WIP - Wiki content plans

Physical motion system
- Belts
- Pulleys
- Bearings
- Grease
- Solid Lubricants
- Linear Rails vs Ball Screws vs Lead Screws
- > And comparisons, and like tradeoffs between 2 carriages/etc.
- Other motion systems (V-Wheels, dovetails, etc?)
- Bellows
- Shafts and clearances
- CrossXY/etc. motion systems

Beds
- Mag-beds, bed sheets, etc.
- Flatness metrics and how 'flat' do they have to be, really
- Kinematics
- Alignment of Bed(Powered tilt, manual, spring loaded, etc.)

Wiring
- Zip-ties
- cable sheaths
- Crimps & Crimping/QC
- Wire Sheathing, uv-resistance, flex, water permeability, etc.
- Gage selection
- Strand count standards, flexibility, repeated-flex ratings

Electrical systems
- Motors
- Encoders, closed/open loop systems
- 3DP Boards
- LED Lights
- ADXL's/Crampon
- Probes, Beacon/inductive/etc.
- Strain Gauges
- ESD, Grounding, Shielding, and Noise
- > Wire twisted stranding, analog/digital sensors, and a bunch more.....
- Screens, touch screens, WiFI/etc.

Filament
- Manufacture and QC
- Drying, Storing, and Annealing filament

> Loadcells to detect filament remaining
> Optical to check filament measurements
> Re-spooling & Spools
Waterproofing 3D Prints (Dichtol/dwh etc.)
Filament database w required printing temperatures
Specialized filaments (ceramic, CNT, etc.)
Common ones used for X purpose etc.

Resins/Glues/Pastes/Silicones/TIM(thermal interface materials)
Thermal Conductivity (inasmuch practical limitations) of these pastes/etc.
Storage, Degassing, Potting, and Curing considerations
Shore hardness and Electronics
Another DB w associated common uses/etc.
Discussions on Filament/Epoxy/resin Tg/CTE/Crystallinity/etc.
Usefulness of technical data and testing
This one has a lot of overlap w resin/filaments idk.....

Air, Water, and Vacuum systems
Piping/flaring/etc.
O-Rings/seal election/vacuum grease/etc. Loctite choice.
Approx. vacuum requirements
Recommended oil-free pump types
Pressure and Vac sensors
Gas and Water permeability of plastics/plastic tubing/etc.
Fans and Part cooling
Liquid Cooling
Air/Oil/VOC Filtration
> and Resin PPE

Thermometry: Thermistors, RTD's, TC's.
Their measurement, accuracy, etc.
PID/MPC and other algorithms

Insulation and Construction
Tapes (Mica/PTFE/Fiberglass/etc.)
IR insulative
Heat insulative
VIP's
Selection of foams, boards, blankets, and flashing
VOC's, aging, oxidation, etc.

Heat:
Safety circuitry and fire-suppression/prevention systems
IR Lamp, silicone, PCB, cartridge heaters. quartz lamps. MCH. PTC. etc.
Kanthal/Nichrome alloys/wiring/selection, winding tools/tips
Wattage and density
> IDK where to mention, if at all: Hermetic seals, dielectric breakdown/shunt-currents, etc.

Firmware: Klipper/RRF

- How they handle motor feedback (closed/open, command buffering, etc.)
- Pressure Advance
- Acceleration/Deceleration options (Square velocity etc.)
- PID/MPC

Slicers and You:

- Detailing of useful features e.g. z-seam controls or what not.
- Slicer Idiosyncrosies
- Adjustments for improved part prints

Extrusion

- Nozzles: Types/Quality/Effect of nozzle orifice
- Hotend general design and limiting factors
- Extruder choices, backpressure, gearing, gimbal, direct, remote drive, etc.

Print 101:

- Prioritized tuning guide (Reduce # of dials to adjust!)
- Macros to improve integration between Slicer/Firmware/Printer, general UX
- Mainsail/etc.
- Printer specific starter configs
- Combined wiring diagrams for specific boards/printers/etc.
- Cross-linking to pages e.g. 'What filament you want, to what temp you need, to printer etc.'
- Common Failures/Failure gallery lol
- Safety 101

Alloys

- Alloy selection for bed material (Deformation under heat, porosity, stress cracks, etc.)
- Alloy selection for Hotend, heat break, and so on.
- Commonly used alloys and their recommended uses (e.g. 3003 alu flashing)

Vendors & Sourcing

- Rails/Motors/yadayada
- More specific details and such, rail profiles, pulley/belt mesh quality
- General vendor QC and elaboration on e.g. Gates unitta/etc.

  NOTE: Most sourcing pages to be written up in e.g. 'Belt's chapter
  Then cross-linked into this book for easier access.

Assembly

- Preferred bolts (stainless vs carbon 10.9, hex vs torx etc.)
- Drilling, Reaming, and Tapping
- Bending sheet metal, rivets, etc.
- Basic metrology and tools/methods to align 3DP
- Torque (NASA guides/what not)
- Specs to torque Rails/etc.

Cross-Ref> belt tensioning, regreasing bearings, etc. etc.
Selection and choice of Loctite components for 3DP uses
> Thermal aging, curing, etc.

Design

Joint Stiffness
Maintainability
Concept to part
CNC/SLM/3DP etc.
Titanium vs Steel vs Aluminum stiffness/weight for part choice
Deformation, Temperature, Air flow modeling
Watersheds for materials/3D printer components, wiring, etc.
This one is tricky since we want to have ONE source of truth for temp ratings
No duplication of hard data like that, makes impossible to reference and clean up later.

OVERLAPS:

- Bellows, wiring, insulative materials. Fiberglass tape etc.
- Permeability of plastics, VOC's.
- Drying/Vacuum/Annealing, Psychrometry/humidity measurement, etc.
- Properties of materials, especially Alloys, have a lot of overlap.
  Resins/Filaments/etc.
- Design for obv reasons overlaps a lot with the others e.g. Slicers, etc.
- Loctite overlaps bcz applicable to many areas
  Same for glues/pastes (for silicone heater, or sensors, potting, etc.)
- Fans for chamber control, part cooling, etc. also technically slicer related.....
- etc. etc.

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