Industrial Services

Safety through Precision

SITE CLEAN-UP
INDUSTRIAL SERVICES
WASTE DISPOAL
SEWER SERVICES
SPILL MANAGEMENT AND RELATED TECHNOLOGY
Competitive Factors
Keeping machinery running at full capacity is an important factor in gaining a competitive edge. Yet the availability of that same equipment is equally decisive. The goal is always to keep planned downtimes as close to schedule as possible, to perform repairs during running operations and to maintain quick operational flexibility even during emergencies.

Maintenance Management
Clear Competence Profile

Partner with Potential
Lobbe has collected vast experience in precisely these three areas. Benefiting from support by large, well-known companies from the chemical and mineral oil sector, Lobbe standards are set high. Why did these companies work with Lobbe? Clearly, they saw Lobbe as a partner with potential, a partner with not only the pure know-how but also the motivation for deep conceptualisation of processes and that was prepared to seize upon ideas that could be turned into new, innovative concepts.

Clear Profile of Competencies
Lobbe offers a distinguished profile of competencies in the areas of maintenance management. The spectrum is broad: Pressure washing and ultra-high pressure water blasting, air conveyance technology, plant engineering and shuttering. Lobbe also works with special processes such as chemical industrial cleaning, industrial cryogenic cleaning and water jet cutting. Together with the personnel and technological flexibility typical of mid-sized enterprises, Lobbe and its service program set an exemplary standard.

Solutions for Sectors
- Chemical industry
- Petrochemical industry (Refineries, tank farms)
- Steel industry (Sintering plant, blast furnaces, top-blown steel works, rolling mill, coke plant)
- Mining industry (coal washery, large-scale excavator, bunker)
- Automotive industry
- Foodstuffs industry (sugar mills, oil mill, confectionary factory)
- Paper industry
- Cement industry (silo plant, conveyor systems, rotary kilns)
- Textile industry
- Electric utility industry (power plants, biomass power plants)
- Printing industry
Air Conveyance Systems

Many residual, waste and other products can be removed using air conveyance equipment. This involves using air as a transport media for distances up to 250 meters and heights of up to 50 meters. This highly developed technology is suited for the extraction of material from bunker facilities, electrostatic precipitators, cement silos, bitumen storage tanks or hollow blocks in reactors. The Lobbe-group owns one of Germany’s largest fleet of air conveyance equipment. This allows it to apply its extensive technical resources and specialists to tackle the most varied of challenges from the most varied of branches. Many industrial services may no longer be performed nowadays without air conveyance technology. The technique’s importance will only grow as cost-effectiveness improves and safety aspects come to play an increasing role.
# Extensive Resources

## Overview of Application Area for Air Conveyance Technology (High-performance Vacuum Suction Devices)

<table>
<thead>
<tr>
<th>Category</th>
<th>Residues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Plants</strong></td>
<td>Residues from filters, boiler equipment, heat exchangers, blocks, smokestacks, cooling towers, coal pulverisers, crushers, silos, dead space and electrostatic precipitators</td>
</tr>
<tr>
<td><strong>Chemical Plants and Refineries</strong></td>
<td>Residues from columns, containers, heat exchanges, bulk storage tanks, tank wagons, pipelines and channel systems, sand trips, silt traps, and oil separators; extraction/feeding of charcoal and tower packing</td>
</tr>
<tr>
<td><strong>Coal Mining</strong></td>
<td>Residues like coal remainders, coal dust, coal sludge from crushers, silos, conveyor systems, ships, wagons, track systems, steel constructions and large-scale devices</td>
</tr>
<tr>
<td><strong>Paper/Sugar Mills</strong></td>
<td>Residues like pulp, molasses, paper dust and remnants, tower packing, sand, dust, ashes, cuttings and sludge from channels and silos</td>
</tr>
<tr>
<td><strong>Steel/Smelteries, Cokeries, Foundries</strong></td>
<td>Residues from filter systems and outlets, electrostatic pre-screeners, furnace dust (dry and wet), coke from hoppers in the coating plant, lime, potash, soda ash, gypsum, borax phosphate, coal, dust, sludge, salt, quartz, sintering dust, refractory, stone chips, wet and dry lead oxide secondary scale, casting flux, pickup of foundry sand and blasting material from storage bins, pits, troughs, track and conveyor systems, storage spaces and points, flue gas vents, handling plants, electrolytic cell and roasting furnace, crane bridges, rotary kilns, craneways</td>
</tr>
<tr>
<td><strong>Water Resources Engineering Facilities</strong></td>
<td>Residues from sedimentation basins, channels, thickeners, culverts, sewage systems, sand trips, sludge trips, filter systems, separators, sludge pits, tanks, wells</td>
</tr>
<tr>
<td><strong>Cement/Hard Rock Plants</strong></td>
<td>Residues like raw meal, fly ash, coal dust from silos and conveyor system cleaning</td>
</tr>
</tbody>
</table>
Automatic High-Pressure Water Cleaning
Automatic high-pressure water cleaning guarantees safety with cutting-edge technology. The modern technical devices used by Lobbe generally require no more than a “remote control”. From devices for inner and outer jet concentration to tank scrubbing heads and rotating wash heads: Lobbe’s equipment spans the spectrum and is always the newest available. Reactors, vessels, tanks, heat exchangers, pipelines and large contaminated surfaces can be cleaned economically and with minimal resource expenditure at pressures between 150 and 2500 bar, as well as water levels between 10 and 650 litres.

Using in-house inventions, Lobbe perpetually looks for new opportunities to improve workflows or to sink costs for the client without sacrificing performance. Its “runway cleaner” is an example of how existing components and a bit of ingenuity can lead to a functional device for removing rubber abrasions from large, flat surfaces. It can be used for airports or auto racing tracks.

Security concerns are also central to many of the deliberations: the goal is always to minimise risks and maximise worker safety. Lobbe is blazing a trail in this direction through closed mobile cleaning stations for heat exchangers.

Technical Fundamentals of Automated and Manual High-Pressure Water Cleaning

- Use of life-support systems in hazardous areas
- High-pressure pumping technology with water circulation process
- Vehicles with low-polluting driving motors
- Exhaust purification during the use of suction tank vehicles and industrial-strength suctioning (air conveyance systems)
- Outgoing air filtering during tank and vessel cleaning

Guaranteed Safety

leaning
Manual High-Pressure Water Cleaning
Planning

Experienced Specialists

Working with Responsibility
At roughly 2500 bar, water coming out of the jet nozzle can easily penetrate a thin steel plate. The handling of manual high-pressure cleaning equipment represents a constant risk, even with safety precautions like automated emergency shut-off in place. The human factor plays a major role.

The companies of the Lobbe group deliver manual services in the high and ultra-high pressure cleaning areas with employees who have proved themselves vigilant and responsible in their working habits. Even so, manual cleaning requires safety-centred thinking and a high degree of hands-on experience, talent and sure instincts.

Personal Protection
Manual cleaning measures are required in practically all industrial and production areas in which automated devices cannot be used. This includes in particular gas holders, pits, channels, shafts, caverns and production facilities. Lobbe possess the necessary technology to handle all of these application areas.

For work in contaminated areas, respiratory filters, breathing suits and full-protection suits, safety harnesses and extraction devices are mandatory. Lobbe personnel have all been trained in the handling of this personal safety and protection equipment, and always receive customised instruction prior to any operation.

Current Certifications in the Industrial Services Areas

- Security management system based on SCC** (Security Certificate for Contractors)
- Quality management system based on DIN EN ISO 9001:2000
- Certified specialist firm based on § 19 l WHG (Federal Water Resources Act)
- Certified specialist firm based on Recycling Economy/Waste Disposal Law
- RAL Seal of Approval for asbestos removal and tank protection
Plant Shuttering

In most cases, these jobs involve much more than just physical disassembly work. The shuttering of plants places strenuous demands in terms of planning, technology and strategy. Lobbe takes over complete coordination and execution of all measures, from pre-demolition cleaning to salvage and disposal of remainders and residue of all kinds and consistencies, not to mention the levelling or rehabilitation of the site.

Exemplary Concept
An exemplary model for innovative approaches to shuttering projects came through the demolition of a sedimentation tank on the grounds of the former Schwarze Pumpe gas combine. Because
Innovative Concepts

Examples of Projects in Plant Shuttering

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tar Separator</td>
<td>Cleaning and disassembly tar separator at the former &quot;August Thyssen&quot; cokery.</td>
</tr>
<tr>
<td>Sedimentation Tanks</td>
<td>Emptying, cleaning and disassembly of two 10,000 cubic meters sedimentation tanks in the Entphenolung Schwarze Pumpe, disposal of the tank contents like phenol water and tar creosote solids</td>
</tr>
<tr>
<td>Abandoned Plant and Building</td>
<td>Planning and organisation of the demolition of abandoned plants and buildings; cleaning and waste management; site recultivation</td>
</tr>
<tr>
<td>Machines and Building</td>
<td>Planning and organisation, cleaning prior to demolition, plant dismantling, explosion, removal of all residues and waste</td>
</tr>
</tbody>
</table>

The tank was filled with tar products that tended toward spontaneous combustion and hence had been covered with nitrogen, flame torches were quickly ruled out. The upper portion of the tank was instead cut open like a tin using hydraulic shears. A crane removed the roof, thereby allowing the extraction and disposal of the residues. The emergency planning also came under trial by fire. A lightning strike interrupted the power supply to the nitrogen pumps. The fire department, already on stand-by, placed a carpet of high-expansion foam atop the tar to make sure that the power outage took no further repercussions. The dismantling of the sedimentation tank was then successfully concluded.
Plant Engineering
Guarantee for Smooth Progress

Lobbe maintains support centres on the grounds of several industrial operations. These are used to manage and execute intra-plant maintenance, repair and cleaning jobs by Lobbe specialists. Those plant engineering services also includes any required metalwork on pipelines, supporting structures, vessels, conveyor belts or heat exchangers. The Lobbe group also dispatches its own plant engineers as needed in construction corps, including for large-scale inspections and unscheduled maintenance management, thereby assuring problem-free workflow at all times.

Certifications

The following certificates have been earned for the plant engineering field: DIN EN ISO 9001:2000, HPO/DIN EN 729-2, certified specialty firm based on § 19 I WHG (Federal Water Resources Act), Security Certificate Contractor (SCC**) and advanced certification based on DIN 18800 (Section 7) and DIN 15018.

<table>
<thead>
<tr>
<th>Steel Construction</th>
<th>from unalloyed and alloyed steels with individual piece weights up to 10 t, as well as for designs created on site (pipe bridges, dumping troughs, conveyor systems, special constructions, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline Engineering</td>
<td>including the required fittings and measurement devices made of rust-proof, thermostable and acid-resistant materials (conduits up to DN 1000, fittings, pipe fittings, custom-built machinery etc.)</td>
</tr>
<tr>
<td>Apparatus Engineering</td>
<td>from alloyed and non-alloyed materials (heat exchangers, separators, reactors, cyclones, etc.)</td>
</tr>
<tr>
<td>Pressure Vessel</td>
<td>from alloyed and non-alloyed materials (storage vessels, silos, trapping systems etc.)</td>
</tr>
<tr>
<td>Construction Service</td>
<td>Repair and assembly work as well as disassembly (troubleshooting, factory operations, etc.)</td>
</tr>
</tbody>
</table>

Diverse Services

Steel Construction

- from unalloyed and alloyed steels with individual piece weights up to 10 t, as well as for designs created on site (pipe bridges, dumping troughs, conveyor systems, special constructions, etc.)

Pipeline Engineering

- including the required fittings and measurement devices made of rust-proof, thermostable and acid-resistant materials (conduits up to DN 1000, fittings, pipe fittings, custom-built machinery etc.)

Apparatus Engineering

- from alloyed and non-alloyed materials (heat exchangers, separators, reactors, cyclones, etc.)

Pressure Vessel

- from alloyed and non-alloyed materials (storage vessels, silos, trapping systems etc.)

Construction Service

- Repair and assembly work as well as disassembly (troubleshooting, factory operations, etc.)
Industrial Cryogenic Cleaning
Industrial cryogenic cleaning involves blasting dry ice at roughly 80 degrees below zero. This process is particularly beneficial in situations where machine components may not come into contact with water or where sensitive seals must be protected. These are not uncommon requirements for industries like the printing industry or power plants. Given the increased use of electronics in all production areas, one can expect that industrial cryogenic cleaning will find increased areas of applications in coming years. Lobbe’s practical experience has put it in a good position to capitalise on this.
Chemical Industrial Cleaning

Given the shrinking size of technical machinery and devices, mechanical cleaning with high-pressure water is not always possible, or else would require relatively intensive make-ready and cleanup work. Lobbe’s alternative falls under the rubric “Chemical Industrial Cleaning”. In specific cases, it is suitable for the cleaning of tanks and large vessels. Used with low-pressure tank washing heads, no physical entry is required.

Lobbe has helped successfully revived a side-aspect of chemical industrial cleaning, namely thermal passivation. A series of reference commissions emphasise both the effectiveness of the process and the expertise of Lobbe’s specialists.

The following measures were executed as part of chemical industrial cleaning:

- Pickling/neutralisation of surfaces during the launch of new equipment, following planned shut downs or other downtime.
- Pickling/neutralisation of surfaces for preventative corrosion protection.
- Removal of carbonates in cooling circuits.
- Removes of oils/fats/cracking in heat exchangers and pipelines.
- Removal of sulphides in pipelines and heat exchangers.
- Scouring of plant components and vessels (with renewable solvents)

### References

<table>
<thead>
<tr>
<th>Chemical Industrial Cleaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-passivation, butadiene plant</td>
</tr>
<tr>
<td>DOW Olefinverbund GmbH, Böhlen plant</td>
</tr>
<tr>
<td>Cleaning waste heat exchanger, oil gasification</td>
</tr>
<tr>
<td>YARA Deutschland GmbH, Brunsbüttel</td>
</tr>
<tr>
<td>Passivation, butadiene reconditioning</td>
</tr>
<tr>
<td>DOW Olefinverbund GmbH, Schkopau plant</td>
</tr>
<tr>
<td>Chemical cleaning oil prewarmer</td>
</tr>
<tr>
<td>Total Raffinerie Mitteldeutschland, Spergau</td>
</tr>
<tr>
<td>Pickling/pre-passivation butadiene conduit</td>
</tr>
<tr>
<td>Fraunhofergesellschaft, Merseburg</td>
</tr>
<tr>
<td>Passivation of butadiene tank/pipeline</td>
</tr>
<tr>
<td>Antwerp Gas Terminal (AGT), Belgium</td>
</tr>
</tbody>
</table>