

Helping roads and the environment meet common ground

When SAE was founded in 1905, nearly all highways outside cities lacked hard pavements, and were lucky to have macadam or gravel surfaces. In 1905, only 161,000 miles of U.S. roads had any kind of surface, compared to more than 4 million miles (6.4 million km) paved by this year. In 1905, auto and truck registrations totaled 78,000, but by 2005 they will have exceeded 231 million.

To keep up, America vigorously built roads, culminating in our Eisenhower System of Interstate and Defense Highways. The emphasis was always on building new roads or providing new capacity. But we now are in the post-Interstate era, and state and federal attention has shifted to maintaining and preserving our roads, rather than expanding the system. Simultaneously, new demands of environmental stewardship have impacted road building and maintenance to levels unimaginable a few decades ago.

Anticipating these needs, **Wirtgen** Group has developed unique, technologically advanced road-maintenance and construction equipment that provides innovative mechanical—and environmentally sensitive—solutions to pavement maintenance and construction problems.

For example, in the past 20 years, America's highway industry has become, by far, the biggest recycler of waste materials, mostly reclaimed asphalt pavement (RAP). Use of RAP saves tax dollars and existing resources. Asphalt recycling and cold-milling technologies developed by Wirtgen help road agencies make scarce road funds go further, permit low-cost reconstruction of roads, and reuse construction materials.

One such mechanical process for the future is "foamed" asphalt base recycling with Wirtgen equipment. Instead of

costly heavy equipment and endless dump trucks being used to dig out and remove failed roads—followed by an equally costly and disruptive reconstruction—failed pavements now can be ground into pieces and then stabilized as road base with an asphalt foam in just one pass by a single machine.

Via a cutter and mixing chamber, the recycler pulverizes the road in place, mixes the RAP internally with hot liquid-asphalt foam, and then places the foam-stabilized material in the roadway, ready almost immediately for traffic or thin overlay. Now, all governments have the means to cheaply rebuild roads in remote rural regions or in environmentally sensitive areas with minimal cost and disruption.

Another mechanical technology for the future is Wirtgen's unique "oscillation" design for compaction of asphalt or base, found exclusively on its **Hamm** compactors. The oscillation technology works by using horizontal shear forces created within the drum to compact the asphalt, rather than by compacting it vertically with the conventional bouncing motion. The result is faster, more efficient compaction, with greatly minimized disturbance to surrounding areas.

Yet another environmentally beneficial road construction innovation of the Wirtgen Group now gaining popularity is the electrically heated screed in back of the asphalt paver. This technology is replacing screeds heated with diesel oil, eliminating diesel fumes, spillage, clean-up, and the "blowtorch" effect beneath the feet of operators. Wirtgen's **Vögele** subsidiary pioneered this technology in the 1960s, and it now is expanding throughout the U.S.

As SAE and America's roads enter their next century, Wirtgen will be there with innovative solutions. **OHE**



by **Stu Murray**, President, **Wirtgen America**



Foamed asphalt repaving



Oscillation compaction