

# Economizer Hoppers

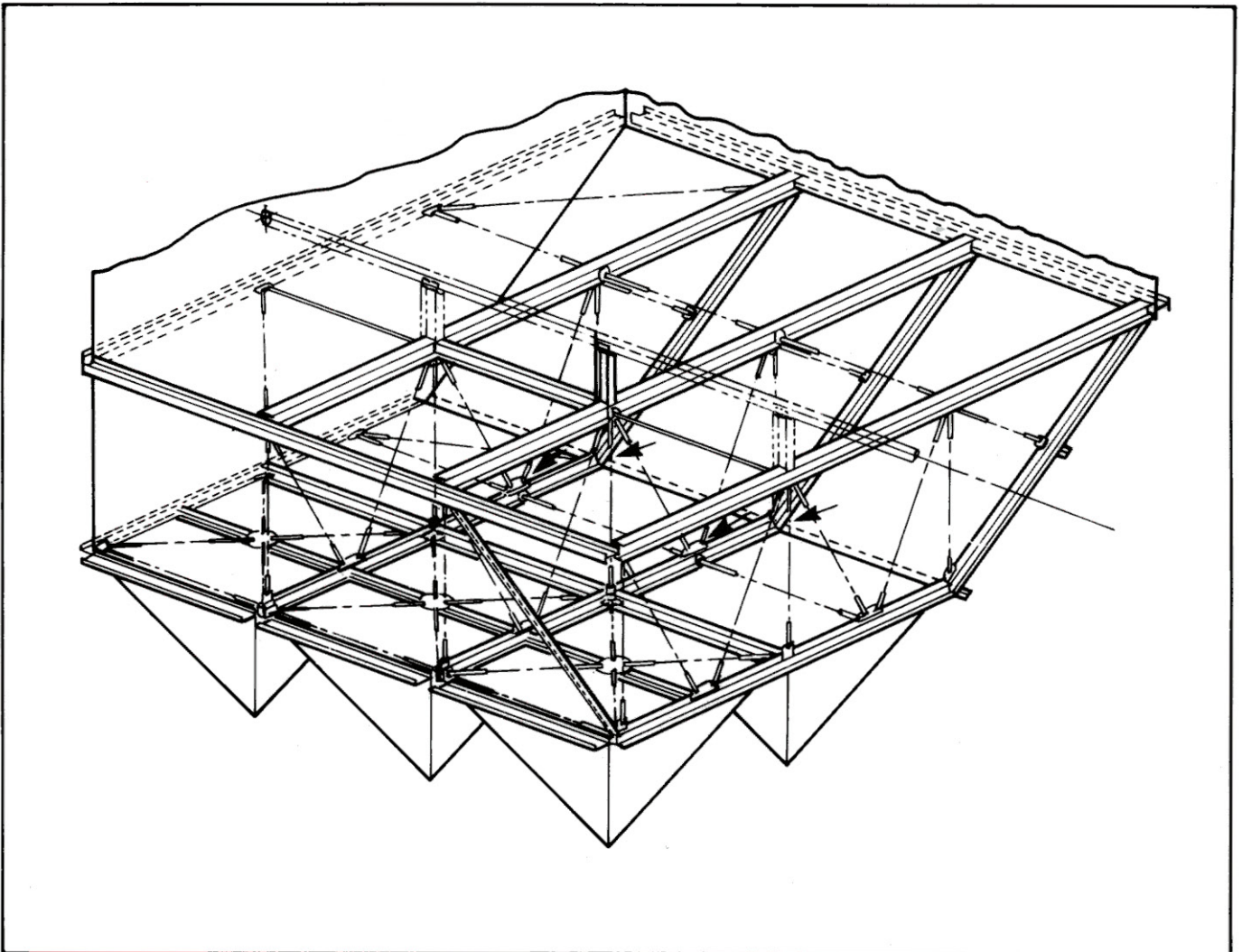
**Purpose:**

Advise customers to inspect economizer hopper supports.

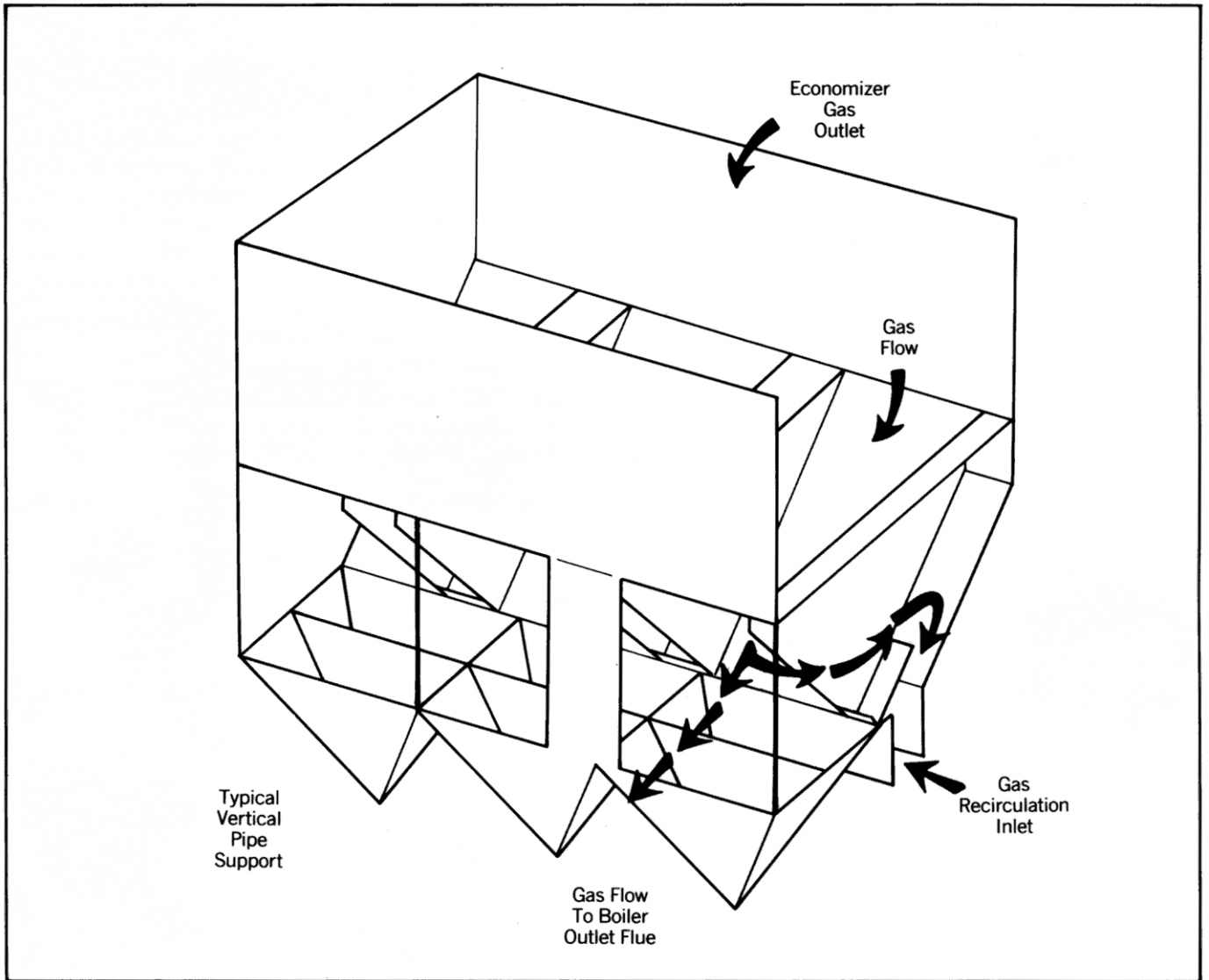
**Problem:**

The majority of economizer hopper supports are located internal to the boiler, in the flue gas stream. As such for coal fired boilers, these supports are subject to wear and damage from erosion.

Recent inspections of several boilers have revealed varying degrees of erosion damage to major hopper support members. The weakening or failure of one major support member causes an undesirable redistribution of loading and stress to other members. These additional loads may cause failures of various hopper supports and potentially total failure of the hopper support system. See Figure 1 and 2 for typical hopper arrangements.



**Figure 1** Typical economizer hopper, trusses and supports that may experience erosion damage.



**Figure 2** Typical envelope supported hoppers.

**Background:**

In addition to failures caused by erosion damage to hopper supports, there are several other causes by which hopper supports could be overstressed. These include:

- 1. Ash density - Ash density may be higher than original design leading to excessive weight in the hoppers.
- 2. Ash removal - Continuous ash removal is preferred, otherwise

- 3. Elevated temperatures

hoppers should be emptied on a routine basis. Operation with overflowing hoppers can overload supports and increases ash density by compaction.

Boiler operation with flue gas temperatures substantially in excess of design condition may weaken support members.

4. Modifications - Field changes made to the design support system without the manufacturer's review and approval could result in higher than anticipated loads for some members of the support system. These changes could include removal of some support members or removal of the gas recirculation envelope plates.

**Recommendations:**

1. Inspect all trusses and gusset plates for erosion and corrosion damage. Pay particular attention to the major support paddles and end supports of the trusses. Repair all affected areas.
2. Check existing ash density and compare to original design values. Discuss any signifi-

cant (more than 10%) deviations with the manufacturer.

3. Inspect hoppers during operation to make sure they empty properly. Take action to assure the ash removal equipment is operating properly to keep hoppers empty.
4. Keep a record of flue gas temperatures in this area and discuss the significance of any levels higher than design conditions with the manufacturer. Establish a maximum allowable temperature limit for your boiler.
5. Review any changes made to the existing hopper support system or any changes contemplated to the supports with the manufacturer.

**Support:**

If you have any questions or require assistance, contact B&W Field Service Engineering.

**For more information, contact your nearest B&W sales office or write: Dept. CIC, Power Generation Group, Babcock & Wilcox, Barberton, Ohio 44203, U.S.A.; or, in Canada, Manager, Marketing and Sales, B&W Canada, Cambridge, Ontario, N1R 5V3.**

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