Overview of Worldwide Demilitarization Activities Using Dynasafe Detonation Chambers

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Introduction

- Dynasafe manufactures two distinct types of Detonation Chambers
  - SDC (Static Detonation Chambers) series (hot)
  - cold and transport/storage chambers
- All are completely sealed, gas tight
- Various capacities
- Used for both conventional and chemical munitions
  - also used for airbags, mfg waste, etc.
Heated System

- Temperature held above auto-initiation temperature of all known explosives and propellants
- Insures *COMPLETE* destruction
  - in one step
  - Without dismantling
- No counter charges required
Cutaway of SDC series
Construction

- Outer chamber with heat insulation
- Air
- Inner chamber
- Electrical heating elements
- Scrap bed

Making The World Safer
The SDC Series is Efficient

- Energy from explosives or propellants being processed supplies energy needed to maintain temperature
  - R3 credits
- No external fuel needed
  - Indirect heating
  - Minimizes resulting gasses needing treatment
  - Lower capital and operating costs
The SDC Series is Safe

- **Absolute Minimum munitions handling**
  - automated feed system
    - interlocked
    - fail safe

- **Most munitions need NO preparation**
  - NO Cutting
  - NO Opening
  - NO Fuze removal

- **Submunitions can be fed while still in racks**
The SDC Series is Safe

- Double walled main chamber
  - 300% safety margin
- Feed chambers made to take full rated detonation
- Interlocked feed chambers (2)
  - System is never open to outside during operation
The SDC Series is Clean

- Gas treatment system meets emissions requirements – Domestic and International
- Treatment of “exotic” chemical fills possible
- Metal scrap ready for recycle without additional processing
The SDC Series is Quiet

- No Upset Neighbors
  - cannot be heard outside of building
- Minimal footprint
  - well suited for space limited facilities
  - easy to set-up
  - minimal maintenance
### High production rates

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>DESCRIPTION OF REJECTED AMMUNITION/EXPLOSIVE</th>
<th>ACTUAL QUANTITY DESTROYED</th>
<th>DEMIL PROCESS</th>
<th>ACTUAL SHIFTS REQUIRED</th>
<th>CALCULATED PLANT CAPACITY UNITS/SHIFT (10-HOUR SHIFT)</th>
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<tbody>
<tr>
<td>1</td>
<td>Cap Precussion</td>
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<td>CUT / FEED</td>
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<td>95</td>
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<td>Proj. 155 WP</td>
<td>990</td>
<td>DIRECT FEED</td>
<td>65</td>
<td>15</td>
</tr>
</tbody>
</table>
Can treat both Conventional and Chemical Munitions

- Chemical munitions treated:
  - HD
  - DA/DC
  - CS/CN
  - CG (Phosgene)
- With or without explosive charge
- Complete treatment in one step
- Hold Treat Release capability
- Scrap ready for release without additional processing
- No reconfiguration required when changing munition feed types
- Can treat RCWM or stockpile/non-stockpile
Available in Four Sizes

<table>
<thead>
<tr>
<th>Size</th>
<th>Largest single item (NEW)</th>
<th>Explosive capacity/hr (NEW)</th>
</tr>
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<tbody>
<tr>
<td>SDC400*</td>
<td>400gr</td>
<td>5kg</td>
</tr>
<tr>
<td>SDC800</td>
<td>800gr</td>
<td>10kg</td>
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<tr>
<td>SDC1200</td>
<td>1200gr</td>
<td>20kg</td>
</tr>
<tr>
<td>SDC2000</td>
<td>2300gr</td>
<td>40kg</td>
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</table>

*Available in Mobile Configuration

- All are re-locatable
- All are available in conventional or conventional/chemical configuration
SDC units in operation around the world

- **Bofors LI AB AB, Sweden**, SDC400,
- Delivered in 1997
- used for destruction of:
  - detonators for anti personal mines.
SDC units in operation around the world

- **FAEX, Spain, SDC1200,**
- delivered in 1997
- used for destruction of
  - Fuzes, AP mine
  - Detonators (millions of units)
  - Detonating cord,
  - Explosives,
  - Propellants, etc.
SDC units in operation around the world

- **Swedish Defence Material Administration, FMV, Sweden, SDC800**
- Delivered in January 1999
- used for destruction of 20 mm anti-aircraft ammunition, fuzes, detonators, pyrotechnic articles, explosives, propellants etc.

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SDC units in operation around the world

- **Sumitomo Corporation Europe Plc, Japan, SDC 1200,**
- Delivered in May, 2000
- Used for destruction of AP-mines and explosives
SDC units in operation around the world

- IDDPortugal, SDC1200
- Delivered in November 2000
- Used for destruction of AP mines, munition components and explosives.
SDC units in operation around the world

- **NKK Japan. SDC 1200**
- delivered 2002 for testing operations with simulate chemical weapons.
UXB International, USA, SDC1200

Delivered 2003

Installed in Asia

Used for demil of AP mines, projectiles, mortars, fuzes, detonators, grenades, bulk explosives and propellants, rockets

HE, smoke, illumination, CS, WP
**SDC units in operation around the world**

- **UXB International, USA, SDC2000**
  - Installed in Asia
  - Used for demil of AP and AT mines, projectiles, mortars, fuzes, detonators, grenades, bulk explosives and propellants, rockets
  - HE, smoke, illumination, CS, WP
GEKA, Germany, SDC2000
Delivered 2005
Used for demil of recovered Chemical Weapons, Airbags, conventional ammunition, bulk explosives and propellants
Achieved 99.9999999% DRE on HD (non-detect)
Dynasafe Cold Detonation Chambers

- Used for lower rate Demil operations
  - Require counter charges
- Conventional and Chemical configurations
- Many sizes available
  - All are gas tight
  - All are Hold, Treat, Release, Capable
Example conventional chamber
Chemical Configured
Chambers

- APG MD – MAPS Facility (2 chambers)
  - HD, VX, GB, Smokes
Transportation Chambers

- **Chemical Configuration**
  - Totally Gas Tight
  - Over 4000 RCWM moved without incident
  - Equipped with sample ports
  - Can be decontaminated without opening
    - Germany, (2 chambers)
    - Japan/China (2 chambers)

*Making The World Safer*
Chemical Configured
Transportation Chambers

Making The World Safer
Transportation Chambers

- **Conventional Configuration**
  - Many models available
  - All are totally gas tight

- **Bomb Squad Units**
  - Explosive/Biological/Chemical Capable
  - Can be equipped with Radiation Shield
  - All gas tight
  - All have sample ports
  - All can be decontaminated without opening
  - Heated models available (Mini SDC)
Bomb Squad Chambers

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