

Acme Coke
11236 S. Torrence Ave.
Chicago IL 60617



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Wilputte Oven Inspection

Dated: October 1994

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SECTION 1.0

INTRODUCTION

Following an inspection of oven walls in August, 1994, (KWC 8384) KWC proposed that in order to have a more complete assessment of the current battery condition, the terms of the inspection should be extended to include such items as battery bracing, regenerators, etc.

Acme requested a proposal (KWC 2147) and this proposal dated November 11, 1994 was sent to Acme purchasing.

Subsequently, Acme authorized the inspection to proceed. The field work was performed February 13, 1995 to March 2, 1995.

October 18, 1994

Mr. Jack Garzella
Superintendent - Coke Plant
ACME STEEL COMPANY
11236 South Torrance Avenue
Chicago, IL 60617-6440

Subject: STEELWORK AND REGENERATOR INSPECTION
REFRACTORY INSPECTION PROJECT
ACME P.O. # X15344994
KWC REFERENCE: 8384

Dear Jack:

Krupp Wilputte Corporation (KWC) recently completed the refractory inspection of your coke oven batteries. The scope of this inspection included only the oven walls and the oven flues. It has become apparent that Acme desires to better gauge the operating life of these batteries.

In order to properly make this determination, KWC needs to field inspect the battery bracing systems, the regenerators, and the oven machinery. KWC, therefore, respectfully requests that Acme Steel grant an addendum to our current purchase order to perform this additional inspection.

KWC will dispatch our inspectors to your coke plant for a period of approximately one (1) to two (2) weeks. KWC's inspectors will perform the on-site inspection and will meet with Acme Steel operations personnel to discuss and evaluate any specific problems.

Following completion of the inspection, a final report will be prepared which will include:

- Summary of observations
- Discussion of any problems observed
- Recommended solutions or repairs

Upon your request, KWC will prepare a proposal to state this scope of work and pricing to provide these services.

Mr. Jack Garzella
October 18, 1994
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Once the steelwork, regenerator and oven machinery inspection is performed, Acme Steel will have, along with the refractory inspection already completed, an excellent baseline document to track any future deterioration or future trends of your coke batteries. Should you have any questions or comments, please do not hesitate to contact me at (412) 257-8277. KWC looks forward to working with Acme Steel on this additional work.

Very truly yours,

KRUPP WILPUTTE CORPORATION

Gregory J. Emish

Gregory J. Emish
Manager - Project Development

GJE/cas

cc: W. P. Getty
R. V. Ramani
A. Cameron
J. Bernaciak

c:\gjel8384Acme_597

November 11, 1994

Mr. John Hickman
Manager of Purchasing
ACME STEEL COMPANY
13500 South Perry Avenue
Riverdale, IL 60627-1182

Subject: STEELWORK, REGENERATOR INSPECTION
CHICAGO COKE PLANT
ACME REFERENCE: VERBAL REQUEST
KWC REFERENCE: 2147

Dear Mr. Hickman:

In accordance with the verbal request of your Mr. Jack Garzella, Krupp Wilputte Corporation (KWC) is pleased to submit this proposal to perform a steelwork and regeneration inspection of Acme Steel's coke oven batteries Nos. 1 and 2. KWC is well qualified to perform this inspection as our personnel are experts in coke oven batteries and we are very familiar with Acme Steel's coke plant.

1.0 SCOPE OF WORK

- 1.1 KWC will dispatch experienced coke oven battery inspectors to Acme Steel's Coke Plant to inspect all the regenerators from both the pusher side and code side. Also, KWC will inspect the battery steelwork consisting of the buckstays, tie rods, springs, standpipes, goose-necks, charging hole castings, and a random selection of buckstay plates and jambs. KWC's inspectors will perform the on-site inspection and meet with Acme Steel operations personnel to discuss and evaluate specific problems.
- 1.2 Following completion of the field inspection, a final report will be prepared which will include a description of the observations, discussion of any problems observed, and recommended solutions or repairs.

Mr. John Hickman
November 11, 1994
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1.0 SCOPE OF WORK (Con't)

- 1.3 A Final Report review meeting will be held at Acme Steel's Coke Plant after submittal of the Final Report.

2.0 GENERAL NOTES

- 2.1 Acme Steel will schedule operation and maintenance personnel to meet with KWC's inspectors, as required, during the on-site inspection.
- 2.2 Acme Steel will provide personnel to open up the regenerator walls on the pusher and coke sides.
- 2.3 Opening up the regenerators will be made at the rate of ten (10) regenerators per weekday. When prepared, our regenerator inspector will be notified and he will enter the coke plant and inspect each regenerator. Another inspector will be on-site for one (1) week to complete the steelwork inspection. A third inspector will assist in the steelwork and regenerator areas.
- 2.4 Acme Steel will provide any requested operating data that will aid KWC in the performance of this inspection.

3.0 PRICING

KWC will perform this inspection on a lump sum basis. Our price to perform the services described above is:
..... \$21,700.00.
This price includes travel, living, and other project related expenses.

4.0 SCHEDULE

For the services described above, KWC estimates that the final report will be submitted within four (4) to five (5) weeks after the site inspection begins.

Mr. John Hickman
November 11, 1994
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5.0 TERMS OF PAYMENT

KWC will submit monthly invoices based on our estimate of the percentage of work completed in that particular month. These invoices will be payable on a net thirty (30) day basis.

6.0 TERMS AND CONDITIONS

The terms and conditions shown on the attached Exhibit "A" will apply to this project.

KWC sincerely appreciates this opportunity to be of service to Acme Steel. we trust that this proposal will meet with your approval and should you have any questions or comments, please do not hesitate to contact me at (412) 257-8277.

Very truly yours,

KRUPP WILPUTTE CORPORATION

Gregory J. Emish

Gregory J. Emish
Manager - Project Development

GJE/cas

Attachment

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SECTION 2.0

SUMMARY AND RECOMMENDATIONS

2.1 REGENERATORS

The regenerators exhibit many faults, but these faults are to be expected after forty (40) years of service and the shock of a thru wall repair fifteen (15) years ago.

Two (2) regenerators, A1 pinion and C19, require repair in the near future. The rest can be repaired as necessary in a planned program.

Serious raw gas leakage into the flue system has resulted in serious carbon deposition in the regenerators. These deposits interfere with combustion, air distribution, and cause erratic heating.

Priority should be given to repair of the oven top and charging holes since these areas are the source of most of the leaks (see App 1 - Acme Survey and KWC Check of the Conditions).

It does not appear that any of the observed faults cannot be corrected to a satisfactory condition by an ongoing repair program. The cost of this repair must be accepted if battery life is to be extended.

2.2 BUCKSTAYS AND BRACING

The present tie rod replacement program should be sufficient to maintain the battery bracing in satisfactory condition.

2.3 BENCHES AND ALLEYS

The coke side benches are in very poor condition and should be considered for extensive repairs in the near future.

The pusher side benches are somewhat better but also in poor condition. Repairs will become necessary in the next two (2) years.

SUMMARY AND RECOMMENDATIONS

(Continued)

2.4 OVEN TOP AND CHARGING HOLES

The charging hole castings and lids are in good condition. The oven top is no longer smooth and traps water during rainfall. There is serious leakage of raw gas from the ovens to the flues and this leakage must be corrected to restore heat distribution both horizontally and vertically.

Charging hole patching and spraying is now in progress and will certainly help in the short term. A more extensive replacement of the charging hole brick shapes down, perhaps as much as five (5) courses and levelling the oven top, will be necessary to control this source of oven to flue leaks. A precast sleeve, grouted in place, is probably the simplest, fastest, and least expensive way to seal the charging holes.

During installation of the sleeves, the charging hole location can be reset and the oven top paving restored to its original slope and elevation.

The regenerators are the source of most of the heating problems. The top leakage is, however, the main source regenerator problems as a result of creating carbon deposition in the regenerators. Carbon plugs the tiles and forces brick shapes out of position.

2.5 GENERAL

This inspection did not reveal any regenerator problems that cannot be corrected. The correction of these problems will, however, be necessary to extend the useful life of the battery and for this reason, an aggressive approach will be required.

APPENDIX II - "PUSHING AMPS" - shows that the C17, C18, and C19 ovens routinely push hard. The regenerator inspection shows severe brick failure in coke side C19 regenerator. The combination of the above strongly suggests that these ovens must be inspected in detail and a special program of repair set up in order to stabilize the ovens at the minimum, or perhaps improve their condition.

Pushing amps provide a relatively easy way to monitor ovens that require special attention.

SUMMARY AND RECOMMENDATIONS

(Continued)

2.5 GENERAL (Con't)

Frequent checks of the battery condition are suggested to assure that the battery condition is stable or improving in response to repair and maintenance activity.

2.6 DRAFT SURVEY

No. 1 Battery

Drafts are expected to improve as leaks from the ovens subside and carbon disappears from the regenerators. A1 pinion damage is definitely shown to affect the draft in this area. There is an indication of carbon/debris limiting air flow through the tiles (high differential) and in some cases, division wall leakage (low differential)

No. 2 Battery

C19 C.S. regenerator is severely damaged and this damage is reflected in erratic draft differentials in this area. The low draft differential of C9 suggest inner/outer by-passing.

D Section drafts are relatively even for a 40-year old battery; the draft differential is relatively even. As carbon in the regenerators gradually disappears and C19 area is repaired, the drafts should become more satisfactory.



Tie Rod Channel at Charging Holes

NOTE: Gas leaks, broken and cracked top brick and tar deposits in the channel and around the inspection caps.