



## CRI - Shell DeDioxin Systems (SDDS) Proven Technology Status

| Category                        | Country     | Year | Number of Lines | Flue Gas Quantity |                     | Flue Gas Temperature |      | Maximum Permitted Dioxin Outlet | Designed w/ Combined NOx Reduction |
|---------------------------------|-------------|------|-----------------|-------------------|---------------------|----------------------|------|---------------------------------|------------------------------------|
|                                 |             |      |                 | Lbs/Hr            | Nm <sup>3</sup> /Hr | (°F)                 | (°C) | ng TEQ/NM <sup>3</sup>          |                                    |
| <b>Solid Waste Incineration</b> |             |      |                 |                   |                     |                      |      |                                 |                                    |
| <b>Municipal Solid Waste</b>    | Netherlands | 1996 | 1x              | 187,000           | 66,000              | 460                  | 240  | 0.1                             | Yes                                |
|                                 | Japan       | 2000 | 1x              | 283,000           | 100,000             | 330                  | 170  | 0.1                             | No                                 |
|                                 | Belgium     | 2000 | 1x              | 57,000            | 20,000              | 330                  | 170  | 0.1                             | No                                 |
|                                 | France      | 2001 | 1x              | 47,000            | 16,600              | 510                  | 270  | 0.1                             | Yes                                |
|                                 | Japan       | 2001 | 1x              | 114,000           | 40,000              | 350                  | 180  | 0.1                             | No                                 |
|                                 | Italy       | 2001 | 1x              | 177,000           | 62,600              | 320                  | 165  | 0.05                            | Yes                                |
|                                 | Japan       | 2002 | 1x              | 157,000           | 55,200              | 440                  | 230  | 0.1                             | No                                 |
|                                 | Japan       | 2002 | 3x              | 119,000           | 42,000              | 420                  | 220  | 0.1                             | No                                 |
|                                 | Japan       | 2002 | 1x              | 79,000            | 27,600              | 410                  | 210  | 0.1                             | No                                 |
|                                 | Korea       | 2002 | 1x              | 117,000           | 41,300              | 420                  | 220  | 0.1                             | Yes                                |
|                                 | Italy       | 2002 | 2x              | 246,000           | 87,000              | 320                  | 165  | 0.1                             | Yes                                |
|                                 | Japan       | 2002 | 1x              | 52,000            | 18,300              | 350                  | 180  | 0.1                             | No                                 |
|                                 | Italy       | 2002 | 1x              | 246,000           | 87,000              | 500                  | 260  | 0.05                            | Yes                                |
|                                 | Japan       | 2003 | 1x              | 114,000           | 40,000              | 350                  | 180  | 0.2                             | No                                 |
|                                 | Italy       | 2003 | 1x              | 71,000            | 25,000              | 320                  | 165  | 0.1                             | Yes                                |
|                                 | Italy       | 2003 | 1x              | 131,000           | 46,000              | 410                  | 210  | 0.1                             | Yes                                |
|                                 | Belgium     | 2003 | 2x              | 148,000           | 52,000              | 390                  | 200  | 0.1                             | Yes                                |
|                                 | Italy       | 2003 | 2x              | 71,000            | 25,000              | 320                  | 165  | 0.1                             | Yes                                |
|                                 | Belgium     | 2004 | 2x              | 105,000           | 36,800              | 370                  | 190  | 0.1                             | Yes                                |
|                                 | Belgium     | 2004 | 1x              | 282,000           | 99,400              | 370                  | 190  | 0.1                             | Yes                                |
|                                 | Belgium     | 2004 | 1x              | 109,000           | 38,300              | 500                  | 260  | 0.1                             | Yes                                |
|                                 | Belgium     | 2004 | 1x              | 107,000           | 37,500              | 370                  | 190  | 0.1                             | Yes                                |
|                                 | Belgium     | 2004 | 1x              | 151,000           | 53,100              | 440                  | 230  | 0.1                             | Yes                                |
|                                 | France      | 2005 | 2x              | 162,000           | 57,000              | 350                  | 180  | 0.1                             | Yes                                |
|                                 | France      | 2005 | 2x              | 150,000           | 53,000              | 340                  | 175  | 0.1                             | Yes                                |
|                                 | France      | 2008 | 2x              | 159,000           | 56,000              | 330                  | 170  | 0.05                            | Yes                                |
| <b>RDF</b>                      | Japan       | 2000 | 2x              | 57,000            | 20,000              | 420                  | 220  | 0.1                             | No                                 |
|                                 | Japan       | 2001 | 1x              | 8,550             | 3,000               | 410                  | 210  | 0.1                             | No                                 |
|                                 | Italy       | 2002 | 1x              | 208,000           | 73,400              | 320                  | 165  | 0.1                             | Yes                                |
|                                 | Japan       | 2002 | 4x              | 43,000            | 15,000              | 410                  | 210  | 0.1                             | Yes                                |
|                                 | Japan       | 2002 | 1x              | 51,000            | 18,000              | 350                  | 180  | 0.05                            | No                                 |
|                                 | Japan       | 2003 | 4x              | 57,000            | 20,000              | 410                  | 210  | 0.05                            | Yes                                |
| <b>Industrial Solid Waste</b>   | Japan       | 1999 | 1x              | 8,000             | 2,500               | 470                  | 245  | 0.1                             | No                                 |
|                                 | Japan       | 2001 | 1x              | 196,000           | 69,000              | 350                  | 180  | 0.1                             | No                                 |
|                                 | Japan       | 2002 | 1x              | 43,000            | 15,000              | 390                  | 200  | 0.1                             | No                                 |
|                                 | Japan       | 2003 | 1x              | 255,000           | 90,000              | 370                  | 190  | 0.1                             | No                                 |
|                                 | Japan       | 2003 | 1x              | 48,000            | 16,800              | 330                  | 170  | 0.1                             | No                                 |
|                                 | Japan       | 2006 | 1x              | 99,000            | 35,000              | 380                  | 195  | 0.01                            | Yes                                |
|                                 | Japan       | 2007 | 1x              | 112,000           | 39,400              | 350                  | 180  | 0.05                            | No                                 |
|                                 | Japan       | 2007 | 1x              | 108,000           | 38,000              | 380                  | 195  | 0.05                            | Yes                                |
| <b>Wood/Biomass Waste</b>       | Belgium     | 2000 | 1x              | 57,000            | 20,000              | 330                  | 170  | 0.1                             |                                    |
| <b>Pharmaceutical Waste</b>     | Ireland     | 2001 | 1x              | 111,000           | 39,000              | 490                  | 255  | 0.1                             | Yes                                |
| <b>Pyrolysis/Gassification</b>  | UK          | 2001 | 1x              | 20,000            | 6,900               | 390                  | 200  |                                 | Yes                                |
| <b>Ash Melting Plant</b>        | Japan       | 2001 | 1x              | 6,000             | 1,800               | 470                  | 245  | 0.1                             | No                                 |
|                                 | Japan       | 2005 | 2x              | 75,000            | 26,500              | 380                  | 195  | 0.01                            | Yes                                |
|                                 | Japan       | 2007 | 1x              | 16,000            | 5,500               | 350                  | 180  | 0.1                             | No                                 |



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Page 2

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|---------------------------------|---------|------|-----------------|-------------------|---------------------|----------------------|------|---|---------------------------------------|
|                                 |         |      |                 | Lbs/Hr            | Nm <sup>3</sup> /Hr | (°F)                 | (°C) |   |                                       |
| <b>Solid Waste Incineration</b> |         |      |                 |                   |                     |                      |      |   |                                       |
| <b>Medical Waste</b>            | Japan   | 2001 | 1x              | 114,000           | 40,000              | 350                  | 180  | 0.1   | No                                    |
|                                 | Japan   | 2002 | 1x              | 43,000            | 15,000              | 390                  | 200  | 5   | No                                    |
|                                 | Japan   | 2002 | 1x              | 156,000           | 55,000              | 440                  | 230  | 1   | No                                    |
|                                 | Japan   | 2002 | 3x              | 119,000           | 42,000              | 420                  | 220  | 1   | No                                    |
|                                 | Japan   | 2002 | 2x              | 79,000            | 27,600              | 410                  | 210  | 0.01  | No                                    |
|                                 | Korea   | 2002 | 1x              | 117,000           | 41,300              | 420                  | 220  | 0.05  | Yes                                   |
|                                 | Japan   | 2004 | 1x              | 114,000           | 40,000              | 330                  | 170  | 0.1   | No                                    |
|                                 | Japan   | 2004 | 1x              | 9,000             | 3,000               | 330                  | 170  | 1   | No                                    |
| <b>Industrial Liquid Waste</b>  |         |      |                 |                   |                     |                      |      |   |                                       |
| <b>Hazardous Liquid Waste</b>   | Italy   | 1999 | 1x              | 16,000            | 5,400               | 320                  | 160  | 0.1   | Yes                                   |
|                                 | Japan   | 1999 | 1x              | 8,000             | 2,500               | 470                  | 245  | 0.1   | Yes                                   |
|                                 | Japan   | 2001 | 1x              | 16,000            | 5,400               | 480                  | 250  | 0.1   | Yes                                   |
|                                 | USA     | 2003 | 2x              | 80,000            | 28,000              | 350                  | 180  | 0.2   |                                       |

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