PHOSGENE AND PHOSGENATION TECHNOLOGIES

THE SAFE WAY TO PRODUCTION
Twenty years of experience in safe and economised production of phosgene on demand have motivated us to support our clients with downstream phosgenation technology. A dedicated test centre allows us to develop phosgenation processes for and together with our clients. Our scale-up experience grants an intrinsic safe industrial plant designed by Buss ChemTech AG which includes full process and performance guarantees.

**Phosgene as Raw Material**
We offer today a variety of processes to produce phosgene on demand. For quantities below 30 kg/h we propose using triphosgene combined with our patented catalyst to produce 3 moles of phosgene from 1 mole of triphosgene. For quantities above 30 kg/h we propose the well-known Buss Phosgene Generators starting from CO and Cl₂. These generators have been built for capacities up to 12,000 kg/h and can operate between 10 and 100% of their nominal capacity. A special high-performance catalyst enables our clients to produce high-grade poly-carbonates and isocyanates without further treatment of phosgene. All these technologies allow a safe phosgenation without liquefying and/or storage of hazardous phosgene using only a minimum phosgene inventory.

**Phosgenation Reactor**
The Advanced Phosgenation Reactor (APR) developed by Buss ChemTech AG sets new standards for safe and efficient production of phosgene derivatives. It ensures a minimum of phosgene excess, which is a benefit to the safety and economy of the process. APR is designed to deal with extreme hydraulic and thermal characteristics of the phosgenation process to achieve high yields with excellent selectivity, which often dispense down-stream purification facilities.

**Safety and Reliability**
Safety and reliability are the most important considerations in a phosgene generation and phosgenation plant. Our commitment to both ensures a fully automatic control with hard-wired emergency shutdown system. All facilities...
containing phosgene are placed within a safety containment system, which is purged with air and continuously monitored against a leakage. The purge air is sent to the safety absorption for neutralisation prior to being released into the atmosphere. The off gas of the plant is sent to process absorption for destruction prior to the incineration of non-destructible components. Minimising phosgene hold-up by maximising reaction rate and plant performance is the mission of our design engineers.

Our test centre with laboratory and pilot plant facilities allows us to provide you with a full process, scale-up and performance guarantee for industrial plants. Our long-term experience in handling high-toxic and hazardous materials guarantees an intrinsic safe phosgenation plant with the best performance.

**Scope of Service**

Our service can be adapted to your specific requirements and cover:

- **Process development** with front-end studies to verify the potential for optimisation and to define the best parameters and safest conditions.
- **Scale-up process** starting with laboratory tests or directly from our 15 litres pilot plant.
- **Process hazard analysis** studies and support during all phases of a project (i.e. authority approval, basic engineering, etc.).
- **Process and performance guarantees**, for all our designed plants.
- **Full engineering package** covering basic and detail engineering as well as complete process automation including process guarantees which gives you the best possible benefit, as there is only one single partner responsible for the overall process.
- **Material supply** consisting of partial or complete pre-erected plant modules including instrumentation and DCS system as well as key and other equipment. The level of supply can be adapted to your individual requirements.
- **Erection supervision, start-up consultancy and training.**
- **After-sales services** to share experience as a partner and to support you in further optimisation, facility extensions and energy optimisation, plant retrofit based on updated regulations, etc.
Buss phosgene and phosgenation technology stands for

- Inherent safety
- Reliable performance
- Excellent product quality

Buss ChemTech is a technology and engineering provider in the field of chemical reaction technologies, fluorine chemicals and the production of anodes for the aluminium industry. It has its own development centre open also for client-specific developments.

Buss ChemTech offers the full range of services as

- Feasibility studies and site assessments
- Conceptual design
- Process hazard analysis
- Basic and detail engineering
- Process automation
- Material or total plant supply
- Project management
- Commissioning and training
- After-sales service