



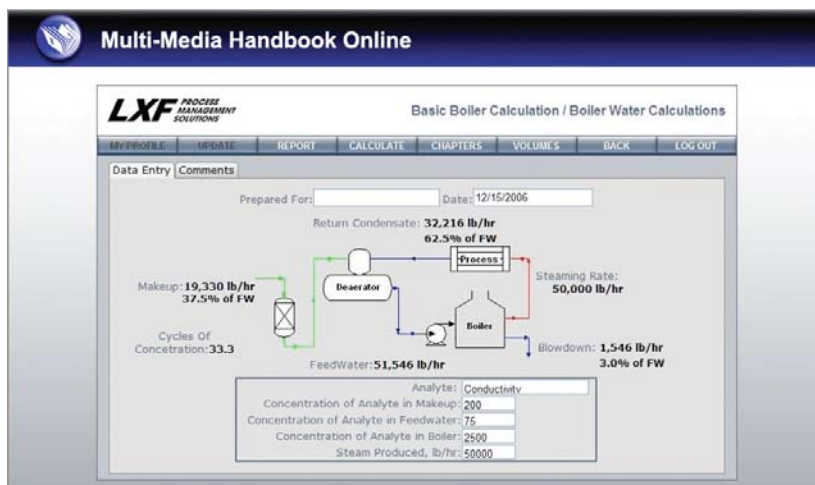
Multi-Media Handbook Online

Ready access to pertinent information is critical to the successful operation of your business. BUT, information is rarely easy to get our hands on when we need it. Even when the bits and pieces of information you need are in folders on your PC, your PC is often not in the same place as your need. Efficiently managing all of that information is important, but it can be almost impossible to have at your fingertips—unless you use **Multi-Media Handbook Online (MMH Online)** from LXF, Inc.

With the new **MMH Online**, you can access all of the pre-loaded data and your added technical references wherever you can connect to the Internet.

Combine documents, pictures, spreadsheets, etc. under one topic or subject, and have each available with the click of a button – no matter where you are. As long as you can open the file on your PC, you can open the file in **MMH Online**.

MMH Online includes a core technical reference second to none—the **AWT Technical Reference and Training Manual**, an electronic version of the 700+ page manual sold by AWT. Authored and edited by some of water treatment's most respected technical consultants, this manual is comprehensive and objective.



In addition, **MMH Online** contains the 150+ page **Industrial Water Treatment Procedures Handbook**, published by the **US Army Center For Public Works**. Its stated purpose is to "provide information on the application, selection, procurement and implementation of water treatment procedures and chemicals required to properly operate boiler and cooling systems and maintain the waterside surfaces."

Chemicals Used in Water Treatment / General Water Treatment Calculations

Chemicals List | Data Entry

Substance	Formula	Atomic Wt	Equiv. Wt	Chem To CaCO3	CaCO3 To Chem	Edit	Delete
Acid - Acetic	HC2H3O2	60.1	60.1	0.83	1.2		
Acid - Carbonic	H2CO3	62.0	31.0	1.01	0.62		
Acid - Hyd. Sulfide	H2S	34.1	17.1	2.93	1.05		
Acid - Hydrochloric	HCl	36.5	36.5	1.37	0.73		
Acid - Nitric	HNO3	63.0	63.0	0.79	1.26		
Acid - Phosphoric	H3PO4	98.0	32.7	1.83	0.55		
Acid - Sulfuric	H2SO4	98.1	49.0	1.02	0.98		
Acid - Sulfurous	H2SO3	82.1	41.1	1.22	0.82		
Alumina	Al2O3	101.9	17.0	2.94	0.34		
Aluminum	Al	27.0	9.0	5.58	0.18		
Aluminum Chloride	AlCl3	133.0	44.4	1.10	0.89		
Aluminum Hydroxide	Al(OH)3	78.0	26.0	1.92	0.52		
Aluminum Sulfate	Al2(SO4)3.18H2O	666.4	111.1	0.45	2.22		
Ammonia	NH3	17.0	17.0	2.94	0.34		
Ammonium Chloride	NH4Cl	53.5	53.5	0.94	1.07		

Other technical references cover specific subjects like a **Corrosion Primer** by Rohrbach, SPC, fuel additives, and Legionella.

Finally, **MMH Online** has almost 20 built-in calculations and tables specifically designed around industrial water treatment applications, including mass balances, chiller and boiler efficiencies, saturation indices, conversion tables, etc. Each accepts your specific input and generates a customized report that can be printed or saved (as a pdf).

Multi-Media Handbook Online

LXF PROCESS MANAGEMENT SOLUTIONS

Boiler Rate of Return / Boiler Water Calculations

MY PROFILE UPDATE REPORT CALCULATE CHAPTERS VOLUMES BACK LOG OUT

Data Entry | Fuel Data | Comments

Prepared For: _____ Date: 12/15/2006

Operating Data Boiler Steaming Rate: 50000 Boiler Pressure, psig: 250 Combustion Efficiency, %: 80 Return Condensate Temp. °F: 200 Makeup Water Temp. °F: 85 Type of Fuel: #2 Fuel Oil Units Used In Energy Costs: Gallons Energy Content of Fuel Btu/Unit: 135000 Days of Operation/Year: 350	Costs Fuel, \$/Unit: 0.85 Makeup Water, \$/1000 gal.: 1 Sewer Discharge, \$/1000 gal.: 1	Variables Current Cycles: 35 Proposed Cycles: 50 Current Returns %, of FW: 35 Proposed Returns %, of FW: 50
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But you do not have to limit your references to the data that we provide, as extensive as it is. Add your own volumes and chapters. Follow simple on-screen prompts to define and upload your own references, product data sheets, PowerPoint presentations, spreadsheets, etc. Access them from any PC that is connected to the Internet.

The **Multi-Media Handbook Online** continues a long tradition of quality software designed to make the increasingly difficult task of managing the many pieces of job-related information easier and less stressful.

For a free demo, visit WWW.LXFONLINE.COM and follow the prompts. See the future of water treatment references.

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LXF PROCESS MANAGEMENT SOLUTIONS

Cooling System Mass Balance / Cooling System Calculations

MY PROFILE UPDATE REPORT CALCULATE CHAPTERS VOLUMES BACK LOG OUT

Data Entry | Comments

Prepared For: _____ Date: 12/15/2006

Cycles Of Concentration: 7.0

Evaporation Rate: 228.0 gpm

Makeup: 266.0 gpm

Circulation Rate: 15,200 gpm

Blowdown: 38.0 gpm

Analyte: Conductivity Concentration of Analyte in Makeup: 143 Concentration of Analyte in Tower: 1000 Circulation Rate, gpm: 15200 Temperature Drop Over Tower, °F: 15.0 Evaporation Factor, %Evap/10 °F: 1.000

PDF Report

Multi-Media Handbook Online

Prepared For: _____ Date: 12/15/2006

Biocide Depletion

Basis of Calculations	% of Initial Dose	Time (min)	Time (hrs)	Blowoff (gph)
System Volume (gph): 100000	100%	0	0	0
Cycles of Concentration: 5	95%	1221.3	20.4	11.08
Tower Design Load (tms): 500	90%	2500.0	41.8	107.08
Temperature Drop(°F): 15	85%	3476.3	58.5	162.75
Operating Load, %: 92	80%	5113.9	86.6	221.64
Recirculation Rate (gpm): 1200	75%	6839.9	114.2	287.72
	70%	8803.8	146.8	380.76
	65%	10928.6	177.0	496.66
	60%	13244.1	220.7	649.92
	55%	15826.1	263.8	850.94
	50%	18696.3	316.6	1122.27
	45%	21852.5	369.0	1479.65
	40%	25303.4	421.4	1938.88
	35%	29050.2	473.8	2516.89
	30%	33093.0	526.2	3230.64
	25%	37432.9	578.6	4097.15
	20%	42069.9	631.0	5134.48
	15%	46903.7	683.4	6370.72
	10%	51935.3	735.8	7835.00
	5%	57165.6	788.2	9547.44
	1%	62595.7	840.6	11538.00

Calculated Mass Balance	Evaporator Rate	Blowdown Rate	Makeup Rate
min	16.6	4.2	20.8
hour	996.0	252.0	1248.0
day	23904.0	6048.0	29952.0

Biocide Retention Time (Days): 26.6
(Based on target residual percentage of 20%)

These figures show only the theoretical maximum retention time for a slug-dosed biocide when depletion is due only to blowdown. In use, absorption and chemical factors will reduce levels more rapidly. Biocides will normally have to be dosed more frequently than these figures suggest. It is unlikely that they can be used less frequently.

Biocide Concentration vs Time

To order the **MULTI-MEDIA HANDBOOK ONLINE** or request additional information, contact LXF at 800.473.8083.



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