At the Federal-Mogul facility in Friedberg, Germany, environmentally sound technologies are providing more sustainability in production.

For the efficiency of a today’s 2-stroke vessel engine the piston ring system is more important than ever given the increasing costs for lube oil, additives and maintenance. To meet these challenges, Federal-Mogul has developed the eWAVE technology: a solution which consists of a carefully designed and fine-tuned ring package providing the best possible use of the available lube oil.

More sustainability with environmentally friendly technologies

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1. New dry-ice-blasting process reduces waste that is subject to special disposal

Due to the previously used sand-blasting method, an unavoidable carry-over of blasting corundum occurs in the chromium-plating tanks. This process thus shortens the service life of the chromium-plating tanks. Used tanks/electrolytes and the blasting corundum must be disposed of as hazardous waste (waste containing CrVI).
Using Linde’s CRYOCLEAN Complete® dry-ice blasting method as a cleaning process before chromium plating, sludge subject to special disposal is reduced by about 50%. The advantages for the environment and quality are obvious. In the new method, ice micro-particles are used, which hit the surface at high speed. The CO₂ dry-ice used as blasting abrasive transforms from a solid to a gas when it hits the surface and is suctioned away. The dust particles fall into a container and can be disposed of very easily. Since no filter is required for blasting corundum, inhalative stress is reduced.

The layer adhesion is not influenced as the surface is pre-etched before chromium plating. The chromium docking takes place on an atomic basis and does not depend on pre-cleaning conditions.

2. Automatic reduction of iron content reduces waste containing CrVI

During a standard galvanic chromium-plating process, dissolved iron is formed in the electrolytes. Due to the new de-ironing plant, this dissolved iron can be bound and precipitated away. The service life/service period of the chromium-plating tanks is thus considerably extended as the wastes requiring special disposal (used electrolytes) are reduced by about 60%. The more consistent handling of the electrolytes additionally improves quality.

3. New heating method for chromium-plating tanks lowers energy consumption and thus reduces environmental impact

The new gas heating, which has replaced the electrical heating reduces the time required to heat up the chromium plating tanks, thus enabling more efficient heating. The energy consumption has been reduced by approximately 25%. The constant heating of the chromium-plating tanks permits an improvement in the product quality and reduces inhalative stress.