The nickel cadmium cell has definite advantages in high temperature applications.

Both the lead acid and the nickel cadmium battery will experience a slight increase in capacity as their temperature is increased above the standard battery ambient of 77°F. For lead acid batteries, this increase is more than offset by the shortening of cell life. It is a generally accepted rule of thumb for lead calcium batteries that for each 15°F rise in battery temperature above 77°F, the battery life will be cut in half.

Example: At 92°F a 20-year lead calcium cell will be a 10-year cell, and at 107°F it will be less than a 5-year cell. It should be noted that increasing the specific gravity of the acid electrolyte has similar results. Changing from 1.215 to 1.250 specific gravity electrolyte raises the lead calcium capacity by approximately 10% and reduces its life by 50%.

Below 113°F there is no measurable decrease in battery life for nickel cadmium cells. For temperatures above 113°F, there is a slight shortness of life, but it is difficult to determine exactly how great this is because the applications are so few in number. It is believed that most of this degradation actually relates to the increased water evaporation, which resulted in the electrolyte level periodically going below the surface of the plates.

The plastic jars used in the batteries begin to soften at about 130°F. The jars will still support the cells, but their ability to withstand physical shock is greatly reduced.

For very high temperature applications, cells in polycarbonate or steel containers can be provided.