CONCEPTS TO BE EVALUATED
IN THE USE OF CRANES FOR REFUSE HANDLING

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The authors are to be congratulated on the thorough and factual presentation of data describing the complex evaluation elements on the use of cranes for solid waste handling. It is agreed by all that material handing in the solid waste management industry is one of the most perplexing and costly components and, as such, these systems must be carefully evaluated to assure that proven cost-effective methods are provided.

I happen to be a proponent of crane/pit design concept and believe that for mass burn type facilities and many other type facilities, this is the only way to go — utilizing a long proven system for refuse handling. The six major topics presented in the paper cover the subject well, but do raise some questions, since all sub-system components are not necessarily acceptable or adaptable to every facility.

The operator location is always controversial, especially since recent mechanical/electrical technology improvements give cause for possible changes from the traditional cab-on-crane location. Also, operator fatigue and safety are certainly important factors to be considered. Generally, I believe that the cab-on-crane location provides the best location for an efficient operation and will be a safe location if the proper quality cab-enclosure, safety access and other safety systems are incorporated. The motor control location is traditionally on-board the crane and with appropriate electrical equipment/enclosure selection, it has proven successful in the poor environmental conditions. The advantages listed for off-board location have merit, but what are the disadvantages? These could help in making the appropriate selection.

The subject of electrical communications of remote operated cranes raises many questions. The discussion of the normal communications for the non-remote type operation should also be added to the paper. Our experience and observations of basic electrical power for traveling cranes has shown that the three-conductor fixed feed rail is a dependable power source which does not have excessive maintenance. The festoon conductor system does have application, but probably specifically with the remote controlled smaller crane applications and/or hazardous locations. Manual or automated crane operation — the latter is popular today due to improve technology. However, I believe that due to the nature of the beast, the variables of refuse characteristics, size, shape, frequency and/or uncertainty of unknown wastes, unscheduled overflow of incoming refuse, need for additional storage by “piling or stacking” etc., require full-time operator's attention and skill and should not be hampered by automation.

The matter of refuse handling grapples is well presented and the successful U.S.A. experience with long-tined grapples speaks for itself. The selection of a quality grapple, wire rope, and controls will assure that this part of the handling system is dependable. At this point, the authors should add a section on the need for spare parts. Certain spares should be provided, based on recommendations from the crane manufacturer, to assure continuous operation and to prevent chain-reaction damage to other components if the spare part isn’t available.

The importance of operator training (and retraining)
cannot be overstated. This training should be assisted periodically by a representative of the crane manufacturer. Copies of a well-documented operation and maintenance manual for the crane system(s) should be on hand at all times (a minimum of four copies, 1-City Hall, 1-Superintendent, 1-Maintenance Foreman, 1-spare) to assist operation, training and, last but not least, for maintenance. I agree with the authors that a detailed, easily followed preventive maintenance program including signed/dated check lists, should be established and followed—but this must be supported by an operation budget or else it won't happen.

In summary, the authors have made a good contribution to the solid waste industry with this paper.

AUTHORS' REPLY

The purpose of our paper was to make plant designers aware of some of the concepts and options available in refuse handling cranes in facilities using the pit crane design. Its purpose was also to raise questions from individuals wanting to know more about these latest state of the art in these refuse handling concepts, which it has.

We appreciate and thank Mr. Richard W. Krotz for his review/discussion comments on our paper. We have commented on some of Mr. Krotz’s questions pertaining to our paper.

(1) Operator Location. We agree that the operator location is an item of concern. Historically, in the United States, most refuse handling applications utilize the cabin-crane operator locations and it has been only recently that the industry is seeing remote operator applications. Reasons for this may be European influence and a desire to try to improve the operator's environment, especially on waste to energy or resource recovery facilities. Getting a history on these remote applications will tell if they are more suitable. Perhaps in some applications, one method may turn out to be better than the other.

(2) Motor Control Location. Some of the draw backs or disadvantages with locating the motor controls off board could be as follows:

(A) Space must be provided for the motor controls. If this space is in an enclosed room, means must be provided for adequate ventilation.

(B) The electrical interconnection between the motor controls and the motors is more costly.

(C) Setting up or the initial adjustment of the motor controls by the field electrician may be more difficult if the electrician can not view the crane from the motor control area.