in order to keep the effluent within compliance.

Mercer International Compliance Master™
400 GPM Unit

THINK MERCER
THINK COST EFFECTIVE

MERCER UNITS TYPICALLY EXTENDED QUARTERLY CLEANING TO SEMI-ANNUALLY

SAVE $725K OVER 25YRS

Below is a copy of an itemized invoice for the cleaning of a 400 gpm unit. As you can see from the service invoice, the cost of a one-time maintenance service is over $10,000 when you add sales tax. When you consider a four-man crew and the equipment/disposal costs, the charges can mount up quickly. An average 400 gpm separator unit has approximately 4,000 gallons of wastewater needed to be removed, and therefore a larger (6,000 gal capacity) truck is needed to completely drain the wastewater out of the unit before cleaning. Once drained and cleaned there are transportation and disposal costs associated, as well.

		DESCRIPTION		QTY/HRS	UM	BILLING RATE	TOTAL
		As Bid					
1003	AS BID	Supervisor	1	8	HR	$75.00	$600.00
1005	AS BID	haz Mat Technician/Marine personnel (cleaning crew)	1	24	HR	$55.00	$1,320.00
1005	AS BID	haz Mat Technician/Marine personnel (2nd day transport)	1	8	HR	$55.00	$440.00
2002	AS BID	Vacuum Trailer and Tractor	2	8	HR	$80.00	$640.00
2003	AS BID	Stainless steel vacuum trailer and truck	2	8	HR	$85.00	$680.00
2027	AS BID	Utility Trucks/Sedans	2	1	DAY	$125.00	$125.00
2039	AS BID	Hotsy Truck/trailer	2	8	HR	$60.00	$480.00
3202	AS BID	Level C - Protective Clothing and Respirator	3	2	MAN/DAY	$170.00	$340.00
3203	AS BID	Level D - Protective Clothing(Standard work uniform)	3	2	DAY	$30.00	$60.00
3205	AS BID	Confined Space Entry Equipment	2	1	DAY	$400.00	$400.00
3303	AS BID	Oxygen LEL Meter (MSA 361 & MSA Passport 3 Gas Alarm)	2	1	DAY	$100.00	$100.00
6400	AS BID	Reinforced Sheeting, 20' X 100'	3	1	EA	$240.00	$240.00
6401	AS BID	Plastic Bags, 3 MIL, 10" X " X 23"	3	1	CASE	$55.00	$55.00
8001	AS BID	SIR-36	3	1	1 Roll/Bale	$345.00	$345.00
Disposal #1	AS BID	United	4	6000	Gall	$0.50	$3,000.00
Disposal #2	AS BID	Covanta	4	1	TON	$200.00	$200.00

Day 1

DATE:

1	LABOR		$2,360.00
2	EQUIPMENT		$2,425.00
3	MATERIALS		$1,040.00
4	DISPOSAL		$3,200.00
5	SUBCONTRACTOR		$0.00
6	OTHER		$0.00
	SUB-TOTAL		$9,025.00
	20.0%		$693.00

FUEL & INSURANCE SURCHARGE(EQUIPMENT & MATERIALS ONLY)

TOTAL: **$9,718.00**

ALL TOTALS ARE WITHOUT SALES TAX

Now comparing the "Mercer Advantage" by accounting for the difference in maintenance requirements over a year (50% less maintenance), the client, using a Mercer separator could extend their quarterly cleaning to semi-annually. That would mean two annual cleanings instead of four. As such, Mercer's design would provide $20,000 in annual savings, $100k every 5 years, and nearly three quarters of a million dollars in cleaning costs over the expected lifespan of the unit.

SAVE $725K OVER 25YRS

How a Mercer Unit Eliminates Replacement Media Costs

The fouling of coalescers occurs as solids settle into the various nooks and crannies of a poorly-designed corrugated plastic coalescers or vertical tube coalescers. The solids start to "back up" in the coalescers and eventually clog the individual plate gaps or vertical tube channels. In theory these "bundles" or "cross sections" of media are easy to pull out of the oil water separators, clean, and put back into the units. In reality, these internals are very difficult to fully clean (all the way through), and are often times fouled beyond the point of complete cleaning. Over time, the weight of the solids within the plastic coalescer breaks the coalescer causing the need for replacement. In higher temperature applications, this degradation is even more rapid. Both engineering and purchasing groups should consider the added cost of replacing failed coalescers. On the next page is relevant pricing information that may be helpful in the decision-making process.

MULTI-PACK FACT

Cleaning Features — One major advantage of the removable-plate Multi-Pack™ design is the ease of cleaning. Although the separator can handle very high solids loading, with time oil-laden solids and sludge deposits will accumulate in the coalescer. The entire coalescer can be easily removed by the operator, visually inspected, and cleaned in minutes. Once cleaned, the coalescer is slipped back into position and is immediately ready to operate again. The easily removable design virtually eliminates the costs associated with the "confined space entry" regulations.

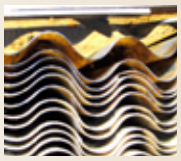
SAVE $725K OVER 25YRS

Coalescer Styles and Pricing

Using the nominal 6' x 5' x 4' (120 cubic feet) dimensions of a Multi-Pack coalescer, the end user can get an understanding of the cost to purchase replacement vertical tube plastic media of the same size. At $75 per cubic foot for the VTC coalescer, it will cost $9,000 annually to replace their packs.

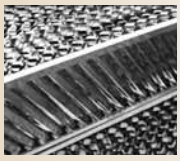
Vertical Tube
$75 per Cubic foot

Plastic Corrugated
$8.50-$11.50
per cubic foot



CPI
$241 per cubic foot

Plastic Latice
$25 per cubic foot



Stainless Steel
Corrugated
$120 per cubic foot

Fibrous Mesh
$120 per cubic foot

Conclusion

Totals:
Annual Cleaning Savings: **$20,000**
Annual Replacement Media Savings: **$9,000**
$29,000 per year over 25 years = **$725,000** over the lifespan

The savings may be less for some applications and more for others. The exact amount of savings realized for a specific application is difficult to quantify exactly, but the above example helps to identify the "hidden" costs of purchasing separator equipment when initial purchase price is the main consideration. Initial purchase price, of course, is important…but long-term costs are significantly more important when it comes to total cost savings.

Maintenance costs will begin to accrue when the oil water separator is commissioned and the first gallon-per-minute of wastewater is processed through it. Mercer International presented its unique oil/water/solids separator design to industry nearly a quarter century ago in direct response to the problems that industry was experiencing with existing oil/water separator design. Lower prices are irrelevant if the solution to the treatment process falls short of being sustainable for long periods of time. There's an old adage in the wastewater industry that "You usually get what you pay for" (and often times—less!).

The status quo of "quick to foul" and "difficult to maintain" separators leaves much room for improvement. Finding the solution to this problem, while maintaining the efficiency required of today's needs, is what sets Mercer apart from others. Mercer's reputation for providing companies savings over the long term, based on an initial investment in quality components, durability and sound design has been steadily spreading to new industries.

Whether it's for a new application, or the replacement of an under-performing unit, Mercer prides itself as being the most efficient, easiest to maintain, and most cost effective long-term solution for its clients.

The "**What If?**" Factor

Perhaps the most impactful costs in the life-cycle calculations are the hidden costs of not staying compliant. Some purchasers of oil/water separators are not aware of the chronic maintenance problems that are inherent in the majority of standard separator designs and, as such, are not aware of how their effluent flow is so quickly compromised. This is where the penalties and fines begin. Many industries are now in a "zero tolerance" mode in regard to effluent violations. The price of making even one mistake now warrants investing the money up front to help ensure a zero tolerance for under performance. It's this concern that often leads companies to ramp up their maintenance schedules (and the cost of the added maintenance) because of the trepidation they have over incurring fines and penalties. In most industries where an unblemished company image is paramount, such as the Oil & Gas, the Electric Utility, and the Chemical industry, the cost of the fine is many times secondary to an untarnished public perception.

Are you willing to gamble?

A short term cost savings may end up costing you much more.

When the client does not feel protected in regard to effluent violations, they tend to throw money at the issue. The Mercer International Compliance Master™ design is geared toward keeping its end users confident about their treatment process, knowing that they have the best available technology at work for them.

Mercer International Inc.

A few assumptions were made for this discussion:

Labor
Regardless of how large the separator, a general rule of thumb for any unit over 100 gpm is that a crew of four is required for proper maintenance. The crew comprises of a supervisor, a Class "A" truck driver for the pumper truck, and two general laborers. Considerations must be made to account for different regions of the country that have different average pay rates. The example we cite is for a scheduled preventive maintenance event of a substation in the NYC Metro area during the normal working day paying "straight time". Adjustments should be made to the labor rates as the local region dictates.

Size of Pumper Truck:
Most environmental cleaning/remediation companies typically have two sizes of pumper trucks. The smaller of the two can accommodate up to 3,000 gallons of wastewater and the larger can handle 6,000 gallons. To decide which tanker truck may be required based on volume of wastewater held in a separator, a rule-of-thumb is to multiple your separator's maximum rated gpm flow by ten and that will give you the amount of gallons held by a typical separator of that size. So, if you have a 200 gpm unit to be cleaned, you would have 2,000 gallons in which to dispose, and therefore the smaller of the two trucks would be sufficient. In our sample case, we have a 400 gpm unit and would require a truck that can handle ≥ 4,000 gallons. Pumper truck rates were based on the NYC region. Adjustments should be made based on your local region.

Transportation:
In this walkthrough we account for one driver of the pumper truck, one driver of a power washing truck, and one vehicle a piece for the supervisor and the second laborer.

Frequency:
Three maintenance frequency scenarios are likely here (either monthly, quarterly or semi annually). We have chosen to look at an application where a company is currently servicing their oil water separator on a quarterly basis. This is typical for any industrial company in an "environmentally sensitive" industry with average oil and solids loadings.

Replacement media:
We took the six mainstream coalescer designs and priced three different manufactures for each style. Taking the nominal sizes of each of these units we came up with the average price per cubic foot. From there we used the size of a 400 gpm Multi-Pack to calculate the 120 cubic feet. If actual prices are known for a certain brand of coalescer, they should be substituted.

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