

**IS THE STEAM YOU USE PURE FOR SURE ?**

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In any power plant using steam, there are a lot of hidden culprits that slowly eat into the Boiler tubes/Super-heaters or more importantly, the Turbines. These are impurities associated with parameters such as Dissolved Oxygen, Silica, Phosphate, Sodium, Chlorides & many others. These impurities ultimately result in erosion & corrosion which can finally lead to turbine failures / boiler shutdowns or in extreme cases, permanent damage to your equipment. The cost of unplanned shutdown can be very high. As per EPRI, USA findings, 50% of the unplanned shutdowns are due to inadequate analysis/control on impurities & the erosion / corrosion resulting from it.

As per another finding, corrosion, if not monitored properly, can result in a loss of turbine efficiency by @ 10%. This means a recurring loss of 10% revenue! Also the loss can be tremendous if there are damages / failures. This has actually happened to many power generating turbines in India & abroad.

Corrosion, Erosion & Deposition are similar to Cholesterol levels in our body. One knows that it is essential to control Cholesterol to appropriate levels, but HOW ? Unless there is a proven, reliable & accurate method to measure Cholesterol levels, one doesn't know what levels exist. And, if he/she doesn't know what levels exist, how can he/she control it? Anything that can be measured accurately, can be controlled properly.

It is possible to arrest this damage. With the help of a well engineered Steam & Water Analysis System (**SWAS**), one can monitor these impurities to ppb (parts per billion) levels, for 24 hours a day, 365 days a year!

Forbes Marshall is perhaps the largest manufacturers of **SWAS** packages in India. Forbes Marshall can offer an integrated sample conditioning & analysis system that includes the conditioning equipment & world class on-line analyzers. Backed up by state of the art technology from their JV partners M/s 'Hach Ultra Analytics, Europe' for on-line analyzers, Forbes Marshall offers a total solution for steam & water chemistry.

Any good **SWAS** package needs expertise in Steam Engineering as well as Control Instrumentation'. Forbes Marshall is perhaps the only company in India today that has this unique combination. With an installed base of over 200 SWAS packages, Forbes Marshall today are in a position to offer solutions to most complex requirements in Steam & Water Analysis.

## What should one look for when it comes to monitoring Steam & Water Quality ?

Here are a few important points to note :

**1. Combination of Steam Engineering & Control Instrumentation:** It is extremely essential that the solution provider has expertise in Steam Engineering & Control Instrumentation. This aspect is extremely important for making a well-engineered SWAS. FM is perhaps the only instrumentation company having expertise in Steam engineering as well. This comes handy when designing Sampling systems for better analysis. The analysis can be as good as the quality of mechanical / thermodynamic design of the Sampling system.

**2. Accurate results :** Accuracy of analysis to parts per billion (ppb) levels is only possible with a well-engineered SWAS.

**3. Regulated output :** SWAS must provide REGULATED pressure/temperature & flow conditions even under fluctuating input conditions. This is one of the most important aspects of a well engineered SWAS.

**4. Installed base :** The solution provider must have good experience in this field. FM has installed base of SWAS at more than 200 locations, unmatched by most others in this field.

**5. Service Network :** Since SWAS packages need a good after care, the service provider should be geared up for this. FM can support their system through well trained engineers from their 25 + branches.

**6. Work experience with Power majors :** All the power majors look for a reliable solution provider. FM has working experience with renowned companies such as Siemens, ABB, NTPC, BHEL, Honeywell, Mitsui, Hanjung, Foster & Wheeler, Yokogawa, Bechtel, Linde, Lentjes, Indonesia Power & so on.

**7. In House capabilities :** It is essential that the solution provider is capable of manufacturing all critical components of a SWAS package. FM makes all the critical components of SWAS such as Sample cooler, Pressure regulator, Back pressure regulators, High pressure stop valves & even the Chillers, which makes FM SWAS packages most reliable.

### **8. The analyzer advantage :**

a. The solution provider should have a complete range of analyzers required. FM is one of the few companies that have complete range of analyzers under one brand. This aspect is very useful in terms of better after sales support. The user doesn't have to contact many

agencies. It's single point responsibility.

b. Reduction in number of spares : The analyzer range should be so designed that there is rationalization of spares requirement (e.g. power supply PCBs, Mother Board etc. can be common items). In FM SWAS there are many spares that are common between different analyzers.

**9. Most critical & important analyzer - The Silica Analyzer** : Silica, being the most important & critical measurement, one needs to be chose the Silica analyzer very carefully. Today silica analyzers are available that can give an unmatched cycle time of 9 minutes. Local lab sampling facility is also provided with the new generation Silica analyzers. The above features make it 'a very easy to commission' analyzer. These features make it easy to convince the plant chemist about the analyzer's reliability & accuracy.

#### **10. The Chiller :**

Chillers are required to provide chilled cooling water, when the available cooling water in the plant is not adequate to cool the sample to the desired temperatures. FM is perhaps the only SWAS manufacturer in India to have capability of manufacturing Chiller packages. FM Chiller packages are dispatched fully charged with refrigerant. This reduces commissioning time & cost substantially.

*To conclude, it is essential to control the parameters that are silent killers of your steam power plant. Anything that can be measured accurately, can be controlled properly. Hence a well designed Steam & Water Analysis System is must for every power plant using steam.*

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