ESCO NEWS

OCCASIONAL NEWS AND INFORMATION FROM ESCO ENGINEERING
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ESCO WORKS

Esco does a wide range of work in a wide range of industries. Some recent customers include:

- Canada Wire and Cable, Montréal, Québec
- H.J.Heinz Co. of Canada, Leamington, Ontario
- Tree Island Industries, Richmond, B.C.
- Great Lakes Steel, Ecorse, MI.
- Precision Galvanising, Ambridge, PA.
- Timet, Morristown, TN
- Worthington Steel, Monroe, OH.

Jobs completed in the last year include:

- 400 gpm wastewater treatment plant
- Installation engineering for dust conveyer system.
- Design and supply of a sheet pickler.
- Food machinery design.
- Design and supply of three 12000 cfm plate-type HCl scrubbers.

HCL SCRUBBERS

Title III of the 1990 Clean Air Act in the USA has targetted hydrogen chloride (HCl) as one of the priority pollutants. This will affect all HCl users, and especially steel picklers.

Esco's plate type scrubbers for HCl have these advantages:

- low water flow produces effluent from the base of the scrubber that is strong enough, and small enough, to be returned to the pickle tank. This means the acid content is recovered, and no neutralising agent is needed to treat it. A continuous pickle line can waste over $50,000 each year in acid costs by not recovering the fume scrubber effluent.
- no circulating pump and no moving parts means low maintenance, and power savings.
- no packing to plug up.

If you are interested in learning more about plate scrubbers, plan to attend the AISE Conference in Pittsburgh in September - Esco's chief engineer, Neil Stone, is presenting a paper about these scrubbers on the afternoon of Tuesday, September 24. If you can't be there, we'll be glad to send you a reprint of the paper.

OPERATING TIPS

Esco's field technician and design co-ordinator, Fred Hasler offers you these suggestions:

During 20 years of consulting in various pickling operations, one question comes up every time - ' Who's in charge of the pickling wet section?' Common answers are:

- Well, ugh... maybe..gee, I don't know.
- Well, I guess the crane operator sort of looks after it.
- We have a tank man looks after acid and stuff.
- Maintenance takes care of it.
- Quality control looks after it.

Only once have I found a technician in charge of the wet section - by which I mean the acid concentrations, chemical additions, steam and water usage, coating chemicals, and fume exhaust. Yet these items represent over half the cost of pickling!

Whether your pickling operation is old or new, the wet section needs to be balanced, cost controlled and managed - this is even more important if your pickling operation has been made effluent-free.

Take some time to think; if I call you, and ask to speak to the person who runs the pickling operation, who are you going to transfer me to?

CAD CAN

Esco Engineering has been using AutoCAD® to prepare new drawings since 1986, so we are well versed in the techniques of CAD, as well as its benefits and drawbacks.

We use CAD because:

- It makes optimisation of design easier; parts and equipment can be quickly drawn up to scale, and moved around the drawing to see how they fit.
- Drawings are easily tailored to customer needs.
- Revisions are quickly, easily, and accurately made.
- Productivity and accuracy are improved by copying standard items from drawing to drawing.

- Document quality is much better - every original is ink-plotted, and every revision creates a new original.
- Final drawings can be delivered on disk, for convenient storage and future access by customers using CAD.

Even if you don't need our engineering, perhaps our AutoCAD expertise may be of help?

AUTOCAD PRODUCTIVITY TIP

Save a view of your whole drawing, and call it A, or ALL. Then, to display the whole drawing, do a VIEW RESTORE A (or ALL). Also, fix your menu up so that whenever you end, you first restore view A - then, next time you edit the drawing, you will regenerate the whole drawing, and not just the part you were working on before!

NEW CAPABILITIES

Esco is constantly acquiring new equipment and software to increase productivity and range of services. Recent acquisitions include:

- a second pen plotter, to increase reliability, and allow faster production of final drawing packages
- an FRP laminate design software program, to make FRP design more accurate, and cost-effective.
- an electrical system design program for sizing conduit, wiring and boxes.

We are also evaluating a piping drafting package that works with AutoCAD® to create fast, accurate piping drawings, and bills of material.

FEA

FEA (finite element analysis) is a technique for stress analysis, in which the object is divided into small elements. By using continuity requirements at the points where elements join, the effect of various loads on the object can be analysed on as fine a scale as desired. Of course, the smaller the elements, the longer and more complex the calculations. This is not a major problem with the development of fast computers.

Most conventional design procedures are 'worst case' methods i.e. the whole part is designed to stand up to the highest stress in any part. FEA calculates the stresses in individual areas of the part, the designer can add material where it is needed, and remove it where it does no good.

FEA is especially useful for cases where conventional calculation methods are not very accurate e.g. flat plates, lug supports, rectangular tanks.

Esco regularly uses FEA to improve equipment and system design. In one case, an FRP vendor refused to build a tank designed using FEA methods, because he thought it 'too flimsy'. Another vendor did build it, and it is working satisfactorily!

PUBLICATIONS AVAILABLE

Esco has prepared and published many technical articles. Here are a few titles that may be of interest:

- 'The whys and hows of sulphuric acid pickling'
- 'Chemical operators - key to economical pickling'
- 'Design your pickle line for pollution control'
- 'Economical fume control in pickle houses'
- 'Save with plate-type fume scrubbers'
- 'Integrated treatment of wastes at Atlas Steels'
- 'Acid pickling of copper rod with no effluent'

Copies of these are available on request.

GOOD FOR A LAUGH

Metal pickling, chemical process engineering, studies, equipment design, piping design, plant layout