

A Brief Discussion of Lockout-Tagout for the Wave Plate Rotation Stage Controller

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Pasted from <<http://www.newport.com/CONEX-CC-Integrated-Rotation-Stages-and-DC-Servo-/934126/1033/catalog.aspx>>



Setup: A wave plate is mounted on a rotation device. This mechanism is used to regulate laser light power.

Objective: Provide a safe working condition down-stream of the wave plate that does not depend on software.

The safety objective will be met when:

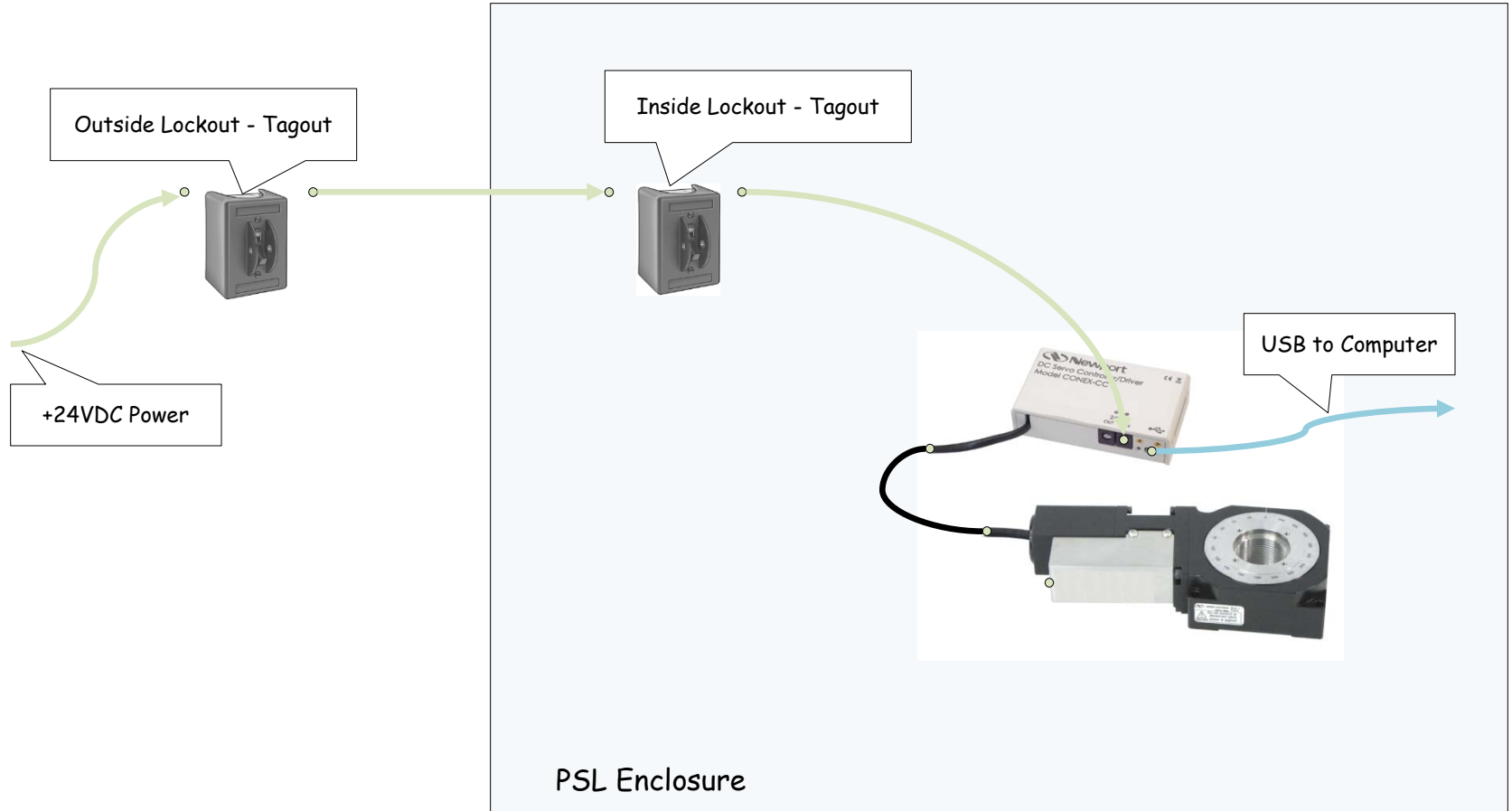
1. The wave plate is moved to an arbitrary but user-specific location
2. The controls for the wave plate are disconnected in some fashion so that while they are disconnected the wave plate cannot be moved
3. Work down-stream of the wave plate is done in safety as long as required
4. And the wave plate is reconnect without the act of reconnecting it moving it.

Mark White, an application engineer at Newport asserted that breaking the DC connection between the power supply and the rotation stage prohibits the rotation stage (and thus the wave plate) from moving. David Feldbaum and I (David Kinzel) explored this behaviour and empirically determined it to be true.

Conclusion: The safety objective can be met by taking advantage of this behaviour by inserting a lockout-tagout switch between the DC power supply and the rotation stage power connector.

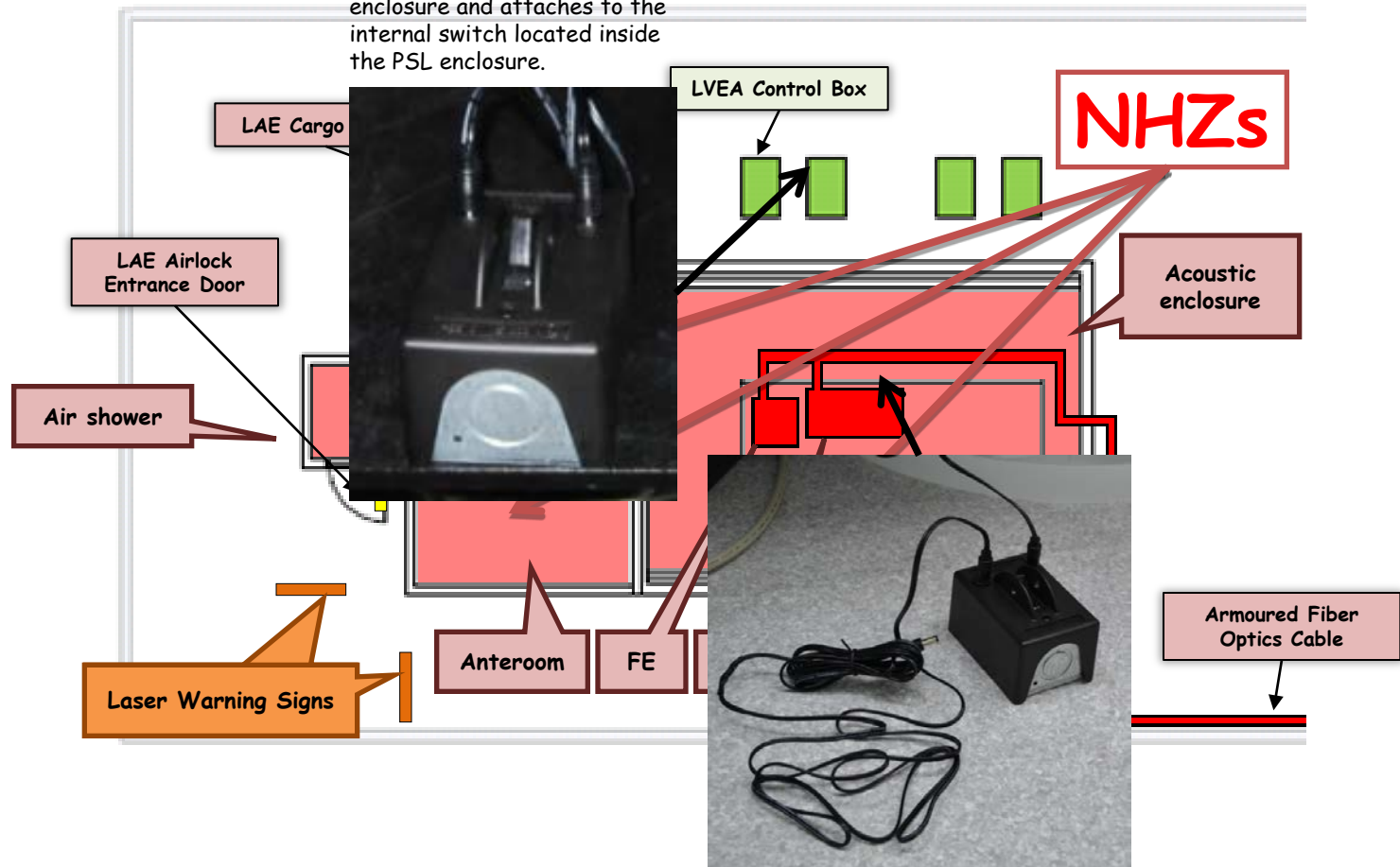
Suggestion for implementation:

Deploy two switches in series - one inside the PSL enclosure and one outside. The switch outside can be used for a far down-stream operation without requiring the additional step of garbing for entrance to a single switch inside the clean-room environment, while the switch inside can be used for a near down-stream operation without requiring un-garbing and re-garbing to manage the switch. While it is true that for the inside operation the cable can be pulled out of the rotation stage to break the connection, it is not true that this state satisfies the conditions of lockout-tagout.



Switch Locations for Wave Plate Lockout/Tagout

This external switch is located in the rack PSL-R2. One cable attaches to the 24VDC Power Distribution Strip, the other enters the enclosure and attaches to the internal switch located inside the PSL enclosure.



This internal switch is located inside the PSL enclosure. One cable attaches to the Wave Plate Controller, the other exits the enclosure and attaches to the external switch located in the rack PSL-R2.

<http://www.mcmaster.com/#7657k21/=ecd5op>

3PST-NO for 3-Phase Motors - Toggle Operator Indoor

<http://www.mcmaster.com/#7657k31/=ecd5op>

DPST-NO for 1-Phase Motors - Toggle Operator Indoor



http://www.cordsplus.com/pages/2.1mm_extension.html



2.1mm x 5.5mm Panel Mount Jack

Designed to work with the locking plug # 1760, but can also be used with regular non-locking DC plugs.

Optional internal switch opens when plug is inserted to disconnect another power source (internal battery) when external power source is used
Mounting Hole 0.515"

#1764 \$7.37
Includes Free Shipping
[Add to Cart](#)



2.1mm Plug to Plug 1 ft. Cable

#1052 \$9.80
Includes Free Shipping
[Add to Cart](#)