BELFOR pioneered successful decontamination and recovery of technical equipment of all types, primarily following contamination events caused by fires, floods, water ingress, chemical spills and more.

BELFOR has specific expertise in the decontamination of both “front-end” and “back-end” semiconductor equipment, and remains the leader in equipment restoration projects worldwide, frequently when the lead times required to replace the sophisticated electronic machinery can be unacceptably long.

BELFOR has the skills and practices to manage preventative and corrective maintenance activities at semiconductor facilities — and to return them to normal operations as soon as possible following a crisis.
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BELFOR can decontaminate, evaluate and arrange transportation of semiconductor equipment globally, giving customers the assurance that it is being done safely and in compliance with applicable regulations.

**TOOL DECONTAMINATION SERVICES**

**SCOPE OF SERVICES**

**Decontamination Assessment**
Bellfor will review process gas and chemical lists, equipment operational status and supporting documents (where available) in order to determine the likely contamination present. Bellfor will verify this using various means depending upon the type of equipment, including but not limited to gas detection and surface wipe sample analysis.

**Tool Decontamination**

Bellfor will document the process used for decontamination and the related test results in the form of a Decontamination Declaration Document.

**TRANSPORTATION REGULATIONS COMPLIANCE**

Semiconductor tools and related components that have already been exposed to process chemistries, and therefore are contaminated with process gases, chemicals and other residues, are very often transported on a global basis. Typically, the soonest when the tools are moving internally, are being modified and/or sold to alternate locations.

Contaminated equipment can pose a considerable safety risk, both during transportation and upon arrival at the final destination. Accordingly, contaminated equipment must be treated as dangerous cargo (hazardous goods). This imposes stringent transportation regulations and leads to considerably higher transportation costs.

**BELFOR** can assess such equipment prior to relocation, decontaminate the equipment as necessary, and provide documentation that declares the status of the equipment to freight forwarders, transportation regulatory authorities and to the party receiving the equipment, which complies with the most current revision of the SEMI S12 standard.

**FACTOR FABRICATION FACILITY DECOMMISSIONING**

**BELFOR** can provide full facility “take down” decontamination services, including the assessment and decontamination of all equipment within a wafer fab and facility. Typically, the range of services provided can include:

- Equipment contamination assessment
- Equipment decontamination
- Removal, decontamination and disposal of furnaces, exhaust lines, ducts, etc.
- Rigging of equipment from within the cleanroom
- Costing and transportation of equipment
- Decontamination of facilities/utilities

**BELFOR** has carried out a wide range of semiconductor equipment decontamination projects, as well as several major semiconductor fab disaster recovery projects around the world. Some of our specific equipment experience includes:

- Chemical Mechanical Planar (CMP) systems
- Chemical Vapor Deposition (CVD), PE-CVD & SACVD systems
- Furnaces (Nitride, Poly, Oxide)
- Gas Control Panels
- Ion Implants
- Physical Vapor Deposition (PVD) systems
- Spin/Roll Dryers
- Steppers
- Wafer Packaging systems
- Common utilities and support systems

**THE BELFOR TECHNICAL SUPPORT CENTER** can develop specific decontamination solutions for a wide variety of unique contamination situations. As the global leader in decontamination and disaster recovery services, **BELFOR** has the expertise, personnel, technology and resources to meet your needs.

**DISASTER RECOVERY**

**BELFOR** can also provide extensive decontamination and recovery services for contaminated/banmal tools and equipment, utilities, cleanrooms and building facilities following disaster incidents such as fires, water spills, chemical leaks and environmental contamination incidents.
Semiconductor Equipment Services

**TOOL DECONTAMINATION SERVICES**

**SCOPe OF SERVICES**

**Contamination Assessment**
BELFOR will review process gas and chemical lists, equipment operational status and supporting documents (where available) in order to determine the likely contamination present. BELFOR will verify this using various means depending upon the type of equipment, including but not limited to gas detection and surface wipe sample analysis.

**Tool Decontamination**
BELFOR will decontaminate the tool as per the OEM’s documented procedures when available. BELFOR has also created decontamination processes and protocols for many models of tools in order to remove hazardous contaminants. BELFOR will document the process used for decontamination and the related test results in the form of a Decontamination Declaration Document.

**Transportation Regulations Compliance**
Semiconductor tools and related components that have already been exposed to process chemistries, and therefore are contaminated with process gases, chemicals and other residues, are very often transported on a global basis. Typically, the issue when the tools are moving internally is being misused and/or sold to alternate locations. Contaminated equipment can pose a considerable safety risk, both during transportation and upon arrival at the final destination. Accordingly, contaminated equipment must be treated as dangerous cargo (hazardous goods). This imposes stringent transportation regulations and leads to considerably higher transportation costs.

BELFOR can assess such equipment prior to relocation, decontaminate the equipment as necessary, and provide documentation that declares the status of the equipment to freight forwarders, transportation regulatory authorities and to the party receiving the equipment, which complies with the most current revision of the SEMI S12 standard.

**Rigging/Crating and Transportation Services**
BELFOR can provide turnkey services not only including tool evaluation and decontamination, but also rigging, crating and the transportation of tools. These services are performed by BELFOR’s logistics partners as part of a turnkey solution.

**Parts Decontamination**
Cleaning of fabrication equipment parts is increasingly crucial as circuit critical dimensions reduce. BELFOR provides a range of parts cleaning solutions, allowing wafer fabrication operators to ensure this important activity.

**FABRICATION FACILITY SERVICES**

**WAFER FABRICATION FACILITY DECOMMISSIONING**

BELFOR can provide full wafer fab “dirt” decontamination services, including the assessment and decontamination of all equipment within a wafer fab facility. Typically, the range of services provided can include:

- Equipment contamination assessment
- Equipment decontamination
- Removal, decontamination and disposal of facility, exhaust lines, ducts, etc.
- Rigging of equipment from within the cleanroom
- Cooling and transportation of equipment
- Decontamination of facilities/utilities

**COMPREHENSIVE EXPERIENCE**
BELFOR has carried out a wide range of semiconductor equipment decontamination projects, as well as several major semiconductor fab disaster recovery projects around the world. Some of our specific equipment experience includes:

- Metrology Systems
- Chemical Mechanical Planar (CMP) systems
- Chemical Vapor Deposition (CVD) systems
- Physical Vapor Deposition (PVD) systems
- Spin/Rotate Dryers
- Furnaces (Nitride, Poly, Oxide)
- Gas Control Panels
- Ion Implants
- Common utilities and support systems

The BELFOR Technical Support Center can develop specific decontamination solutions for a wide variety of unique contamination situations. As the global leader in decontamination and disaster recovery services, BELFOR has the expertise, personnel, technology and resources to meet your needs.
BELFOR will review process gas and chemical lists, equipment operational status and supporting documents (where available) in order to determine the likely contamination present. BELFOR will verify this using various means depending upon the type of equipment, including but not limited to gas detection and surface wipe sample analysis.

**Tool Decontamination**
BELFOR will decontaminate the tool as per the OEM’s documented procedures when available. BELFOR has also created decontamination processes and protocols for many models of tools in order to remove hazardous contaminants. BELFOR will document the process used for decontamination and the related test results in the form of a Decontamination Declaration Document.

**Transportation Regulations Compliance**
Semiconductor tools and related components that have already been exposed to process chemistries, and therefore are contaminated with process gases, chemicals and other residues, are very often transported on a global basis. Typically, the issue when the tools are moving internally, are being moved and/or sold to alternate locations. Contaminated equipment can pose a considerable safety risk, both during transportation and upon arrival at the final destination. Accordingly, contaminated equipment must be treated as dangerous cargo (hazardous goods). This imposes stringent transportation regulations and leads to considerably higher transportation costs.

BELFOR can assess such equipment prior to relocation, decontaminate the equipment as necessary, and provide documentation that declares the status of the equipment to freight forwarders, transportation regulatory authorities and to the party receiving the equipment, which complies with the most current revision of the SEMI S12 standard.

**Parts Decontamination**
Clearances of fabrication equipment parts is increasingly crucial as circuit critical dimensions reduce. BELFOR provides a range of parts cleaning solutions, allowing wafer fabrication operators to counteract this important activity.

BELFOR can decontaminate, evaluate and arrange transportation of semiconductor equipment globally, giving customers the assurance that it is being done safely and in compliance with applicable regulations.

**TOOL DECONTAMINATION SERVICES**

**SCOPE OF SERVICES**

**Contamination Assessment**
BELFOR will review process gas and chemical lists, equipment operational status and supporting documents (where available) in order to determine the likely contamination present. BELFOR will verify this using various means depending upon the type of equipment, including but not limited to gas detection and surface wipe sample analysis.

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**FACTORIATION FACILITY SERVICES**

**WAFFER FABRICATION FACILITY DECOMMISSIONING**

BELFOR can provide full wafer fab decommissioning services, including the assessment and decontamination of all equipment within a wafer fab facility. Typically, the range of services provided can include:

- Equipment contamination assessment
- Equipment decontamination
- Removal, decontamination and disposal of fumehalls, exhaust lines, ducts, etc.
- Rigging of equipment from within the cleanroom
- Costing and transportation of equipment
- Decontamination of facilities/utilities

**COMPREHENSIVE EXPERIENCE**
BELFOR has carried out a wide range of semiconductor equipment decontamination projects, as well as several major semiconductor fab decommissioning projects around the world. Some of our specific equipment experience includes:

- Physical Vapor Deposition (PVD) systems
- Chemical Vapor Deposition (CVD, Inc., PECDV & SACVD) systems
- Furnaces (nitride, poly, Oxide)
- Gas Control Panels
- Ion Implanters
- Common utilities and support systems

**DISASTER RECOVERY**
BELFOR can also provide extensive decontamination and recovery services for contaminated/biomaterial tools and equipment, utilities, cleanrooms and building facilities following disaster incidents such as fires, water spills, chemical leaks and environmental contamination incidents.

**The BELFOR Technical Support Center can develop specific decontamination solutions for a wide variety of unique contamination scenarios. As the global leader in decontamination and disaster recovery services, BELFOR has the expertise, personnel, technology and resources to meet your needs.**
BELFOR pioneered successful decontamination and recovery of technical equipment of all types, primarily following contamination events caused by fires, floods, water ingress, chemical spills and more.

BELFOR has specific expertise in the decontamination of both “front-end” and “back-end” semiconductor equipment, and remains the leader in equipment restoration projects worldwide, frequently when the lead times required to replace the sophisticated electronic machinery can be unacceptably long.

BELFOR has the skills and practices to manage preventative and corrective maintenance activities at semiconductor facilities — and to return them to normal operations as soon as possible following a crisis.