

Biological Hood
USER REQUIREMENT SPECIFICATIONS

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U.S. DEPARTMENT OF COMMERCE
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APPROVED

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2 SCOPE

The project will include at least 1 up to 3 Biological Safety Hoods/Cabinets. This document defines the requirements for this system. It describes overall requirements that must be met to produce the specific equipment requested. This scope covers procurement, delivery, and start-up support of the specified equipment; no installation is required.

This URS is the input document for:

- Equipment procurement purposes
- Equipment sizing
- Functional and technical specifications

Bids will be evaluated based on compliance with the URS, pricing, lead time, and the company's experience and track record as they pertain to the relevant equipment. See Evaluation Criteria below.

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3 BACKGROUND

The Dakota Bioproducts Innovation Institute is a research facility for the development of high-quality bioproducts. A biological safety cabinet is a crucial piece of microbiology safety and necessary to reduce the potential of cross contamination of different microbial products. Microbiology and fermentation are fundamental technologies in the advancement of new bio-based products. Contamination is a constant threat, as selective measures in most GMO organisms are not allowed. In that instance, and for good microbiological practice, having a biological safety hood/cabinet is needed for maintaining sterility throughout the process.

4 PROCESS DESCRIPTION

Biological safety hoods/cabinets are pretty basic, they are an isolated area that is highly cleanable, with generally a filtered ventilation space associated and the additional capability to sterilize with UV light. The hoods are self-standing, without the need to be connected to a building HVAC system, have power, light, and are generally stainless steel. Typically these are bench style, with the capability to sit at them with adjustable height and have a sash that can be lowered to maintain a sterile environment.

5 BASIS OF DESIGN

5.1 Capacities

Biological safety hood/cabinet must be 4-6 feet long, with the capacity to sterilize with surface spray and built in UV capability. As there will be the

potential for multiple simultaneous projects to occur, we will likely need between 1 and 3 of these.

5.2 Skidded Construction

N/A

5.3 Health, Safety and Environment

The biological safety hood/cabinet will be independently tested and certified to NSF/ANSI 49. Filters will be replaceable and tracked to allow users to know when they need to be replaced.

5.4 Operation, personnel and automation

N/A

5.5 Materials of Construction

Stainless steel surface within the cabinet/hood.

5.6 Reliability & maintenance

Hood must be reliable for 24/7/365 operation, with mechanisms in place to ensure that the user is aware if something is malfunctioning via alarm.

6 ABBREVIATIONS, ACRONYMS & DEFINITIONS

Acronyms	Description
ASME-BPE	American Society of Mechanical Engineers BioProcessing Equipment
CIP	Clean In Place
GPM	Gallons per Minute
HMI	Human Machine Interface
REQ	Required Attribute
OPT	Optional Attribute
P&ID	Piping & Instrumentation Diagram

PLC	Programable Logic Controller
RPM	Revolutions per Minute
SCADA	Supervisory Control and Data Acquisition
UL	Underwriters Laboratories
URS	User Requirements Specification
WFI	Water for Injection

7 USER REQUIREMENT SPECIFICATIONS

URS TABLE – Biological Hood		
Designation	Description	Type
URS-F1	The biosafety cabinet must be independently tested and certified to NSF/ANSI 49	REQ
URS-F2	The cabinet must use SmartFlow™ technology, automatically adjusting the airflow speed without the use of a damper to ensure continuous safe working conditions, even without maintenance adjustments	REQ

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URS-F3	Unit shall have all metal plenums designed for easy removal at filter change. (Non-metal, fabric type plenums are not acceptable.)	REQ
URS-F4	In order to preserve safety to the user and the environment, the exhaust blower on the cabinet must continue operating when the supply blower stops working. If the exhaust blower should fail, the supply filter will also be turned off	REQ
URS-F5	In order to alert the user to a restriction in airflow or compromised safety, the cabinet must use Digital Airflow Verification pressure sensors (rather than anemometers) to detect pressure drop across the supply and exhaust filters. Pressure sensors must be encased in order to protect the sensor from temperature, humidity and other environmental phenomena that can impact the sensor's performance.	REQ
URS-F6	The microprocessor must display the inflow and downflow air velocities in realtime on an LED display to ensure the user knows whether or not the cabinet is working under safe operating conditions.	REQ
URS-F7	The front window can be either an 8 or 10" sash opening and be made of laminated safety glass to ensure containment of potentially hazardous samples in the case of accidental glass breakage	REQ
URS-F8	All interior and exterior parts must be smooth to ensure no risk of cuts to users or maintenance personnel	REQ
URS-F9	The front of the cabinet must be angled 10° to help minimize glare on the window to the user, and to ensure that the user's posture is comfortable during a working session. Inadequate user ergonomics in a safety cabinet may lead to excessive fatigue, unsafe working habits and harmful consequences to user safety or product contamination.	REQ
URS-F10	The cabinet noise level must be less than 62 dB(A) for a 3 foot or 4 foot cabinet and less than 64 dB(A) for a 5 foot or 6 foot cabinet as measured in a sound proof room 12 inches in front of the cabinet and 15 inches above the work surface. Lower noise levels promote more comfortable and safer working habits of the user	REQ
URS-F11	The microprocessor controller must be located on a slanted front panel so it is easy to see and reach from a seated working position in front of the cabinet	REQ
URS-F12	The front window must use SmartClean™ to ensure it is accessible for cleaning without requiring the user to remove or support the window	REQ
URS-F13	The sides shall be double walled construction under negative pressure allowing side access through the SmartPort for tubing and cables without compromising NSF-tested containment	REQ
URS TABLE – Biological Hood		
Designation	Description	Type

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URS-F14	The biological safety cabinet must be capable of achieving current state-of-the-art in energy efficiency. A biological safety cabinet with 8 inch work aperture, with lights on and fan at operating speed should consume <150W for a nominal 3 foot cabinet; <180W for a nominal four foot cabinet; <280W for a nominal 5 foot cabinet; or <360W for a nominal six foot width cabinet	REQ
URS-F15	The cabinet must have a Night-set-back mode, ensuring cabinet cleanliness and reduced energy consumption when the window is closed and the cabinet is nonoperational.	REQ
URS-F16	In order to provide maximum effectiveness, efficiency and safety to laboratory personnel, an optional UV light must be programmable to allow for specific exposure times from 0 to 24 hours without continuous reprogramming. The automatic shut off feature on the UV light saves money on replacement of the bulbs	REQ

END OF SPECIFICATION

8 SELECTION CRITERIA

Vendors will be evaluated based on the following criteria:

Evaluation Criteria		
Description	Ranking	Weight
Mandatory Technical Requirements A review of your proposal to determine adherence with the REQ specifications and technical requirements.	1-10	30%
Proposal Pricing Review of your proposal in relation to the services offered in the proposal. Proposals will be evaluated against competing proposals for cost effectiveness. Proposals will be evaluated to be reasonable and appropriate.	1-10	20%
Technical Response The technical response in your proposal portrays knowledge, experience, and professionalism. Relevant product features and/or specifications are available with your equipment other than those mandatory specifications allotted above.	1-10	10%
Lead Time A review of your product's lead time to meet business objectives.	1-10	15%
Product Warranty The available warranty, in scope, duration, and value, proposed with your product.	1-10	5%
Experience and Demonstrated Results Our evaluation will include a review of your history, your experience as it relates to the requirements within this RFP, evidence of past performance, quality and relevance of past work, references, and related items.	1-10	20%

9 RETURN BIDS TO

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10 OTHER PROVISIONS

Must meet 200 CFR buy America Provision□ Title 49 Subtitle B Chapter VI [Part 661](#)

Federal Participation Disclosure – “This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the Federal laws and regulations associated with that program.”

Must meet Federal Contract provision 200 CFR Title 2 subtitle A Chapter II [Part 200](#)

Certification Relating to Prohibited Entity

For contractors, vendors, suppliers, or subcontractors who enter into a contract with the State of South Dakota by submitting a response to this solicitation or agreeing to contract with the State, the bidder or offeror certifies and agrees that the following information is correct:

The bidder or offeror, in preparing its response or offer or in considering proposals submitted from qualified, potential vendors, suppliers, and subcontractors, or in the solicitation, selection, or commercial treatment of any vendor, supplier, or subcontractor, is not an entity, regardless of its principal place of business, that is ultimately owned or controlled, directly or indirectly, by a foreign national, a foreign parent entity, or foreign government from China, Iran, North Korea, Russia, Cuba, or Venezuela, as defined by South Dakota Executive Order 2023-02. It is understood and agreed that, if this certification is false, such false certification will constitute grounds for the State to reject the bid or response submitted by the bidder or offeror on this project and terminate any contract awarded based on the bid or response. The successful bidder or offeror further agrees to provide immediate written notice to the contracting executive branch agency if during the term of the contract it no longer complies with this certification and agrees such noncompliance may be grounds for contract termination.

RESTRICTION OF BOYCOTT OF ISRAEL

For contractors, vendors, suppliers, or subcontractors with five (5) or more employees who enter into a contract with the State of South Dakota that involves the expenditure of one hundred thousand dollars

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(\$100,000) or more, by submitting a response to this solicitation or agreeing to contract with the State, the bidder or offeror certifies and agrees that the following information is correct:

The bidder or offeror, in preparing its response or offer or in considering proposals submitted from qualified, potential vendors, suppliers, and subcontractors, or in the solicitation, selection, or commercial treatment of any vendor, supplier, or subcontractor, has not refused to transact business activities, has not terminated business activities, and has not taken other similar actions intended to limit its commercial relations, related to the subject matter of the bid or offer, with a person or entity on the basis of Israeli national origin, or residence or incorporation in Israel or its territories, with the specific intent to accomplish a boycott or divestment of Israel in a discriminatory manner. It is understood and agreed that, if this certification is false, such false certification will constitute grounds for the State to reject the bid or response submitted by the bidder or offeror on this project and terminate any contract awarded based on the bid or response. The successful bidder or offeror further agrees to provide immediate written notice to the contracting executive branch agency if during the term of the contract it no longer complies with this certification and agrees such noncompliance may be grounds for contract termination.

CERTIFICATION OF NO STATE LEGISLATOR INTEREST

Offeror (i) understands neither a state legislator nor a business in which a state legislator has an ownership interest may be directly or indirectly interested in any contract with the State that was authorized by any law passed during the term for which that legislator was elected, or within one year thereafter, and (ii) has read South Dakota Constitution Article 3, Section 12 and has had the opportunity to seek independent legal advice on the applicability of that provision to any Agreement entered into as a result of this RFP. By signing an Agreement pursuant to this RFP, Offeror hereby certifies that the Agreement is not made in violation of the South Dakota Constitution Article 3, Section 12
