EXPANSION JOINTS IN COAL FIRED POWER PLANT
APPLICATIONS INDEX

SCHEMATIC – KEY ELEMENTS OF COAL FIRED POWER STATION

DESIGN VARIATIONS ARE HUGE in both cars and Expansion Joints

PENETRATION Ejs

SCHEMATIC BOILER AREA DISCUSSION
BOILER AREA PICTURE OF METAL AND FABRIC SOLUTION
BOILER AREA PICTURE ON SPLICING
BOILER AREA PICTURE ON HIGH VS LOW PROFILE BELLOWS

BOILER EXHAUST TANDEM EJ AREA -
-- FABRIC OVER METAL APPROACH

SCHEMATIC BOILER EXHAUST AREA DISCUSSION
DRAWING TYPICAL FABRIC OVER METAL CONCEPT
DRAWING TYPICAL FABRIC OVER METAL - INSULATION
DUCTING PICTURE ON IMPROPER INSULATION
TANDEM EJ PICTURES OF INSTALLATION DISCUSSION

RECTANGULAR DUCT EJ -- USING CIRCULAR BELLOWS

BACHMANN DAMPJ JOINT INC. [BDI] HISTORY

ALSO, REMEMBER US FOR DAMPERS PICTURE BOILER RH & SH DAMPER

BACHMANN DAMPJ JOINT INC.
Key elements of coal-fired power station

(schematic, not drawn to scale).
Typical locations for dampers [guillotine or louver].
Typical locations for expansion joints - metal.
Typical locations for expansion joints - fabric.
DESIGNS VARY TO SUIT NEEDS

Like the cars in Bachmann Dampjoint’s parking lot, the final product often varies in size, and details.
To illustrate the large variation and complexity of Coal Fired Power Plant expansion joint designs and needs, this presentation will detail a few specific EJ applications.
BOILER ENCLOSURE PENETRATION EXPANSION JOINTS.
DESIGNED TO ALLOW MOVEMENT AND PREVENT LEAKAGE AT PENETRATION.

PENETRATIONS INCLUDE STEAM PIPES; SUPPORT STRUCTURES; HEADER ENCLOSURES; ROOF HANGERS; AND PENTHOUSE ROOF ITSELF.
SOLUTIONS VARY - METAL TO FABRIC CIRCULAR TO RECTANGULAR. LARGE TO SMALL BUT ALL REQUIRE 
A FIELD SPLICE ABILITY and 
ALL ARE CUSTOM DESIGNED TO THE SITUATION.
ALMOST ALL PENETRATION EJ’s REQUIRE AN EASY WELD SPLICE -
- ONE POSSIBLE SOLUTION IS WITH HIGH CONVOLUTION METAL BELLOWS
CIRCULAR METAL EJs

HIGH PROFILE VS LOW PROFILE

RIGHT
LOW PROFILE
[MORE MODERN]
1” TO 3” HIGH CONVOLUTION

LEFT
HIGH PROFILE
[OLD EUROPEAN DESIGN]
6” TO 9” HIGH CONVOLUTION
BOILER EXHAUST DUCTING AREA

BOILER EXHAUST DUCT – RIGHT AT BOILER EXIT -
-CONTAINS THE TOUGHEST EJ IN DUCTING

-TOUGH BECAUSE LATERAL MOVEMENTS ARE BIG.
-MOVEMENT DUE TO [6” TO 8”] DOWNWARD BOILER
GROWTH, AS WELL AS SIGNIFICANT OTHER
MOVEMENTS; AND DUSTY FLUE GAS.

DUCT IS LARGE – 40 FT BY 15FT

ORIGINAL SOLUTION WERE TANDEM METAL EJS

FAILURE MODES VARY –
SOLVE PROBLEM.

LITTLE SPACE EXISTS
TO REMOVE OLD
METAL EJ; NOR TO
REPLACE WITH A NEW
METAL EJ.
RATHER THAN REPLACE A METAL EJ WITH A FABRIC EJ -- SAVE THE EXISTING METAL EJ, USE IT AS A DUST LINER, AND JUST ADD A FABRIC EJ OVER AN EXISTING METAL EJ. SAVES DIFFICULT REMOVAL COSTS OF PRESENT EJ
KEY IS PROPER INSULATION – **OVER STIFFENERS** – TO PREVENT BOWING, BY KEEPING ALL METAL UNIFORM IN TEMPERATURE.

**SUGGESTED LOCATION FOR FIELD INSULATION (BY OTHERS)**

**CROSS SECTION AT BOTTOM (STRAIGHT AREAS)**
PHOTO OF WHY SOME ORIGINAL METAL EJ FAILED -- IMPROPER DUCT INSULATION IN AREA WHERE DUCT BOWING CAN CREATE CRACKS / CREASES IN THE NEARBY METAL EJ BELLOWS OR EVEN IN METAL FRAME OF FABRIC EJ.
Steps in fabric over metal upgrade

A) Metal frame [studded] welded in place

B) Protective layer installed.

C) Final built-up fabric installed

D) Final radius’d corner – next is critical proper insulation over metal frame.

E) Internal liners removed. Old metal EJ becomes new flow liner. Add control rods for increased metal “EJ LINER” life.
THINK OUTSIDE THE BOX

RECTANGULAR DUCT -- NEEDING TANDEM METAL EJ FOR LATERAL AND AXIAL ABILITY –
- DONE ECONOMICALLY WITH CIRCULAR GEOMETRY OF TWO TANDEM BELLOWS; AND A SPOOL PIECE STRENGTHENED WITH A CONVOLUTED AREA. ALL WITH RECTANGULAR INTERNAL FLOW LINER.
1972 Original Bachmann company started
1995 Bachmann Dampjoint Inc. Founded
1998 ISO 9001 Registered ; Joined FSA [Fabric EJ]
2001 ASME U Stamp acquired
2003 Bought & Moved to 63,000 sq. ft. Laval plant
2004 Added hi-definition plasma cutting
2007 Founding member of FSA Damper Division
2010 Added sandblast and paint booth in plant

EMAIL info@bachmann.ca www.bachmanndampjoint.com
And, remember that we do dampers as well