

ESCO NEWS

OCCASIONAL NEWS AND INFORMATION FROM ESCO ENGINEERING NO. 5, October 1993

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SOFTWARE ALERT!!

ESCO is using AutoCAD 12 on a regular basis now. We have yet to find major improvements over Release 10, but we'll keep looking.

Our new CD-ROM capabilities enable us to quickly access and search large documents such as the Canadian Electrical Code and the Ontario Building Code. As with all new developments in the world of computers CD-ROMs still leave something to be desired. *A word of caution: presently CD-ROMs have no uniformity in their interface, so you have to learn new search software for each disk you buy!*

THE VIEW FROM THE FIELD

Cooler weather is upon us, and people in processing plants everywhere are closing doors and windows and stuffing rags in any building openings they can find, in order to keep the cold out. Sound familiar? Then this will be familiar too, if you have any fume exhaust systems in your plant.. slowly you are receiving more and more complaints about fumes not being exhausted. Maintenance gets into the act to "find out what's wrong with the scrubbers or the fans".

Well, neither of the two has anything to do with the problem; it's simply the fact that the exhaust system can't exhaust anything anymore. By closing everything up tight there is no air coming into the building to be exhausted! It's just like closing a damper in the fan suction.

Worse than that, if you happen to have more than one fume exhaust in the same building, you might even experience air flow reversal in one of the systems. What goes out has to be coming in somewhere!

A properly designed fume exhaust system is very dependent on the *air flow* entering the hoods and ducting, and if this air flow is restricted by any means, fumes will not be exhausted properly. Therefore, a fume exhaust system that works perfectly in the summer when the building is wide open may perform poorly in the winter when everything is closed up tight.

To overcome this problem we obviously can't just knock a hole in the plant somewhere, but

there *are* several options which can be considered. Whichever option is selected will need to take into consideration such things as

- comfort level of the plant
- conflicting air currents
- cold or warm air makeup
- cost considerations

If your fume exhaust systems are not up to par in winter time, don't cocoon your plant entirely. A little bit of draft here and there will keep you from coughing and if the drafts are designed properly they will also keep you away from the doctor.

STILL FREE!

Are you interested in finding out more about plate type fume scrubbers for pickle lines? Ask us to send you Neil Stone's AISE paper describing how plate type fume scrubbers work, and how they can benefit you.

Also available is our spreadsheet software for calculating acid evaporation rates. It determines surface losses for hydrochloric, hydrofluoric and nitric acid and water in tanks. The spreadsheet is available in Lotus 1-2-3, and Microsoft EXCEL formats.

Last but not least, you can *still* get your own copy of the updated "The Why's & How's of Sulfuric Acid Pickling".

Write or fax us for your free copy today!

PEOPLE IN FLUX

Once again ESCO is supporting the local high school co-op programs. This fall Peter Martens from Kingsville and Jeremy Hall from Leamington have joined the crew for the next eight or nine months.

Jane Stone has left the Kingsville office, but still continues to do some contract work for ESCO from her new home in Nova Scotia. New fax/modem technology allows files and data to be transmitted across regular phone lines, so that working from a 'remote' location is easy.

ESCO WORKS

ESCO gets involved in a wide range of projects, in addition to our main stream work with metal pickling, fume scrubbers and food processes. Some of our other jobs include:

- design of a scaffold for painting the inside of water towers
- research into methods of separating rare metals from scrap
- analysis of tomato damage in a flume
- layout for a casting conveyor system
- design of a boat lift

JUST THE RIGHT SIZE

Today's emphasis on quality processing combined with reducing costs means that processes must be much more closely designed and controlled than was often the practice in the past, when utilities, especially water, were relatively cheap, and pollution control was almost non-existent. The philosophy then was 'make it plenty big enough'. Now, the idea is to make it just the right size.

Two common items of equipment that are often oversized are centrifugal pumps, and modulating control valves. If you use a pump that is too big for the job: you increase capital cost for the pump and its electrical wiring and controls; you waste power, because the pump is usually operating in a region of low efficiency, and also because it will need to be throttled back, with a very large pressure drop across the controlling valve; and throttling the pump can cause internal recirculation, overheating and excessive wear.

Oversized control valves cause poor process control, and cycling of process conditions as the valve tries to control while it is almost closed. Operating steam control valves that are almost closed causes a lot of noise, and damages the trim by erosion.

Not all equipment problems are caused by oversized equipment - spray nozzles are often undersized, in the mistaken belief that a high

pressure drop will prevent blockage, which is the most common problem with nozzles. In fact, using low pressure drop nozzles saves energy, and can give much more reliable service (when the function of the nozzles is primarily distribution), because this allows use of nozzles with much larger clearances, which are less likely to plug.

Whether your process is new, or existing, a small investment in a proper heat and material balance can make sure that your equipment is just the right size.

MORE FOR LESS

Want to get more life out of your equipment? Perhaps ESCO can help.

A major steel company was thinking of rebuilding their old pickle lines, but decided, instead to have ESCO carry out a detailed inspection and recommend a program of repairs.

Using this as a guide the company was able to target their spending on the most important defects, and extend the useful life of the equipment at substantially lower cost than the rebuild.

GOOD FOR A LAUGH

