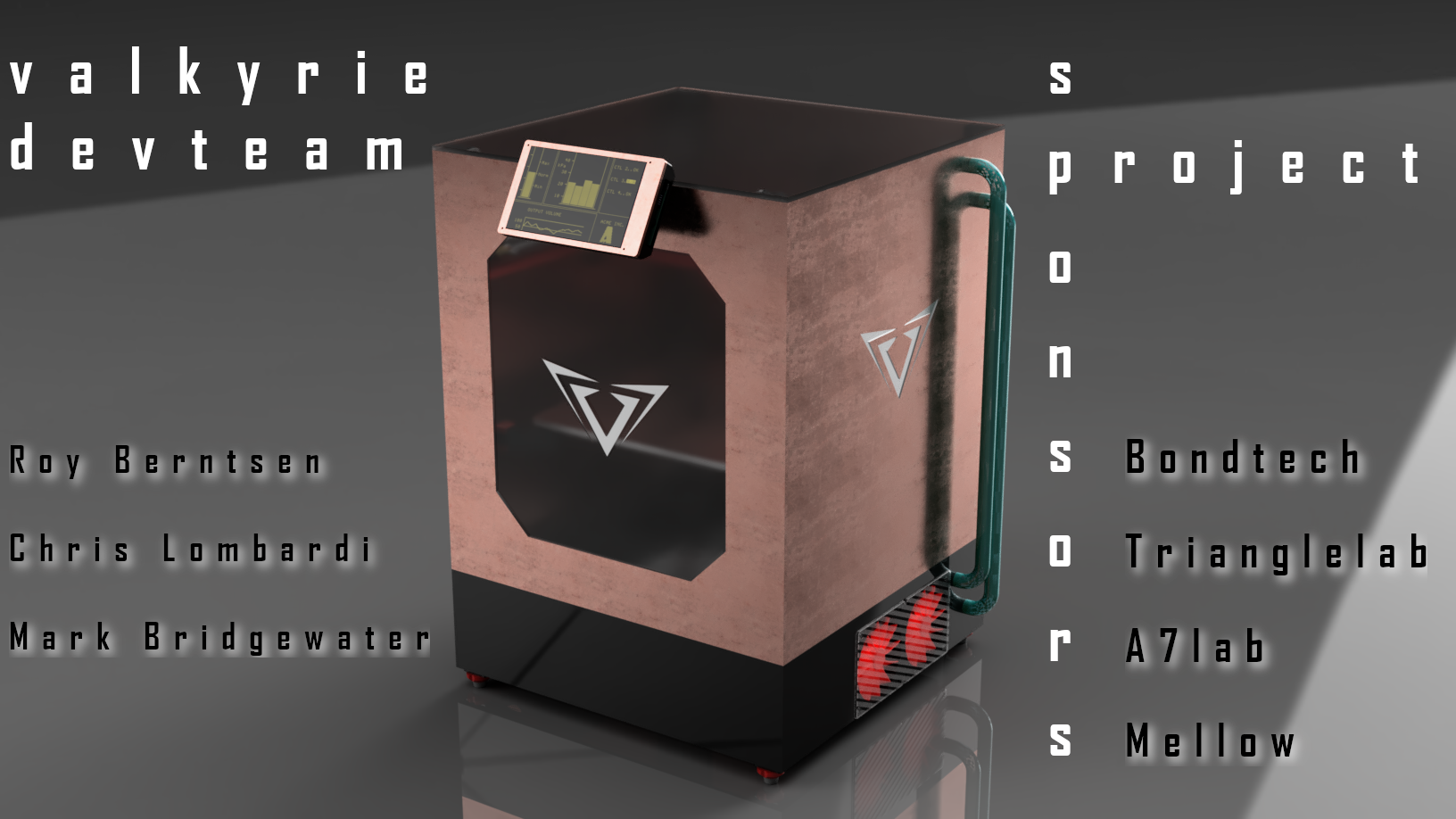
Project Valkyrie

Designing a Premium DIY 3d printer

Discord channel: https://discord.gg/C77tsY5



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# The Development Team

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# Material Selection – Enclosure and Drybox Panels

# General Requirements

## Product Choice

* The panels should have high temp rating
* Easily sourced
* Cost effective
* Easy to cut
* Easy to assemble/build
* As thin as possible
* Look good

## Function Choices

* Insulate from chamber temp
* Strong
* Low weight

# Shortlist of Materials

## Enclosure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Material | Temp Rating | Durability | Insulator | Comment |
| MDF FR | ~130C | Good | good | May need to be sealed , easy to make a box |
| ACM FR ( dibond) | 80C | Good | poor | Great product for outside finish |
| Calcium silicate | 2130C | poor | Excellent | Good as a core product |
| Drywall | 900C | poor | average | Good as a core product |
| Polyisocyanurate Foam Sheets | 149C | Average | V good | Good for a core product needs to be laminated |
| Silicon sheet | 200C | excellent | excellent | Not self-supporting, |
| Poly carbonate | 140C | V good | poor | Warps when heated on one side |
| FR4 G10 | 266C | Excellent | poor | Good as a boundry layer |
| Bakelite | 120C | Excellent | Good |  |

## Drybox

|  |  |  |  |
| --- | --- | --- | --- |
| Material | Temp Rating | “Add properies” | Comment |
| MDF |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Material property matrix

## Enclosure (example)

|  |  |  |  |
| --- | --- | --- | --- |
| **Material properties** | **MDF** | **ACM** | **…** |
| Tensile Strength | Medium - low | Medium | Medium |
| Flexible properties | Medium | Good | Very good |
| Impact Strength | High | Good | Very High |
| Cost | Low | Low | Medium-High |
| Impact resistant | High | High | High |
| Cold Climate properties | Good | Good | Good |
| **Material evaluation** | **Medium** | **Good** | **Good** |

## Drybox (example)

|  |  |  |  |
| --- | --- | --- | --- |
| **Material properties** | **MDF** | **ACM** | **…** |
| Tensile Strength | Medium - low | Medium | Medium |
| Flexible properties | Medium | Good | Very good |
| Impact Strength | High | Good | Very High |
| Cost | Low | Low | Medium-High |
| Impact resistant | High | High | High |
| Cold Climate properties | Good | Good | Good |
| **Material evaluation** | **Medium** | **Good** | **Good** |

# Supplier List