

# Complexity in ISFA

## (in-service fluid analysis): Part XX

Successful CM programs are straightforward—but that doesn't mean they're easy.

**PREPARING FOR AN EFFECTIVE CONDITION MONITORING PROGRAM IS A MAJOR UNDERTAKING.** The larger the entity or the more varied and complex are the entity's holdings, the more difficult the task of establishing a successful CM program.

In the previous column, I debunked the notion that ISFA (or any aspect of CM) is trivial to install or somehow runs on autopilot. Such thinking is a recipe for disappointment. Maybe

it's simply a recipe for throwing money away. It needn't be that way, but a lot of pre-consideration is crucial.

It is important to understand the fundamentals that make or break a program. Toward this point, I want to elaborate on the matrix from my November 2014 column, delving more deeply into the caveats and pitfalls that can occur despite very good intentions.



## COMMON END-USER ERRORS AND OMISSIONS

1. **Not defining one's program fully. This involves failure to establish a corporate goal for productivity (uptime) and ROI** but still taking lube samples to analyze in a corporate lab or sending them to a commercial lab or perhaps one's lube supplier. Such programs lack any sort of grounding and, therefore, have no accountability built into their framework.
2. **Placing an otherwise good, competent person in charge of the program when that person already has a full slate of responsibilities.** CM, at any reasonable level, is a full-time job or very close. Corollary: Placing a person in charge who has no familiarity with CM, at least at a peripheral or overview level or who will not receive any support training, presents a clear risk. Relevant experience is highly valuable and should be a requirement for a CM/ISFA manager.
3. **Failure to opt for the most effective ISFA relationship possible:**
  - Corporate in-house labs, whether housed in a building or set up as Tier 2 (on-site) in satellite corporate sites, have seemed most effective in my experience because there was greater demand and consensus for initiation. Such labs are equipped to address the entity's specific machinery undergoing monitoring, resulting in a better marriage of tests versus tasks. There are often domain expert candidates (who can be promoted from related positions such as lubrication or repair and maintenance) available for such entities when a decision is made to stand up a corporate lab. The learning curve is appropriately lower when a person already involved at the entity is elevated in such a manner.
  - Commercial labs (Tier 3) have the location limitation, wherein there is often no ongoing discussion or review of the program. Essentially an arm's length relationship that's, in effect, hit and miss. Labs with strong evaluators will usually be effective, but without any first-name relationships and ongoing dialogue the program's unlikely to amount to what it could/should be.
4. **Selecting testing equipment or services (or an ISFA laboratory) without sufficiently vetting the situation as to pertinent tests for the machinery placed on CM** or, for that matter, the lab's qualifications in terms of customer base (experience with the entity's machinery types).
5. **Using a Tier 3 (offsite) lab but not forming a relationship or even knowing the name of the evaluator(s) who renders opinions and commentary on the test data.** The user may know the lab has a fine reputation, and that may be absolutely so, but I suggest to you that the lab's reputation is primarily based on the rendering of accurate test data from promptly analyzed samples (i.e., the act of being a good lab). Here's where oil analysis is simply an inadequate term. Most established labs are quite competent and diligent. Virtually all of them are now accredited as testers.



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They're not accredited as to evaluation, however, because there's no established standard for that, and a method would be a huge problem undertaking at the very least.

**\*Note:** Please do not offer ASTM D7720-11 as an example—that's a (very reasonable) guideline and advisory for using sound statistical techniques and models to assess and flag data. Many labs provide nice summary data in that regard, graphs and the like (lots of visuals in a dashboard), but flagged or otherwise categorized data don't spit out recommendations.

Humans or expert systems do. Not all expert systems, and certainly not all humans, are created equal when it comes to evaluation. Evaluation is, as I've stated time and again, the end-game in ISFA. Uptime maximization and ROI from ISFA and CM is post end-game work and should be vetted in the corporate office in consideration of good CM data.

Read the above initiation section again if you're embarking on an ISFA program. Below is another matrix, regarding one's selection of lab configuration, to build on that of the previous column.

Given the entity conducts a good program initiation, one must then look at ongoing concerns that should be addressed lest they squelch program effectiveness and objectives.

For the next article, we'll explore the program in action. **TLT**



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Choosing One's Laboratory Configuration	Private Corporate Lab	Independent Commercial Lab	Supplier Lab, Oil Company, OEM, etc.
<b>General Description/Assessment</b>	Private corporate labs are in position to be the best alternative for ISFA if the entity can justify it with sufficient samples and quality personnel in the analytical and evaluation mix. <ul style="list-style-type: none"> <li>Local analysis for best turnaround time is possible.</li> <li>Talent and staffing, particularly domain expertise, can be culled from the entity itself.</li> <li>Purpose-built labs can be stood-up for best effectiveness in terms of performing tests that are most revealing of problems that affect the entity's specific operations.</li> </ul>	Commercial labs were the original backbone of ISFA and likely still perform more than half the analyses done worldwide. They've lasted as long as they have because they are usually effective at a good price.	Supplier labs were founded by oil companies decades ago, providing very good monitoring of fluid condition, backed by knowledgeable people. OEMs followed suit in the 1970s and forward. Supplier labs are akin to Commercial labs—in fact many supplier programs are performed by commercial labs under private label.
<b>Strengths</b>	A well-planned private lab can avoid nearly all the pitfalls of program setup. A manager is likely already employed in another area. Test instruments can be hand-picked for the machinery served. The machinery under test is well known. Domain expertise is available to guide evaluation quality. Location is local for rapid turnaround, a big advantage.	Commercial labs usually offer the widest variety of tests and can accommodate most any machinery and lubricants. These labs see more varied equipment than any other lab type and it enables them to differentiate limits differences by machinery type more readily. A good number of commercial labs are quite competitive as to pricing, offering very good value, especially in the U.S.	Supplier labs have similar strengths to commercial labs, but oil company supplier labs are the best qualified of all lab types to analyze their own fluids and assess lube change intervals. Similarly, OEMs are best able to provide insight as to stress points and metallurgy in their machinery. In other respects supplier labs are roughly equal to commercial labs.
<b>Limitations</b>	Private labs are islands unto themselves which may hinder progressive knowledge building, .e.g., a drilling company may know how well it's doing against its own goals but may also wonder how well it is doing against another drilling company with similar goals. Commercial and supplier labs 'see' these rankings because they would have several drillers on their customer lists. A solution, of course, is for private lab personnel to attend maintenance conferences for useful cross-pollination and knowledge exchange. Blogs are also available for a variety of discussions toward knowledge sharing. Of course one needs to vet the knowledge offered at times.	Commercial labs are detached from their customers due to location (customer or lab). This results in report delays from distance itself—true, critical reports can be telephoned or emailed, however there are numbers of customers expecting such treatment and they can't all be called at the same time, necessarily. Much of the time the relationship between the lab and the entity is arm's length and negatively affects otherwise well-meant communication and effectiveness. This doesn't mean the program isn't effective, but it may not be as effective as it could be in such instances.	Supplier labs also have limitations comparable to commercial labs, location being the most significant.