



University Laser Safety

Practical Examples

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University Laser Safety

The Michigan State University Laser Program was established in 2010.

Mary Hardy of Purdue University and Ken Barat were helpful in establishing the program.

The program was established with the “cradle to grave” philosophy and built on the ANSI Z136.1 standard.

ISSUE # 1- Building an Inventory

- First attempt- Walk around and try to find the lasers-EPIC FAIL.
 - MSU is a 5 mile² campus with many buildings and satellite campuses.
- Second attempt- call the departments to get a list of their lasers- FAIL
 - The departments knew less about their lasers than I did.

Solution

A deal was made with the purchasing department to;

- Assign lasers a code like the radiation department.
- Assign only one agent to laser purchasing.
- Do not allow the purchase to go thru until the LSO clears it.
- Once the laser arrives, the PI adds it to the online inventory.

EBS (Enterprise Business Systems) Example

Browser address bar: <https://fin.ebsa.msu.edu/kfs-prd/purapPurchaseOrder.do?methodToCall=decHandler&decId=4752795&command=displayDocSearchView&sessionTimeout=NftopOffor...>

Page Title: KFS :: Purchase Order

Navigation: File Edit View Favorites Tools Help

Suggested Sites: Warning Signs for Medica... PLOS ONE A Partial Gene... CFR - Code of Federal Reg... CFR - Code of Federal Reg... AntennaWeb - Home USPS.com - Location D... http--prefs.connect.comc...

	Posted timestamp	Author	Note Text	Attached File	Attachment Type	Notification Recipient	Actions
add:				<input type="text"/> Browse... <input type="button" value="CANCEL"/>			<input type="button" value="add"/>
1	08/01/2014 04:30 PM	Wallace, Jan	Awaiting Commodity Code Approval			<input type="text"/>	<input type="button" value="send"/>
2	08/08/2014 03:58 PM	Wallace, Jan	invoice was given to A/P on 8-8-14			<input type="text"/>	<input type="button" value="send"/>

Ad Hoc Recipients

Route Log

Route Log

ID: 4752795

Title	Purchase Order - Universal Medical Lasers		
Type	Purchase Order	Created	08:58 AM 07/30/2014
Initiator	admin_kfs	Last Modified	03:58 PM 08/08/2014
Route Status	FINAL	Last Approved	03:53 PM 08/08/2014
Document Status	Open	Document Status Modified	03:57 PM 08/08/2014
Node(s)	JoinVendorIsEmployeeOrNonResidentAlien	Finalized	03:57 PM 08/08/2014

Actions Taken

	Action	Taken By	For Delegator	Time/Date	Annotation
<input type="button" value="show"/>	SAVED	admin_kfs		08:58 AM 07/30/2014	
<input type="button" value="hide"/>	COMPLETED	Wallace, Jan		04:29 PM 08/01/2014	
<input type="button" value="hide"/>	APPROVED	Potter, Elvet		03:53 PM 08/08/2014	
	Action	Requested Of	Time/Date	Annotation	
<input type="button" value="show"/>	APPROVE	MSU-EHS Laser Safety	04:29 PM 08/01/2014	KFS-PURAP Commodity Reviewer 41115307 EL PO	
<input type="button" value="show"/>	FYI	Wallace, Jan	03:57 PM 08/08/2014		
<input type="button" value="show"/>	FYI	Worqui, Laurie	09:03 AM 08/12/2014		
<input type="button" value="show"/>	FYI	Morrison, Tahirh	03:24 PM 08/13/2014		

Future Action Requests

Log Action Message

Action Message

100%

Laser Safety Inventory

FileMaker Pro - [laser_form_v2 (FMP_11_01)]

File Edit View Insert Format Records Scripts Window Help

Records 6 Total (Unsorted) Show All New Record Delete Record Find Sort Omit Record Show Omitted Print Setup Print Save as PDF Save as Excel Duplicate

Layout: Form View As: Preview Edit Layout

MICHIGAN STATE UNIVERSITY | Laser Safety Program

View Full Application | Search | Show All Records

Form List Email Form PI Report Class Report

LAPIDUS, LISA Registration 12357

PI Name: LAPIDUS, LISA
Department: PHYSICS & ASTRONOMY
Mailing Address: 367 WILSON RD RM 4227
Office Phone: 4-5656
Lab Phone: 4-5701
PI Email Address: LAPIDUS@MSU.EDU

Status & Review Laser Information Laser Location Laser Images

Manufacturer: MELLES GRIOT
Manufact Serial #: 351MA410-120
MSU Tag #: 022188
Category: GAS
Classification: CLASS 3B
ReClassification:
Power (W or J): 10 MW
Wavelength (nm): 10 (-7)
Training: MSU ONLINE TRAINING
Other Training:
Active/Inactive: Active Inactive
Comments:

100% Browse

Solution #1 Continued

- Salvage and recycling was instructed to no longer pick up unused or discarded lasers.
- They could help sell a laser and pack it for shipping but could not pick up, transport or store it.
- The LSO must clear the sale by contacting the receiving LSO.
- This has now been revised in light of other events to: MSU no longer sells unwanted lasers.

MSU Purchase/Transport form

Laser Purchase/Transport Request	
Primary Investigator: <input type="text"/>	
Department: <input type="text"/>	Date: <input type="text"/>
Building/Address: <input type="text"/>	Room: <input type="text"/>
LASER Information:	
Class of LASER: <input type="radio"/> 1 <input type="radio"/> 1R <input type="radio"/> 2 <input type="radio"/> 2R <input type="radio"/> 3A <input type="radio"/> 3B <input type="radio"/> 4	
Manufacturer: <input type="text"/>	Model #: <input type="text"/>
Description: <input type="text"/>	
Disposal Type: <input type="radio"/> Donate <input type="radio"/> EHS Disposal <input type="radio"/> Disposed of Personally	
Disposal Comments: <input type="text"/>	
Responsible Person	
Name: <input type="text"/>	
E-mail Address: <input type="text"/>	Contact #: <input type="text"/>
Building/Address: <input type="text"/>	Room: <input type="text"/>
Information	
Orderer: <input type="text"/>	
E-mail Address: <input type="text"/>	Contact #: <input type="text"/>
Document #: <input type="text"/>	Status: <input type="text"/>
Initiator: <input type="text"/>	Created: <input type="text"/>
Purchase Order #: <input type="text"/>	EBS PO Approved: <input type="text"/>
MSU LSO Authorization <input type="radio"/> Approved <input type="radio"/> Denied	
MSU LSO: <input type="text"/>	Date: <input type="text"/>
Comment: <input type="text"/>	

ISSUE #2- Lighted signs

- Another challenge was the addition of lighted signs to adhere to the ANSI std
4.3.9.4.2 Visible Warning Devices (Class 3B and Class 4).
- Prepared lighted signs were too expensive- \$400- \$700 per light.
- An estimate from a lighting and signage company- \$2500.00 per lab unit.

The Solution


Rekall dynamics ILLUMINATED WARNING SIGN



RD2020 MILSPEC

ILLUMINATED WARNING SIGN

RD2020.AC - LED FIXTURE



rekalldynamics

FEATURES

- Housed aluminium housing with IP55 rated liquid and chemical resistant anodised coating.
- SMD ultra daylight active water matrix illumination.
- Impact & fade resistant, chemical safe exchangeable front poly carbonate graphic panel.
- Self contained miniaturised main power module.
- Extruded illuminated front display panel allows viewing from side on.
- Stainless steel fitting and assembly hardware with option to be supplied with high security tamper proof fittings.
- Internal single piece 5mm silicone dust, water and chemical seal.
- Included accessory kit with mounting hardware and access tool.

SPECIFICATIONS

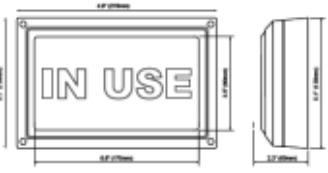
- Mains Powered (90-264 volts AC)
- Internal Integrated Power Supply
- 14 x SMD5630 10w LED Illumination
- 5000-5500k Colour Temperature
- IP55 Dust & Liquid Protection Rating
- RoHS & CE Approval Certificates
- Aluminium Front & Rear Housing
- Shatterproof Poly Carbonate Face Plate

The RD2020 Enclosure is the result of years of experience working with some of the worlds largest government, military and professional healthcare organisations supplying a range of top of the line warning lights for demanding environments.


All aspects of this modular warning solution can be supplied customised to the customers exact requirement from input voltages, colour and custom printed messages to a range of trigger and activation modules to suit any situation.

www.rekalldynamics.com

DIMENSIONS



BACKGROUND COLOR OPTIONS



Custom colours including Pantone or RGB matching available on request.

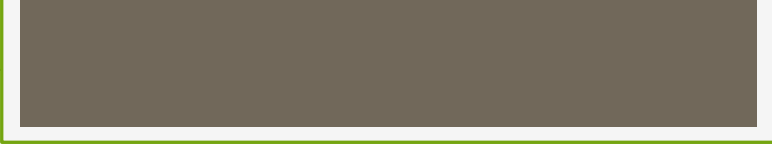
ACCESSORY OPTIONS

- 24Volt Power Supply
- DIN Rail Power Supply
- Hardwired Wall Switch
- Phone In Use Trigger
- Wireless Remote Control
- Battery Power Pack
- DMX Control Trigger
- Studio Console BUS Trigger

CE **RoHS** **IP55**
ignis protection

COST= \$173.00–\$205.00 US





Weight	1.21 lbs
Dimensions	8.5 x 5.3 x 2.3 in
Background Color	Red, Black, Grey, Blue, Yellow, Orange, Green, Milspec Green, White, Other (Pantone or RGB)
Voltage	Mains (90 – 264vAC), Low Voltage (12vDC), Low Voltage (24vDC), Battery Powered (8 x AA)
Frame	Black Electro Plate Coated Aluminium
Face Panel	Shatterproof Poly Carbonate Face Plate
Illumination	14 x SMD5050 7w LED Illumination (5000-5500k Color Temperature)
Operating Temperature	-4 to +140°F (-20 to +60°C)
Ingress Protection	IP55 Rated
Certificates	RoHS, CE, IP55
Optional Modules	Wireless Remote Control, DMX Control Trigger, Studio Console BUS Trigger, Phone In Use Trigger, Hardwired Wall Switch
Delivery	FREE Worldwide Delivery
Stock	In Stock – Ships Same Day

The drawback

Rekall Dynamics.

Subject: laser signs

<http://www.rekalldynamics.com/product-category/medical-warning-signs/page/2/>

While we deliver internationally to the world, **our head office, store and manufacturing facility is based in New Zealand. This means that for some customers the time difference makes phoning us quite hard.**

The fastest way to contact us about any of our warning sign products is by email. We check emails several times a day and will be more than happy to provide quotes or additional information for you.

USA Sales

Phone: 888-451-8924(click to call)

Email: sales@rekalldynamics.com

Head Office

Suite 2828, PO Box 106910

Auckland City 1143

New Zealand

Email: info@rekalldynamics.com

ISSUE #3 - Training

- The MSU-LSO Position is part time (=50%) so there is little time for face to face training.

Solution

- LSO Provides basic training online and
- Provide site specific training;
From the PI, or
From the manufacturer
- Document both

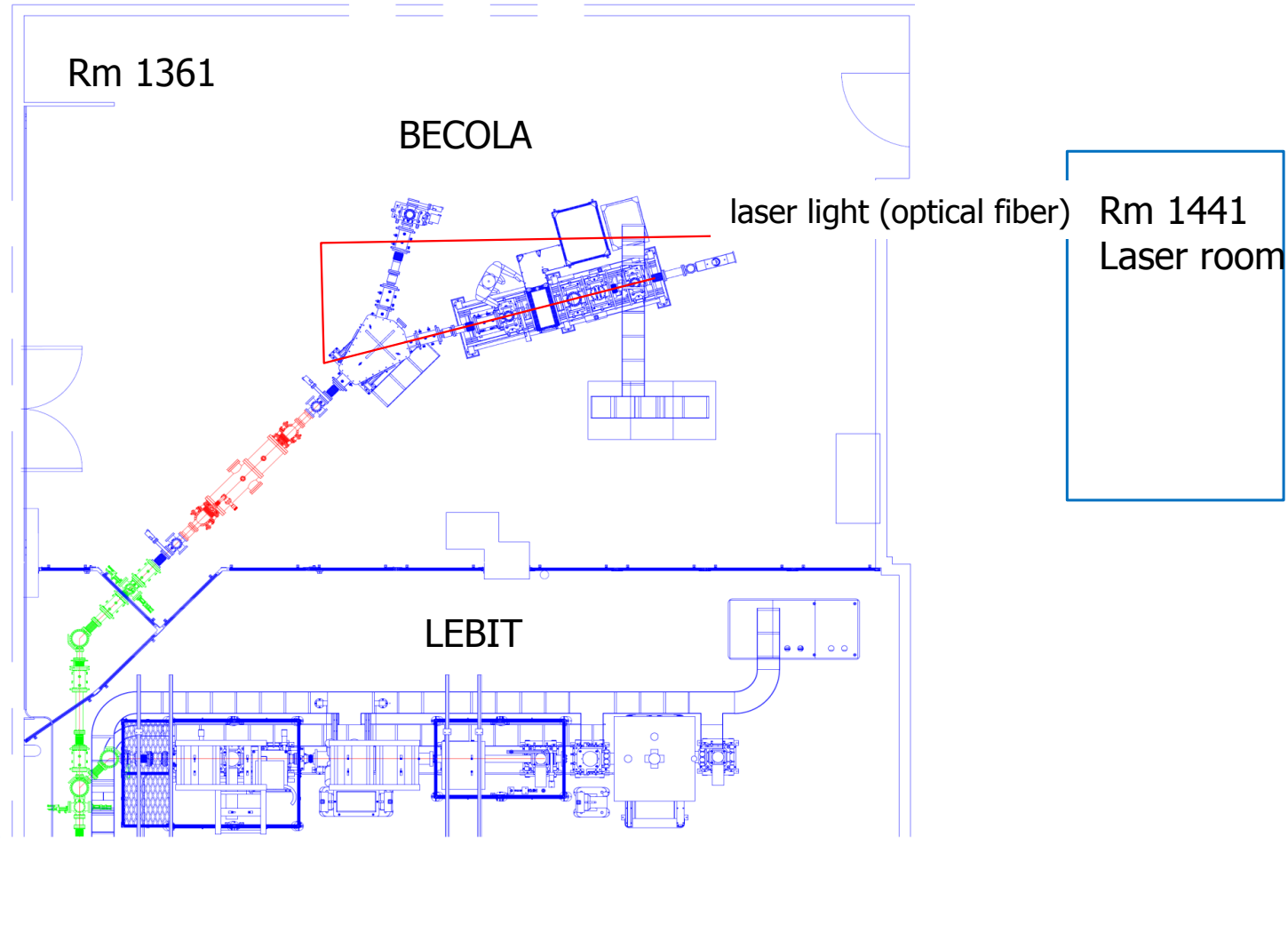
ISSUE #4 - Access controlled areas

- Interlocks needed in area but building/rooms are already built.
- Who will pay for the cost of the retrofit?

Some Solutions

- Limit access to the room via:
 - door lock core changes.
The easiest solution, limit keys to those who are trained and need access to the space
 - Electronic code entry.
Can be expensive, doors can be popped by police dispatch, electronic malfunctions
 - Principle investigator controlled entry.
Only the professor has the code, delays if the PI is absent or forgets or loses code
 - NO DOOR PROPING FOR ANY REASON.
- Partition the room with beam blocking panels to create a temporary laser controlled area when the laser is running.
Used for shared spaces.
- Fully enclose the beam, creating a class 1 laser.
Still treated as primary class during alignment and maintenance
- Place the laser in a remote area and control the activation/deactivation from that site.
No one is present at the site of the laser.

Example of remote laser operation



ISSUE #5 - Ongoing

- LSO authorization-
 - The direction of the program is not always up to the LSO.
 - LSO as a university position vs added duties
 - Several institution struggle with this issue.
 - Many do not have an actual University LSO, but departmental LSOs paid for and funded by the department.
 - Problem with this model is that there is no one voice for the University.
- Laser safety budget-
 - everyone wants to know who will pay for this?
 - Hinders safety request
 - PIs feel inundated with monetary request that takes funds from their research

Thanks for listening

- Slide left blank fishing for Solutions to issue #5