

ESCO NEWS

OCCASIONAL NEWS AND INFORMATION FROM ESCO ENGINEERING NO. 6, September 1994

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CUTTING BACK ON WATER SAVES MONEY

Recently, ESCO completed a turnkey installation of a new strip rinsing/brushing system and sulphuric acid fume exhaust system at a major stainless steel mill.

In addition to improved rinsing and fume exhaust control, one of the primary objectives of the project was to minimize water usage. This, in turn, reduced the size, capital and operating costs of a new wastewater treatment plant.

Even after installing an extra scrubber, water usage was reduced from 1200 gpm to less than 200 gpm (design), and in fact to about 120 gpm. *How did we do it?* Plate scrubbers and countercurrent rinses were used, with water recycled and re-used wherever possible.

The changeover to the new system was done during summer shutdown, and no production time was lost on re-start. *The new system, with less water, rinses the strip better than ever before!*

ESCO WORKS

Recent ESCO customers include:

- Heinz Canada
- Rouge Steel
- Great Lakes Steel
- Sidbec Dosco
- Algoma Steel

FUME EXHAUST TIPS #3

Fans

The fan is the driving force for the fume exhaust system - it creates the air flow necessary for control of the fumes. Fans are sized on the basis of capacity (usually acfm) and head or pressure, (usually inches of water).

A fan does not have a fixed head and capacity - as the capacity increases, the discharge pressure generally decreases, and vice versa; in this way, the fan matches itself to the flow characteristics of the hood/duct system.

If your fume exhaust system is not controlling the fumes properly, this is usually a sign of reduced flow due to increased pressure drop somewhere in the system. A pressure survey can be carried out to establish where the high pressure drop is occurring.

Causes of pressure drop may be

- deposits of crystals in the duct
- liquid collecting in a low point
- collapsed duct
- corroded dampers
- garbage, such as plastic sheeting, in duct

In time, fan performance may deteriorate, due to worn or slipping drive belts or slight changes in impeller clearances, resulting from wear or maintenance. Fume exhaust fans should always be equipped with a casing drain to ensure removal of condensation and carryover, and this drain must be kept open.

Finally, if your system is not working well, especially after maintenance, make sure the fan is rotating in the right direction - we've seen more than one instance of fans going backwards!

Next time we'll talk about fume scrubbers.

USEFUL INFORMATION FOR FREE!

Still available, *free of charge* from ESCO:

- "The Why's & How's of Sulfuric Acid Pickling".
- Neil Stone's AISE paper describing how plate type fume scrubbers work, and how they can benefit you
- our spreadsheet software for determining *open tank emissions*, which is generating a lot of interest. We have had quite a few calls about this software, which 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.

Write or fax us for your free copies today!

PEOPLE

Peter Blokker has joined us as a field technologist, after graduating in Chemical Engineering Technology from St. Clair College. He was a mature student, having gone back to school after a number of years work experience in industry, so he brings the benefit of both practical and academic skills to the job.

EXPLANATION PLEASE!

Although the detail design of chemical process and pollution control systems and equipment is sometimes complex, involving much tedious calculation, the basic principles underlying the design are often relatively simple.

ESCO's engineers and technicians always try to explain to our customers the technical basis for our designs and recommendations, because we believe that a knowledgeable customer is better able to evaluate how our innovative ideas fit in with the customer's process.

Our customers often say "Now that you have explained how the equipment works we can see why...". *Need an explanation? CALL US!*

THE VIEW FROM THE FIELD

PLC - Friend or Foe?

There is no doubt that the PLC control system has its place in industry and that it has tremendous advantages over hardwire controls, *but* (there is always a *but*) does it apply and/or is it economical on every application?

Not really. For instance if someone in the office applies 2 paperclips a day would you install a PLC controlled paper clipper that would require a PLC technician to set up and maintain? Not likely. Therefore, if your process operator, in the course of performing his duties, has to adjust 2 valves once per day to maintain a certain process condition... you know what I am getting at!

There is a temptation to use the PLC for control *because it is there* or because it is '*state of the art*'. In some cases it just isn't the most economical control solution. But, what if the adjustment (or misadjustment) of 2 valves has crucial economical consequences in your operation? Then we must analyze these consequences and determine the economic feasibility of PLC control for a relatively simple application.

All the factors involved in making a final decision as to whether or not, with what and how, are too

numerous to cover in detail here. Suffice to say that generally an uninvolved third party doing an in-depth survey on the process and its control requirements can often be more objective about actual control requirements than a very busy, very involved in-house engineer.

Our field technicians have many years experience in gathering the information needed to allow us to make practical and economical recommendations for your process controls. After all we *can* see the forest for the trees because we are not in the same forest all the time.

GOOD THINGS IN SMALL PACKAGES

Almost all of the growth of business in the 90's is being attributed to the establishment of small businesses.

Having been around for 15 years already, ESCO Engineering is ahead of its time. We are a *great* example of the success of small business.

We believe that it is the people that make up the company, rather than the size of the company that counts. Our staff is made up of experienced, long term employees with a wide knowledge of various processes, technologies and design techniques.

Because of our size we have good co-ordination of disciplines, which minimizes the tendency for things to get 'lost in the shuffle'. We offer top quality engineering services and customized design for each application. *Give us a call to find out how we can help you!*

FOOD FOR THOUGHT

Some words of wisdom we've picked up along the way...

Prediction is very difficult... especially about the future.

In order for something to become clean, something else must become dirty... but you can get everything dirty without getting anything clean.

Complex problems have simple, easy-to-understand wrong answers.

Failure in the past increases the probability of success in the future.

The solution to a problem can be cheap, simple or fast - but it can't be more than two of these at once. If it's cheap and simple, it won't be fast; if it's simple and fast, it won't be cheap; and if it's cheap and fast, it won't be simple.

food and chemical process plant design • piping • metal pickling • fume and pollution control