



SF6 Conversion for Mg Melt Protection

IMA 66th Annual World Magnesium Conference May 2009
San Francisco, California

EPA Climate Protection workshop



PRESENTATION AGENDA

- About Polycontrols
- Expertise with gas conversions
 - SO₂ Experience
 - SO₂ Conversions
 - US EPA Partnership
 - Gas cost advantage compared to SF₆
 - Novec 612 Experience
 - Test trials
 - Existing systems
- Carbon Credits
 - On going projects
 - Window of Opportunity
 - Canada EDC assistance in financing



ABOUT POLYCONTROLS ...

- Family business since 1982
- Manufacturer of gas mixing panels for specialty gases.
- The largest certified gas calibration laboratory in Canada.
- 10+ years of expertise with SF6 gas conversions.
- Worldwide support for our gas mixers.
- Gas mixers are UL and UNFCCC Compliant
- Winner of the Canada Innovation Award in 2006.
- Laureate in the Canada Exportation category in 2008.



Expertise with gas conversions

- First cover gas mixer: 1992 (Chlorine)
- First cover gas mixer for Mg industry: 1998
- First SF6 conversion: 1999
- Actual installed based:
 - Canada
 - USA
 - UK
 - Italy
 - China
 - India
 - Israel





Experience with SO₂ conversions

- Converted plants to SO₂:
 - Canada (Meridian Strathroy)
 - USA (Meridian MPA)
 - Europe (Meridian UK)
 - China (Foxconn Taiyuan, Meridian Shanghai)

- Type of equipment:
 - Hot & cold furnaces
 - Melting & Dosing furnaces
 - Recycling units
 - Alloying units
 - Ingot casting



Experience with SO₂ conversions

- Participation to the US EPA tests :
 - Lunt Manufacturing
 - Garfield Alloys / MagReTech
 - Amacor
- Executive Summary of the tests:
 - Works extremely well;
 - No smell
 - Security plan is essential
- Complete report available online:
 - <http://www.epa.gov/highgwp/magnesium-sf6/resources.html>



SO₂ Gas Mixer



Experience with Novec 612™

- Test Programs (US EPA & Private trials):
 - Casting conveyers
 - Alloy furnaces
 - Ingot casting
 - DC Casting
 - Sand casting
 - Pure
- Test unit in operation since 2002
- Excellent collaboration with 3M



Experience with Novec 612™

- Converted plants to Novec 612
 - Canmet (Ontario)
 - Trimag (Quebec)
 - Meridian:
 - Canada (Die Casting 2008)
 - USA (Die Casting & recycling 2008)
 - Mexico (Die casting 2008)



Novec 612 Gas Mixer

Experience with Novec 612™

- Installed systems status:
 - Good integrity and reliability
 - Very adaptive to process variations
 - Simple start-up
 - Easy to operate
- Executive summary of the tests:
 - Works extremely well
 - Not suitable for the melt portion of the recycling operation (too high concentration needed)
- Detailed presentation available on the EPA web site
 - <http://www.epa.gov/highgwp/magnesium-sf6/resources.html>

Experience with HFC-134a (AM-Cover™)

- No recent data
 - Last important project know : Norsk Hydro 2004
 - Last participation to the US EPA trials : 2006
 - Few licenses sold or under negotiation
 - No published results concerning successful implementation
- Executive summary of the tests:
 - Works when well supervised (Propention to liquefaction & Excessive concentration of HFC creates HF)
- Detailed presentation available on the EPA web site
 - <http://www.epa.gov/highgwp/magnesium-sf6/resources.html>



HFC-134a Gas Mixer

Carbon Credits ...

Window of opportunities

- North America
 - One VER project completed:
 - Meridian Magnesium
VERs produced Successfully and sold up to 2012
 - Other projects are in negotiation for 2009

- China
 - Large number of conversion completed
 - However, no CDM/VERs projects to date
 - All conversions have been done based on the gas cost advantage compared to the SF6

- Other countries
 - Two projects in negotiation. CDM based.





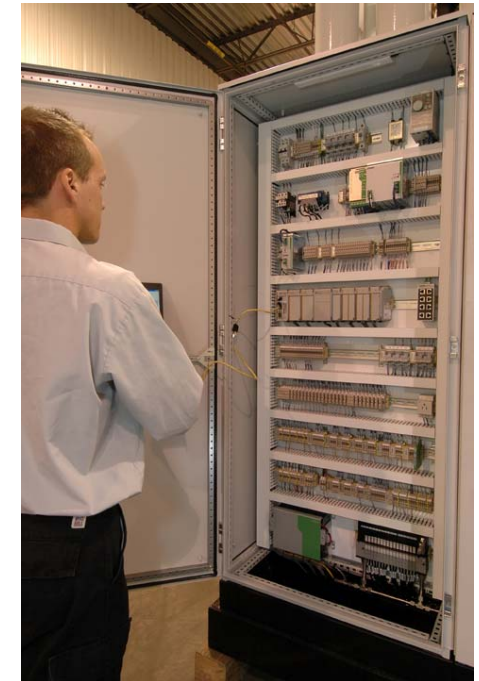
Carbon Credits ...

Window of opportunities

Things to consider to meet target date

- Your project needs time....
 - Budget and internal approval cycle: (?) weeks
 - Engineering and purchasing: (?) weeks
 - Equipment manufacturing: 10-12 weeks
 - Shipping time: (?) weeks
 - Installation & commissioning: 2-3 weeks

- There is not much time left!!

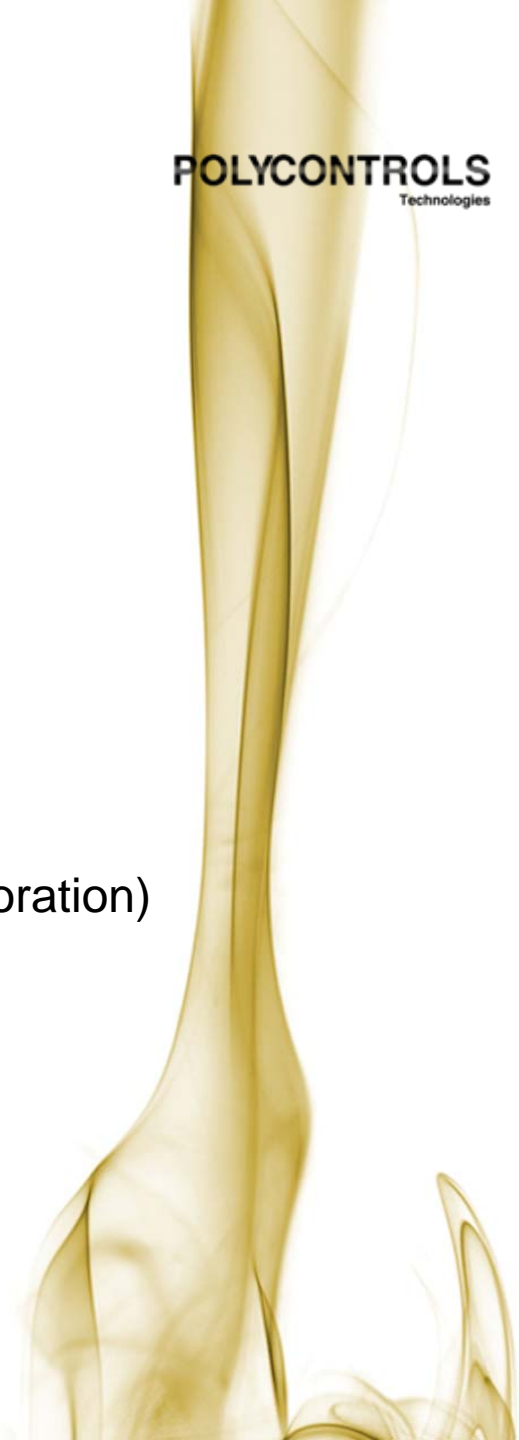




Carbon Credits ...

Window of opportunities

- **Financing sources for Gas Conversions**
 - CDM credits to generate offset revenues
 - EDC Loans from Canada (Export Development Corporation)





Carbon Credits ...

Window of opportunities

- Timing for conversion projects: Time is running out before SF6 ban!
- Once the law will be enforced, new CDM projects will not be admissible and sanctions will appear.
- Regulations are in the cards:
 - EU : Too late...
 - USA : 2010
 - China: No fixed date yet, however Government is getting ready
 - ROW : Coming soon





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