

. . . a drive mechanism that precisely aims and holds in position antennas used for satellite transmissions.

SAGEBRUSH'S COMMERCIALIZATION OF ROTO-LOK® DRIVES HAS SPREAD INTO SATELLITE NEWS GATHERING, VIDEO CONFERENCING, AND MEDICAL MARKETS.



■ This antenna system uses a Sagebrush Roto-Lok® rotary drive for precise positioning in satellite news gathering.

ROTARY DRIVE POSITIONS ANTENNAS FOR SATELLITE NEWS GATHERING

The booming business of satellite news gathering (SNG) uses mobile trucks equipped with portable satellite antennas. Many antenna systems, however, use a linear actuator (motorized rod-and-screw design) that makes it harder to point antennas in the right direction. This design also makes it difficult for the antenna to hold its position in windy conditions and to accommodate truck and satellite movements. Such problems interfere with transmission of sound and image data to television stations or other reception sites.

Responding to this problem, Sagebrush Technology, Inc. (Albuquerque, NM), now sells its Roto-Lok® rotary drive to designers of SNG antenna systems. Using an innovative motorized cable-drive system, Roto-Lok precisely positions and holds these antennas, even in windy conditions. The drive's zero-backlash, virtually perfect smoothness, and high torsional stiffness make it possible to position satellite antennas with greater reliability and accuracy than previous technology provided.

One of Sagebrush's newest customers—Andrew Corporation, a global supplier of communications systems equipment and services—recently introduced a compact, lightweight antenna for SNG trucks. Instead of the typical rod-and-screw design, a Roto-Lok drive precisely points the antenna. "Andrew selected the Roto-Lok drive because it is a very precise pointing system and is virtually maintenance free," says Bob Fitzgerald, Andrew's manager of earth-station antennas.

Electrospace Systems, Inc., also a supplier of communications systems and a Sagebrush customer, recently purchased many Roto-Lok drives to install on mobile satellite antenna systems for military vehicles. Roto-Lok's ruggedness and reliability allow operation in harsh environments, impressing the military. U.S. troops on a peacekeeping mission in Bosnia-Herzegovina used eight drives connected to satellite antennas. According to Don Carson, Sagebrush's vice president of marketing and sales, "These drives survived the coldest winter in European history and didn't lose a minute in downtime."

Sagebrush is supplying 250 Roto-Lok drives to a company that sells videoconferencing equipment to schools and colleges. In addition, the company is using Roto-Lok drives for precision positioning in medical and military equipment. The BMDO Laser Communications program provided key support to develop the Roto-Lok drive into a high-visibility product. In this program, the drive controlled the precision angular alignment of laser beam transmitters and receivers in a communications network.

ABOUT THE TECHNOLOGY

In the Roto-Lok drive, tensioned cables wrap a figure-eight pattern around two closely spaced wheels. Friction carries torque from a powered wheel (capstan) to a driven wheel (drum). The drive maintains precision by employing many cables working in parallel. Sharing the load, the cables average the rotation rate so that any imperfections, dirt, or other slight irregularities on the drum or cables do not affect the drive rate. Because the cables do not slide on the drum or capstan, there is virtually no wear.

The Roto-Lok drive also maintains much higher stiffness than drives that use chains and drive belts because it has springs at the end of each cable, which provide tension throughout the cable. Spring-loaded cables also reduce backlash, a design problem that affects pointing accuracy and transmission efficiency. Roto-Lok positions the drum and the cylinder connected to the drum to within 50 millionths of one degree. It also transmits rotation at efficiency rates greater than 98 percent and runs quietly.