

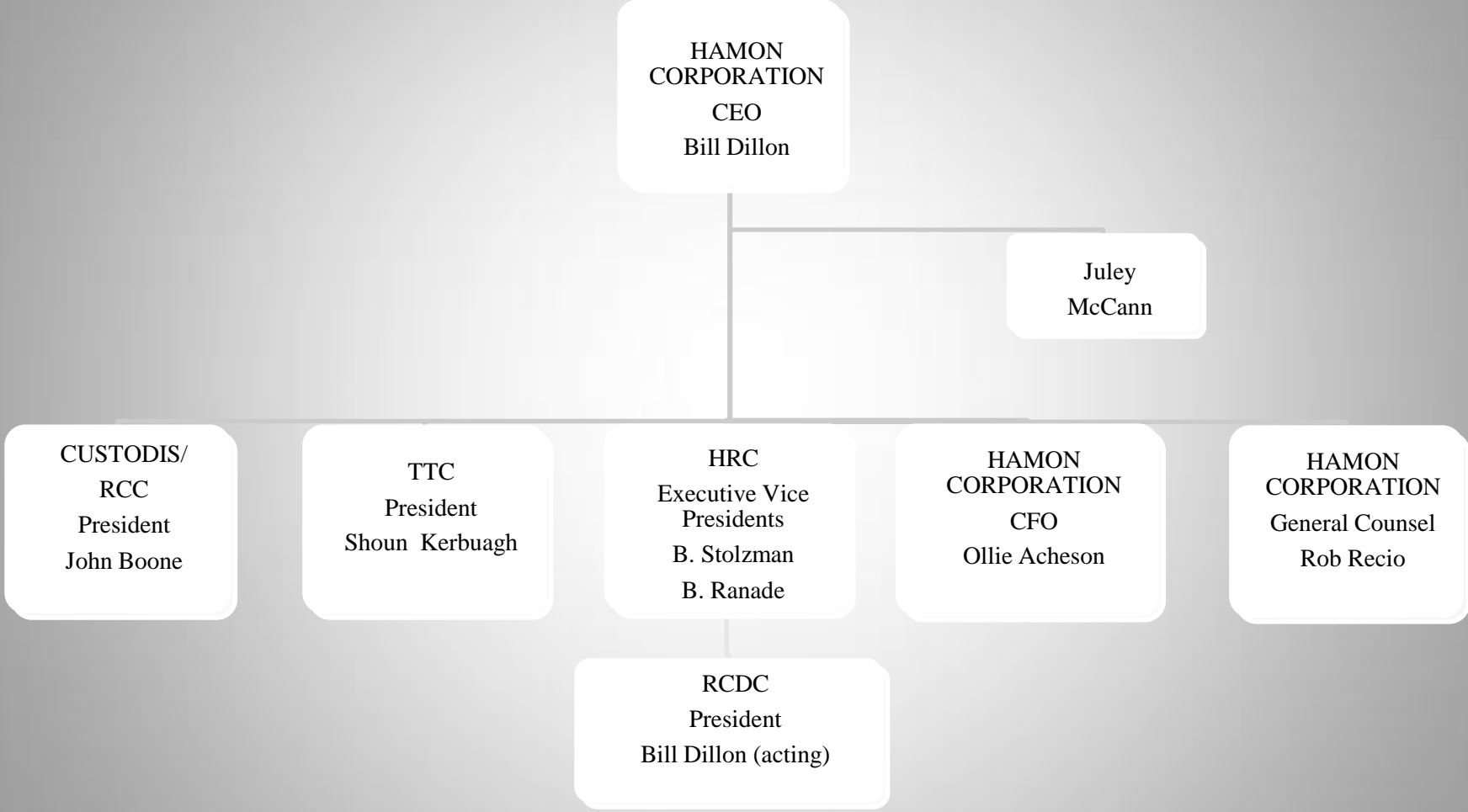
**Hamon Research-Cottrell**

# **Fabric Filter Technology**

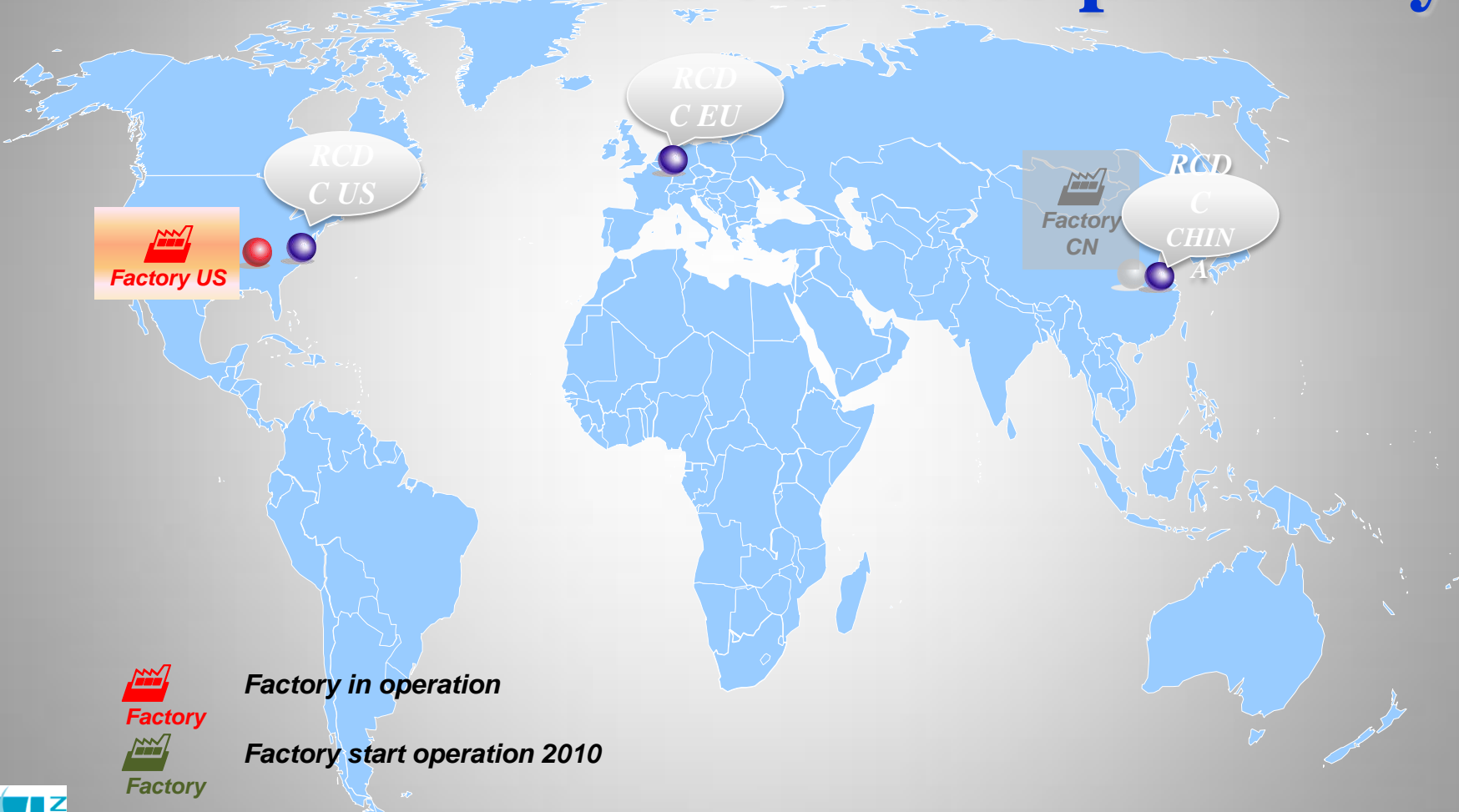
**Low Pressure High Volume (LPHV)  
Pulse Jets**



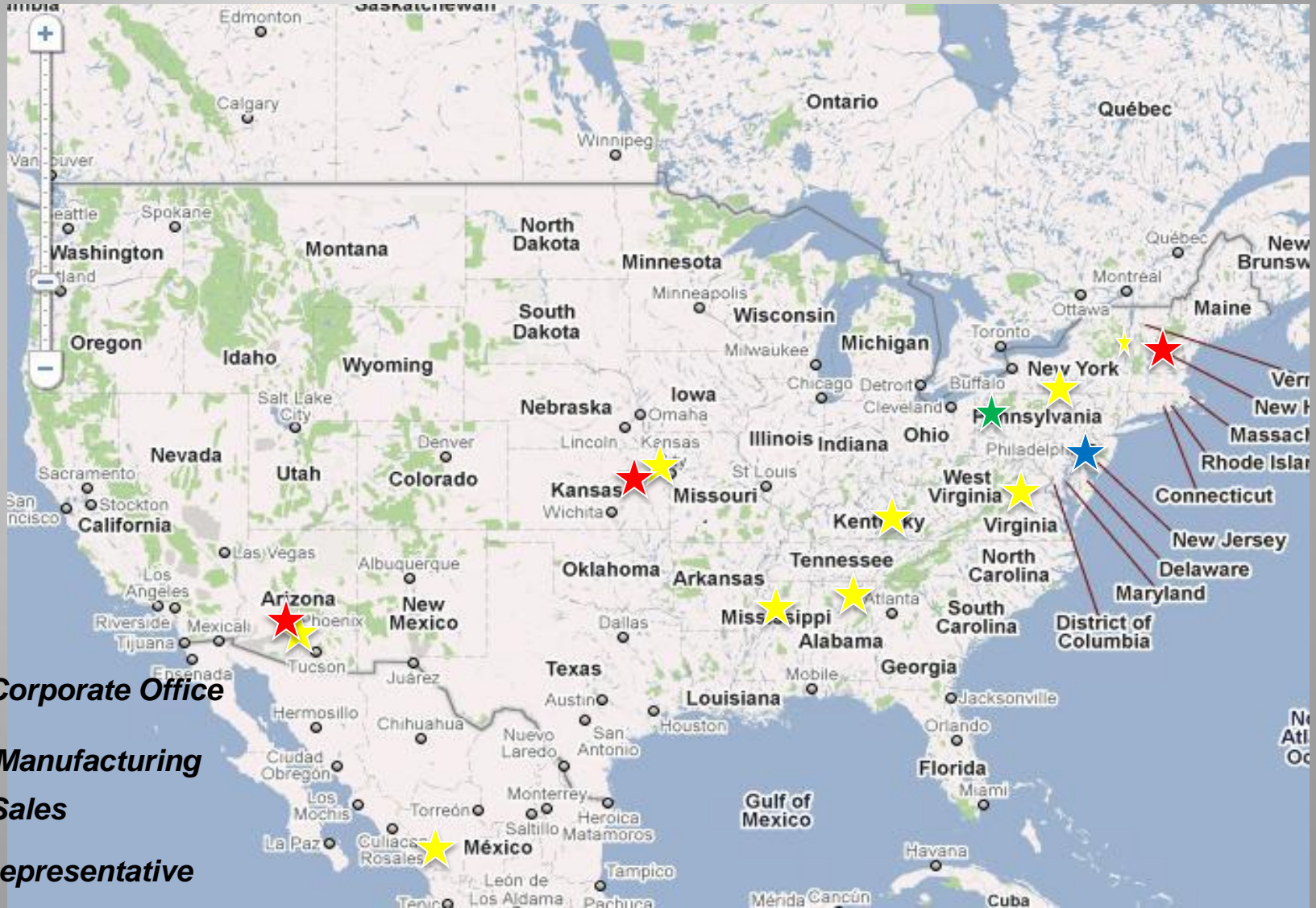
# SOMERVILLE ORGANIZATION



# Global world wide network combined with end-user proximity



# HAMON CORPORATION NAFTA LOCATIONS



# Partial Listing of Recent Hamon Corporation Clients

- AES
- Alliant Energy
- AMEC
- APS
- Babcock Power
- Bechtel
- Black and Veatch
- Burns and MacDonnell
- CH2M
- Conoco Phillips
- *Consumers Power*
- *Detroit Edison*
- *Dominion*
- *DVH\**
- *Eco Power\**
- *Exxon Mobil*
- *FP&L*
- *HB Zachary Construction*
- *Ica Flour\**
- *Kiewit*
- *Nevada Energy*
- *Pacific Corp*
- *PP&L*
- *Reliant Energy*
- *Sargent & Lundy\**
- *Shaw Group*
- *Southern Companies*
- *Tesoro*
- *Valero Refining*
- *Worley Parsons*



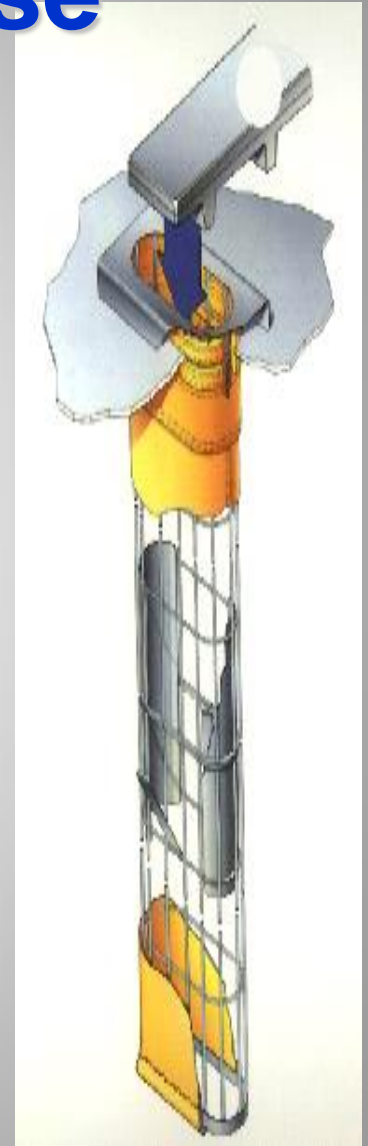
# Key Points

- Successful experience
  - Large U.S. utility installed base
  - Long bag life and low emissions
- Advanced design
  - Maintenance friendly
  - Large compartment concept
  - Attention to gas and particulate dynamics



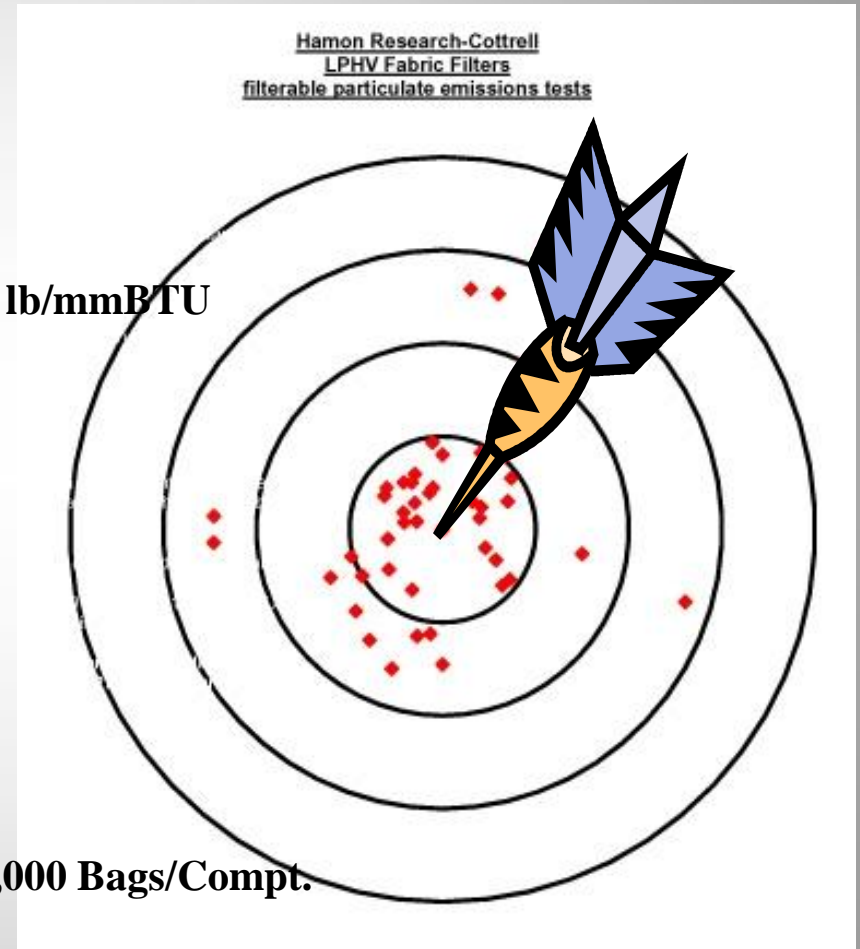
# HRC FF Experience Base

- **Low Pressure/High Volume (LPHV)**
  - **Predominant technology for HRC FF**
    - Worldwide - over 22,000 MW installed
    - North America - over 12,000 MW installed
- **Fabric Filter Application Experience**
  - **Wide variety of coals**
  - **Primary particulate control – flyash**
  - **Polishing filters downstream of ESP**
  - **With PAC for Hg control**
  - **With DSI for acid gas control**
  - **Following SDA and/or CFB dry scrubbers**
  - **ESP to FF conversion**



# HRC Results

- **Bag Life:**
  - Guarantees to five years being met
  - Exceeding five year bag life
- **Emissions :**
  - Filterable emissions guarantees at  $\leq 0.01$  lb/mmBTU
  - Recent Units average  $< 0.006$  lb/mmbtu
  - Low opacity
  - Clients waive performance tests
  - Analysis of performance variance
- **Pressure Drop :**
  - Excellent dP control
  - Low pressure drop – 6” typical
- **High Reliability – Large Compartments:**
  - Traditional 1,000+ Bags/Compartment
  - Over 6 years operating experience at  $> 2,000$  Bags/Compt.





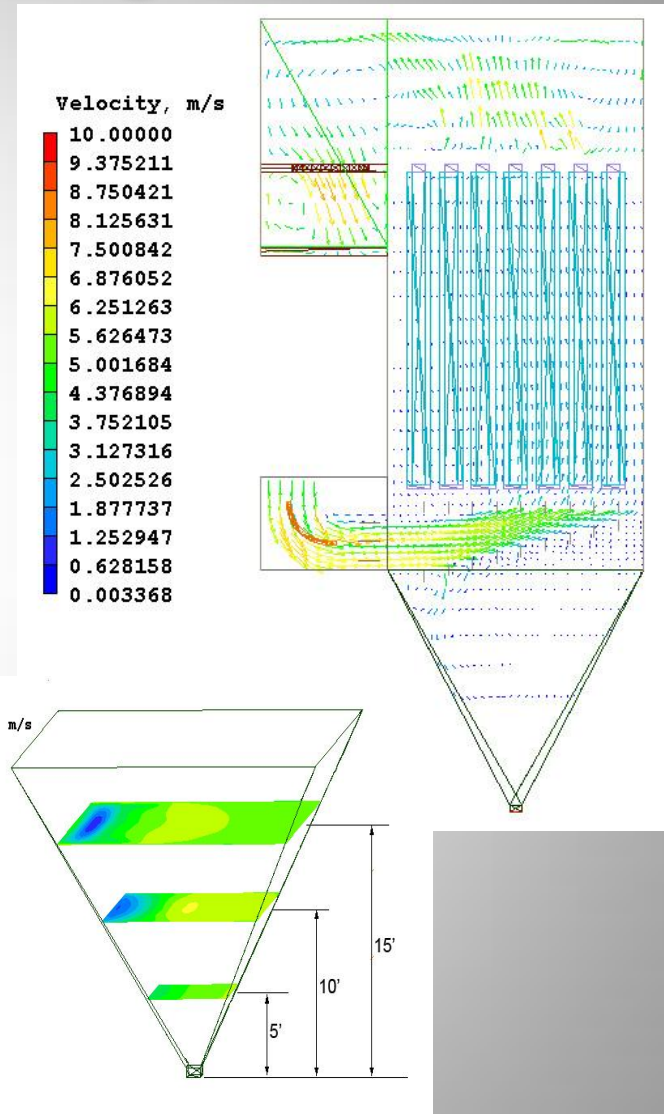
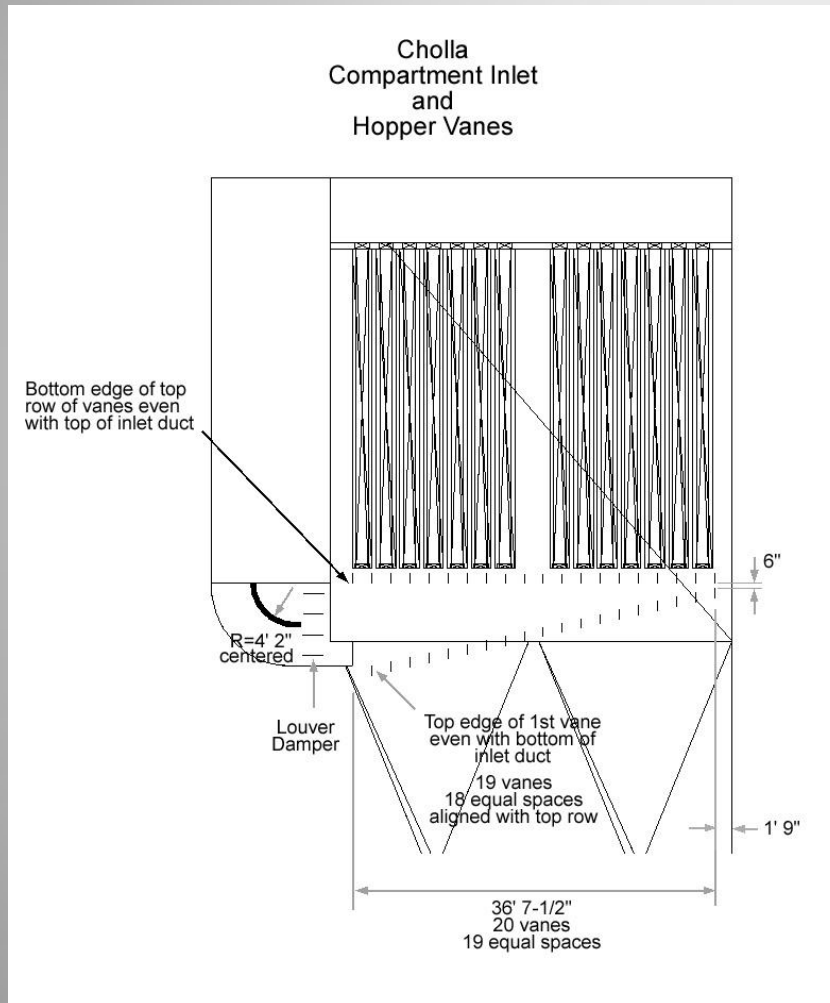
# HRC Fabric Filter

- HRC LPHV (low pressure, high volume) pulse jet filter
- Use of proven design concepts
  - Bag configuration
  - Cleaning system design
  - Fluid dynamics analysis
  - Multiple bundle compartments



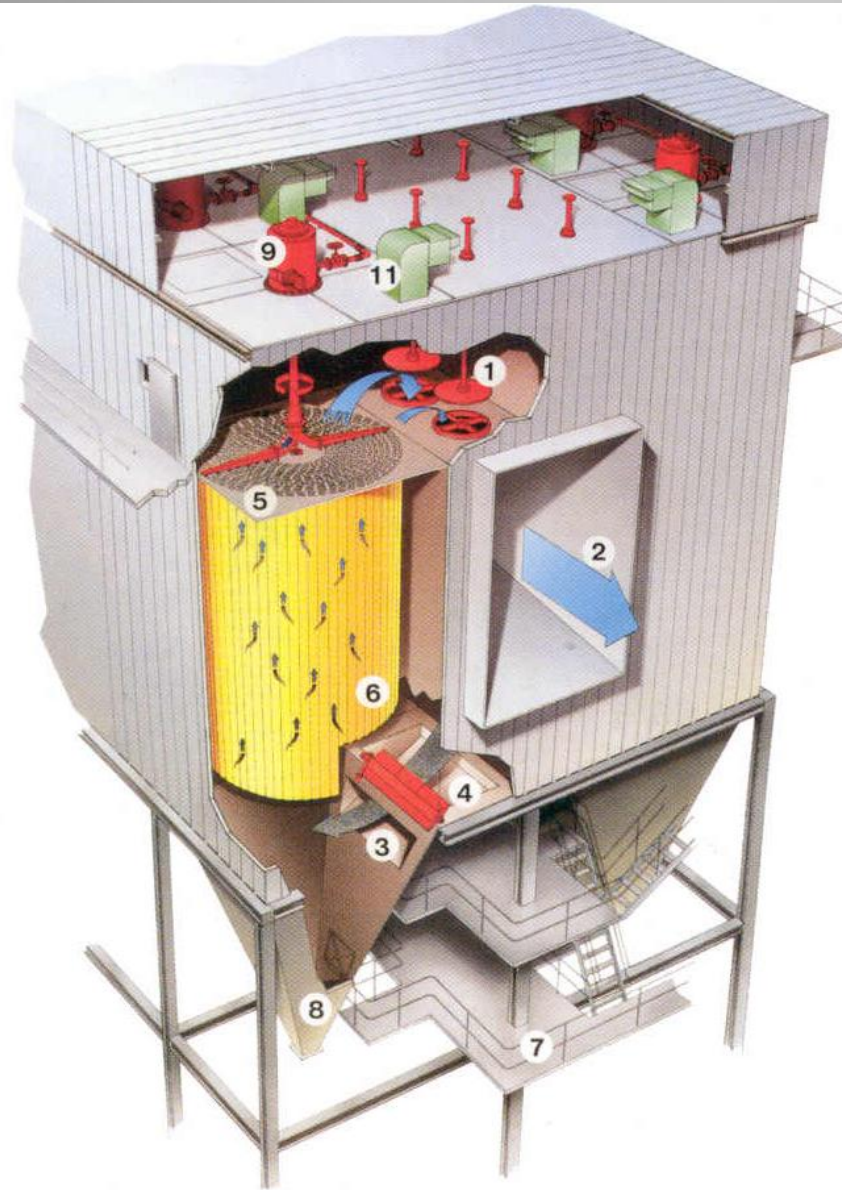
# Fabric Filter Configuration

- Typical “Dutchman” entry with full vaning



# Components

1. Outlet Poppet Dampers
2. Outlet Ductwork
3. Hopper Entrance
4. Inlet Butterfly Dampers
5. Tube Sheet
6. Filter Bags
7. Hopper Access
8. Hopper Discharge
9. Cleaning Air Reservoir Tank



A cutaway section showing Gas Flow,  
Filtration and Dust collection in Twin Cell



# Roof Mounted Components

**Diaphragm Valve**  
with Silencer & Weather  
Protection Cover

**Cleaning Air  
Reservoir Tank**

**TEFC 3/4 Hp Motor and  
1 rpm drive  
components**

With Additional Weather  
Protection Cover



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# Internal Components

- Internal clean air manifold
  - Three arm arrangement
  - Continuous rotation at 1 rpm
  - Clean up to 40 bags per pulse
- One manifold per bundle
  - Up to 1,600 bags per bundle
- Direct access to bags/cages
  - NO pulse pipes to remove



# Walk-In Plenum Access Design

- Quick opening, tight sealing man doors



- Normal 24"W x 48"H door
- Two doors per compartment
- Smaller perimeter for sealing
- Less in-leakage vs. hatches
- With portable ventilation fan provides safe environment for access during inspection or bag replacement activities



# Installing Support Cage

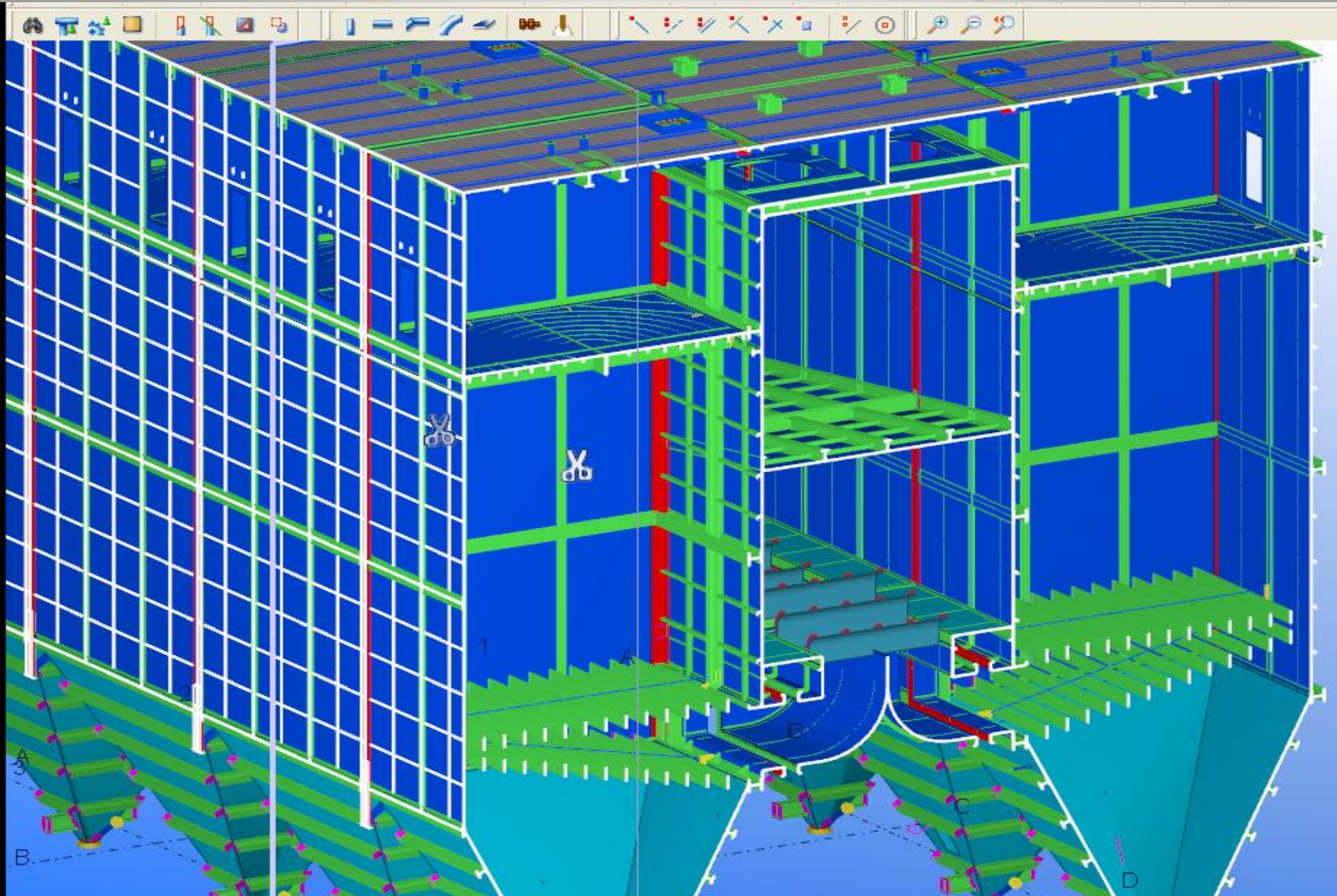


# Several Rows in Progress

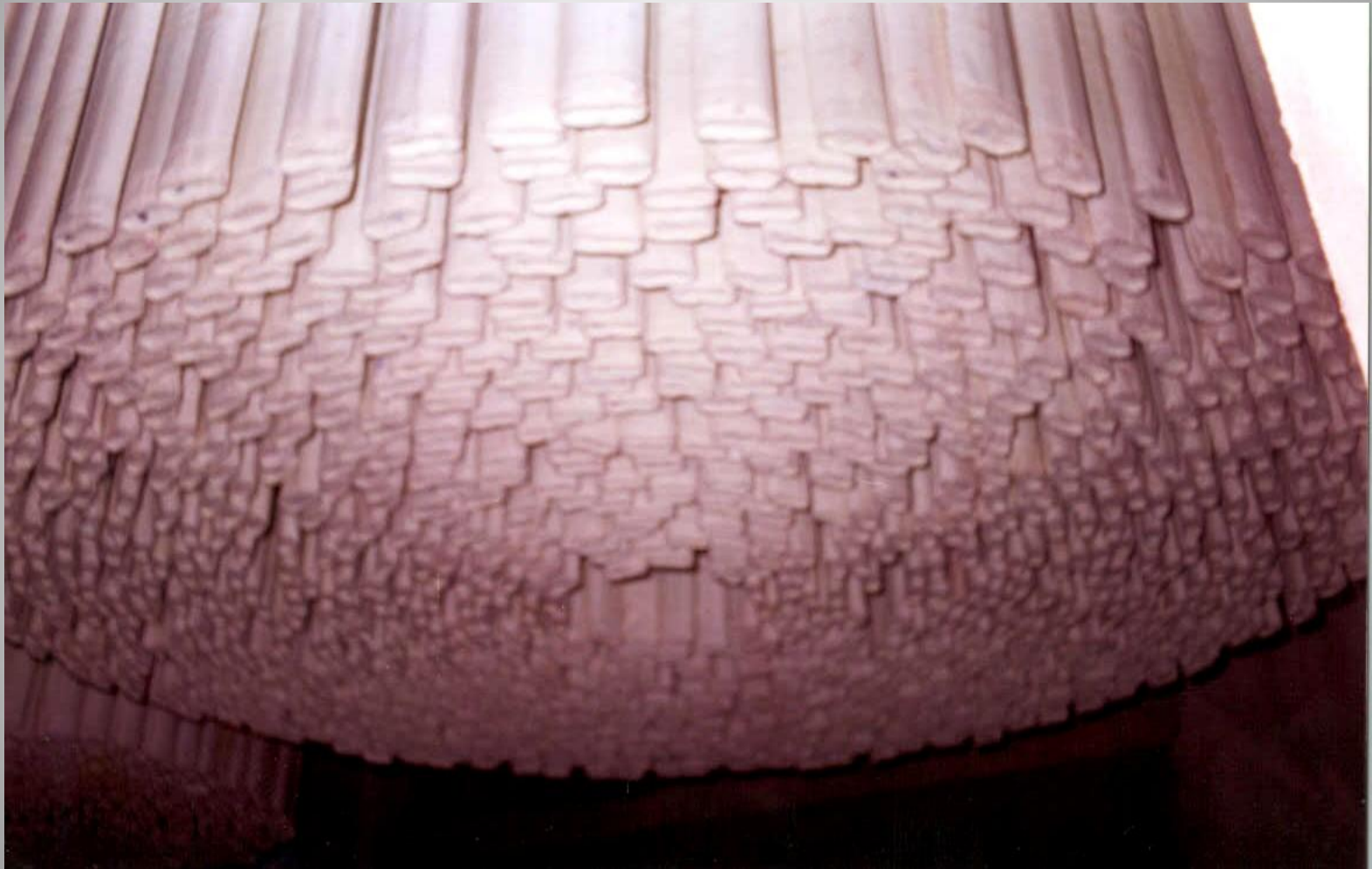




# Fabric Filter Cut Away View



# Inside View of Bag Bottoms





# Filter Bags hopper view through vanes





# ***LPHV Pulse-Jet Retrofit FF into ESP Casing***

