This is the <u>published</u> (July 26, 2017) version of the my original walkthrough - I had to revoke general edit access due to the increased popularity of the modpack - send all edits / comments / suggestions / lamentations to <u>here</u>.

This is a guide that expands upon the already existing ingame guide made by Qvist in the Age of Engineering modpack. This is heavily based on my own playthrough of the game so while the goals may be similar, the methodology can vary as much as you want.

The items and subgoals here are listed in the age they are *recommended*, and while it's better to get things done sooner than later, it's not always 100% recommended to do them right away (ie quest for the Elytra can be done as soon as you have a smeltery technically).

Links

Twitch
https://www.twitch.tv/davqvist
- modpack maker's Twitch, which includes a runthrough of his own pack as of 7/3/17
https://www.twitch.tv/fma_winry
- Crazy cat lady with emphasis on aesthetic builds
https://www.twitch.tv/sevadus
- Strong language, strong automation builds, strong dog fan service
https://www.twitch.tv/jasonmcray
- Modpack maker of InfinTech, will release InfinTech 3 when Half Life 3 comes out

AoE Discord
https://discord.gg/pmBMnH3

YouTubers

DireWolf20: https://www.youtube.com/watch?v=7UGvxe6YSv4
Wilx: https://www.youtube.com/playlist?list=PL53P7_J0vziyntDeLILO4aEeFDAn0tmoE
ChosenArchitect:
https://www.youtube.com/playlist?list=PL_ipI8CnaNIZpmvalodu7XVEJZ7WgOdxK
SystemCollapse:
https://www.youtube.com/playlist?list=PLJkfWFKMxbFhao-WjCThYlv07vIR2j0zu

Stone Age

Power: I hope you like furnaces that can't smelt ores
Tools: Tinkers / Vanilla
Goal: Make a forge hammer
     Subgoal: Tinker's Smeltery, Coke Oven (at least one)

Tips

- An optimal location would have surface access to lava (otherwise might have to make a mine shaft down to lava sources on stone tools), access to a river for clay and gravel
- Apatite is useful early on when combined with Actually Additions rice as it can secure yourself an easy food source, as well paper
- IE Village houses are disabled, so no easy treated planks there either
    - You can also light a Nether Portal using the lava + wood but it won't do much as you still need steel anyway
- For the 200th time, Bauxite makes aluminum - there is no 'aluminum ore' in naturally occurring worldgen
    - You can use a Black Quartz Pickaxe to break the bauxite, uranium, gold ores - *Daniel*
    - If you can find a slime island with purple slime, making knight slime equipment is a good way to mine everything on the overworld.
    - Any tinkers' tool can have its mining level bumped up to cobalt with an obsidian sharpening kit. You don't even need a cast. Cast regular obsidian blocks from mixing lava and water, and use it in the part builde*r. - Redcatone*
- A block of coal coke is more efficient than 9 pieces of individual coal coke
- EnderIO Tanks are one of the earliest forms of pumping in/out of fluids, you can automate lavawood easily by having an EIO Fluid tank push lava into a basin and extracting from the bottom with a hopper. Also useful to pull from coke oven and push into a fluid trash can if you don't want to deal with excess creosote.
- Batch automation is big in the early-midgame of this pack and the only form of automation available until you gain access to Item Conduits in the Ender Age, so get ready to make your fair share of hoppers and chests
- ExU2 redstone clocks are a cheap way to automate faucets - *Kythorn*

- The Obsidian All-In-One-Tool (AIOT) is very easy to make once you have a smeltery to produce 11 pieces of Obsidian. They are quite slow initially but can easily be enchanted.
  - *- Rusyadi*
- Use scythe on grass to farm Ender-Lily seeds. *- Bruno*

Industrial Age

<u>Power</u>: I hope you like IC2 generators
<u>Tools:</u> Slime Boots, Tool Forge Tinkers
<u>Resource Gen:</u> Tool Forge Mining
<u>Goal</u>: Make a calculator
> *Subgoal:* IC2 Blast Furnace, IE Blast Furnace, IE Reinforced Blast Furnace, **Metal Former, Tool Forge**

Tips:
- Storage Drawers are life
- An alternative to regular chests are Wooden Storage Crates (Immersive Engineering) which allows you to break it while keeping the contents inside.
- Grated Hoppers from the Hopperducts mod and ExU2 Nodes with item filters are the earliest form of item filtering/routing
- Alternative EU power sources are semifluid generators, do note that creosote oil can only be used as an EU source in TechReborn semifluid generators, which are only available at such a late stage in the modpack they are close to obsolete. You can quite easily get the oil from AA - using the presser, fermenter etc (becomes better when the greenhouse thing from calculator is available)
- IC2 Generators can be broken with a pickaxe (and funny enough along the other end of the spectrum so can Ultimate Hybrid Solars, I wouldn't risk a pickaxe on anything else though)
- It's highly recommended automating the insertion/extraction of compressed air/empty cells from the IC2 Blast Furnace otherwise you will be manually refilling/compressing cells for a few hours (~5 minutes per steel ingot), upgrade to the IE Blast Furnace as soon as you have enough slag, I chunkloaded the IC2 Blast Furnace while exploring the Nether
    - IE Reinforced Blast Furnace is automatable whereas normal Blast Furnaces are not, and the preheaters are optional, however you might want to spend the first steel on a Tool Forge
- Learn to love metal formers, make 2 if possible or at least be prepared to keep one running constantly with hopper automation
    - The Block Cutting Machine makes a useful initial alternative especially in making plates - *Xavion*
- Null Charm is a form of /dev/null that will delete any items that you pick up in its filter
    - A cheaper option is the NeoTech trash bag, downside being it only filters 1 item at a time, compared to the null charm's 5 - Redcatone

- Resturbed Spawners are not nerfed, but the powerful interaction with AA's Spawner Changer isn't available until Empowering Age, and ExU2 speed upgrades are delayed until Empowering age as well
- Once you get a tool forge and have gone to the nether for some cobalt/ardite, this is a fantastic hammer
    - Summary: Ardite Head and Tough Tool Rod, Bronze and Obsidian Large Plate
    - The magic of this hammer is that once it gets down to ~20-30% durability, it will stay there forever*
        - *Need to keep mining stone like materials for the petramor to kick in and give you more durability.
- Block cutting machines are your friend for making plates. One piece of obsidian makes 9 plates, which you will need for compacting drawers if you decide to make them. It's also cheaper to cut a metal block for 9 plates, rather than use the metal former for 9 plates, 1,600 eu compared to 18k eu.
    - You still want a metal former for the other options though as a block cutting machine only does plates.
- It is more efficient to macerate Blocks of Coal compared one Coal piece at a time.

<p align="center">- Rusyadi</p>

- Mekanism Dynamic tanks can hold roughly 64 buckets per block of tank, so a 5x5x5 Dynamic tank can hold 8k Buckets and is available as soon as you have steel since it uses no other Mekanism parts
- You can also get the bottom three parts of the nano suit at this point for excellent armour

Calculation Age

<u>Power</u>: Start of RF Generation (Survivalist Generator recommended), towards end of this Age Water Wheels (recommended) and other IE power gen
<u>Tools</u>: Calculator, Scientific Calculator, **Actually Additions Drill**
<u>Resource Gen/Processing:</u> Tool Forge Mining, AA Double Crusher
<u>Goal</u>: Make an Empowerer
   Subgoal: Atomic Reconstructor, IE Water Wheels, AA Drill, Basic Greenhouse
Tips
- Highly recommend upgrading to the AA Drill as soon as possible (acts as a shovel/pick, has modular upgrades, has RF instead of durability, and can insta-break dirt/stone upgraded unlike Tinker's picks which has a soft cap on speed in this pack)
    - A tinkers' shovel however can insta-mine shovel blocks with the head and an extra piece cobalt and 1 modifier used for redstone.-Redcatone
- Prunae seeds have to be be planted in a basic greenhouse
    - Basic Greenhouse is the first form of automated farming in the pack - it's fairly slow and I viewed it mostly as a stopgap
    - Add gas lanterns in the basic greenhouse to make it faster

- The gas lanterns can be powered by most items with a burn value, including prunae dust
    - Coal Dust grown from prunae seeds can be eventually made into Fire Coal, which is a fairly strong fuel source that I used in IC2 generators until I got to reactors
    - If you have trouble finding pumpkins for the broccoli try looking in the mining dimension. You can also get some menril saplings there. - Redcatone
- People have had issues crafting the AA battery for the empowerer with the Calculator Energy Module, putting a little bit of charge inside the energy module should help from a an energy cube or other form of charging block
- The biggest incentive to automate Calculator circuits generation is that you need them for the drawer controller and AE2 components for Energy Acceptor, and Drives (logic, calculation, and engineering pressed circuits require 3 different circuit boards each) (available in Farming Age, and AE2 in Nuclear Age) and the circuit process has an element of RNG associated with it, so best to automate it early and leave it on
    - There are 14 circuit subtypes total, and each has a stable variant for 28 types of circuits total
- AA Energy Lasers output energy to all 6 sides, not only the side from which the base is attached to
- If you're still looking for a decent and easy food source, cooked broccoli is very comparable to cooked steak, and you need broccoli seeds to get Prunae seeds
- AA Crushers / Double Crushers as well as the AA Furnace are the earliest sources of RF Based ore processing
- You can actually get automated resources at this point with the AA Lens of the Miner on an Atomic Reconstructor, with a smooth-stone generator and AA auto-breaker. At 60,000 RF/ore (plus a little for processing) power generator might be a problem at this point, but you can set a timer to slowly produce smooth stone and generate resources from that (600RF/t will get you an ore every 5 seconds, so work from there)   - *Herriott*

Empowering Age

<u>Power</u>: IE Water Wheels, Thermoelectric Generators, Canola Farm, Recommended about 1k rf/t to get through comfortably
<u>Tools:</u> If you haven't yet, get the AA Drill
<u>Resource Gen:</u> AA Farmer (slightly better than the Greenhouse)
<u>Goal</u>: Empower a Sturdy Casing
    Subgoal: Resonator, Spawner Changers

Tips
- Remember Infinity Expert mode's love affair with the Buildcraft Assembly Table? Well, this pack treats the AA Empowerer the same way, be prepared to have this thing run constantly as you hit mid/late game, or setting up multiples of them.

- Empowered Block power requirements are: 4/8/12/16/20/24 for Restonia/Palis/Void/Enori/Diamantine/Emeradic respectively

Empowerer Ingredients Cheat Sheet
- Restonia
    - Rose Red can be sourced/grown from beetroots
        - Additionally, you can use bonemeal/fertilizer on a rose bush
                                            - *Richard*
    - Ardite spawns commonly enough in the Nether
    - Resonating Crystals can be crafted from Ender Pearls. It is pretty cheap to go this route if you have redstone to support it.
    - You can never, never, never have too much empowered Restonia
- Palis
    - Prismarine can be received by reconstructing Nether Quartz
    - Cobalt spawns commonly enough in the nether
    - Blue Slime Crystals can be annoying to get early on, best to just explore or create your own blue slime farm
    - Make an AA Fishing net as soon as you can to get automate fishing
    - You can never have too much palis
- Void
    - All the ingredients are straightforward to get, I didn't up end using much Empowered Void crystal until double digit ages
- Enori
    - All materials are straightforward to get, I also didn't end up using much empowered Enori until double digit ages
- Diamatine
    - Benitoite spawns at extreme Y levels in the Nether, namely very high up or low down, I had the most luck by searching the ceilings of large caverns, but you could also find plenty if you stumble upon a cave near bedrock
    - Lithium, Ash, and Fertilizer are all straightforward to get
- Emeradic
    - Green Slime Crystals can be made from rice slimeballs crafted into a slime block and then recrafted into 9 green slimeballs
    - Cactus, Cooked Broccoli, and Uranium are all straightforward to get

- It's fairly easy to go from this age to the next one that you can actually clump these together as the first thing you will want to be empowering is a Sturdy Casing
- Empowerer ritual will not reset if you run out of energy, but it will continue to keep on draining energy, I liked using laser relays as I could wrench them and disconnect the empowerer from the network if I needed it for anything else
    - Doesn't cost much to slap hoppers onto each display stand + empowerer and under the empowerer with a chest to give it batch automation

- You have access to a Spawner Changer now if you have enough shards, I usually prefer roaming the Nether and collecting shards from broken blaze spawners
- AA Fishing net, despite needing an empowered emeradic gem, is worth it
- Villager Golems are blacklisted from being able to be put into a spawner from Spawner Changer or from EIO Broken Spawner
- It was my own personal experience that greenhouse glass was definitely NOT worth the cost after the 2-3 stacks I made to speed up my crop farms, wisely use Empowered Palis somewhere else

Farming Age

Power:
Tools:
Resource Gen: Tool Forge Mining, Vertical Digger (first form of mass mining available)
(Range of 33x33 with 3 phantom boosters - *Zawi)*
Goal: Make an EIO Machine Chassis
Subgoal: **Drawer Controller**, Thermionic Fabricator, upgrade power to 1-2k RF/T,

Tips
- For me this was the age when options really started opening up and the pack started to feel more like modded minecraft than vanilla (still no flight however) as you gain access to the automation from forestry as well as IC2 Advanced Circuits (and thus higher level machinery)
- Drawer Controller is big here, the Forestry circuit board was the first thing I made in my carpenter before even bothering with the EIO Machine Chassis
- Forestry multifarms only seemed worth it for rubber and peat automation (and Forestry's fruit to get Seed Oil), everything else multifarms are used for get outclassed in midgame or even early game
- As soon as I was able, I made a one chamber Nuclear Reactor with the following configuration: https://imgur.com/a/Fhpn0 for 100 eu/t for most of my basic IC2 Machines
  - I had it placed on top of an MFE set to emit a redstone signal whenever the MFE was partially empty, so while it may have stuttered on/off with annoying sounds when only a few machines were on, it was well worth the convenience
  - Note that comparators can also measure how full IC2 energy storage units are, so you can go a level deeper and have the IC2 reactor only turn on when the storage unit is below 50%.
    - Here's a schematic showing how to turn it on at 50%, and have it stay on until power storage is full. This will turn the generator off when storage is full. http://imgur.com/a/aTIvy - *Nachismo*
    - *https://gist.github.com/8f0265c4962ec6701dc2851eb1c5a419*
  - This goes without saying, but please use a transformer
- A quick note on bees, bees are necessary for progression later on, not to a large extent, but you will need bee products to finish the modpack. Specifically they are:
    - Ice Shard to make a Vacuum Freezer in Age 10

- - Mekanism Teleportation cores need pulsating meshes
    - 4,096 Scented Panelings in a Basic bin to craft Creative Vending Upgrade
  - As you can see Pulsating Mesh is as simple as automating one apiary with Ender Bees, Ice Shards are taken from a breed of Industrious and Wintry (which is found in the wild) - the big issue here is scented panelings (see Creative Age for more details)
- I briefly started bees here, I just set up a couple of Apiaries with meadows and forest drones mostly because the guide told me so - in hindsight you could've started them much later if you don't like bees
  - Note that apiaries cannot be automated with frames, and without ExtraBees Alvearies do not have frame housing, there is no gendustry nor ExtraBees machines to help make breeding/cultivating traits easier - so it may fall down to coin flips at times if you choose to go for the bee route to produce a resource
- As for treebreeding, Cherry trees are very easy to to breed and provide a decent yield on seed oil if you are running low - however by this stage I also had a melon farm going which makes up for subpar quality (each melon seed only makes 10mb of seed oil per 80 from cherries) with sheer quantity. In the end treebreeding is only helpful, not necessary, and its only boon is for more aesthetic woods as a melon farm or pumpkin farm can provide more seed oil easier
- Canola can also be a good source of seed oil, there are a lot of drops per harvest and the canola itself can be turned into seeds just by crafting. This is also has the benefit of being able to be bonemealed/fertilized to grow a large quantity in a short time. - Redcatone
- You can make a pretty efficient melon farm using Mechanical Miners to harvest the melons after they've grown, but seeing as the next age unlocks Farming Stations, it's up to you to decide if it's worth it
- Cloches from immersive engineering trumps most forms of automating farming, just requiring a constant supply of water and power. Good for stuff that's hard to farm like chorus fruit, or stuff that grows slow/can't be bonemealed like cactus or nether wart.
- The Thermionic Fabricator will only accept Clear Glass from Environmental Tech.

Ender Age

Power: IE Diesel Generators (4k rf/t each), Environmental Tech Solar Panels up to Tier 2
Tools: Dark Steel Armor (including Glider), Staff of Traveling (or Traveling on Ender)
Resource Gen: IE Excavator (second form of mass mining available), EIO Farming Station, Void Miner, up to T2
Goal: Make an RFTools Machine Frame
    Subgoal: See **QoL** below, IE Diesel Generator, IE Metal Press

Quality of Life: ITEM CONDUITS, EIO Inventory Panel, Jetpack, Ender Chests/Tanks (Ender Resonator)
- Inventory panel is the equivalent of a poor man's AE2 system, but it does work wonderfully well with the Drawer Controller from storage drawers and EnderIO's Storage system
- Ender Chests/Tanks/Pouches are always useful no matter what and are especially useful when you need to start using forms of mass mining farther away from your base
- Conduits, 'nuff said (although be warned several users have reported bugs with conduits and FTBU Chunkloading; such as needing to break/reset a conduit in order to get the network functional again)(Same w/ IC2 machine cabling, I've found this can be avoided by chunkloading your whole base)

Tips
- Oh gee, access to heavy engineering blocks, alloy smelters, AND conduits? You might want to spend some time in this age or next one to start setting up infrastructure that can carry you through most of the midgame (until AE2)
- When it comes to IE biodiesel, melon farms are the TRUTH
- Darksteel Plate + Glider upgrades along with Slime Sling make the quest for the Elytra (and the Ender Dragon fight!) much easier, otherwise you will be traversing thousands of blocks in the end searching for end cities on foot
- IE Excavator is a huge upgrade from regular mining despite the initial steep steel requirement but if you made the Reinforced Blast Furnace earlier than this shouldn't be too much of a hassle
    - Each chunk (and its corresponding) vein can provide up to 38k ores in various combinations depending on the vein. Fully powered at 4k rf/t this results in an ore every few seconds or so
    - If you look ahead, you'll notice that most late game power solutions revolve around having Plutonium (unless you are going with ET Solars), so spending 30mins to an hour or so looking for a uranium vein is well worth it for uranium ores)
- Be careful as I had EnderIO energy conduits voiding energy in my network that was only connected to the diesel generators and the farming stations
    - You can eventually fix this problem by having a RFTools Power cell handling all the power input from the generators and then using the power cell to transfer the power wirelessly to where it needs to go rather than running conduits everywhere. Aside from being much cleaner looking, it also eliminates any possibility of an wiring loop constantly eating up energy in your network
- Make more than one Alloy Smelter, you're going to be needing plenty of electrical steel and vibrant alloy if you plan to be building anything related to Environmental Tech
- Immersive Engineering Diesel generators continued to provide the most bang for the buck when it came to power generation, instead of diversifying to environmental tech solars or adding canola farms, I simply added more melon farms and diesel generators

- Paper tools can take 5 max modifiers, allowing you to make 100% unbreakable tools for use in farming stations

Automation Age

Power: Access to Power Cells as a form of Wireless RF Transport
Tools: RFTools Storage Control Module + Storage Scanner
Goal: Make a Pattern Storage (needed for IC2 Replication)
     Subgoal: See QoL below

Quality of Life:
- If you didn't make an Inventory Panel in the previous age (or even if you did), the RFTools Storage Scanner is almost a strict upgrade over it
    - A Modular Storage Tablet can accept a Storage Control Module synced to a Storage Scanner, allowing you to access a Storage Scanner and all blocks it's hooked up to (this includes Drawer Controllers)
- Power cells from RFTools are an easy way to transport RF wirelessly, and the loss is almost negligible intra-dimensionally, and only 5% interdimensionally
- RFTools Teleportation Network is also recommended for getting around outposts for bees in other biomes, distant laggy farms, and eventually to/from planets and moons
- RFTools Advanced Porters lets you sync and teleport up to 8 different Matter Receivers, and one of the best handheld teleporters until DE's Advanced Dislocator (Mekanism's Portable Teleporter can sometimes be inconvenient as it can only recognize chunk loaded teleporters)

Tips
- Storage Filter Modules can let you blacklist certain ores from being mined by a Builder, combined with a Clearing Quarry card, this can let you Silk Touch/Fortune the remaining valuable ores such as Emerald, Diamond, and Draconium
    - You can sneak right click the filter module onto the ore block itself to add to the filter instead of opening up the GUI and clicking it into the box
- You can manually configure the area which a Builder will quarry by sneak + right clicking on it with the quarry card and then right clicking the corners of the area you wish to quarry rather than playing around with the coordinates in the card
- RFTools Spawners are an alternative way to spawn Withers at a faster rate than traditional withers without that annoying global 'bong' sound, and combined with Shield Projectors, they can be used to damage/farm Withers entirely - do note that this uses a fair bit of energy (20k rf per wither spawned and drains anywhere from 10k-20k rf each time the shield damages a wither, 10 withers in a shield projector box can drain the entire shield in one attack, powering down and releasing the withers into your base)

- These can also be used to spawn the End Dragon itself, but due to the size, an End Dragon will likely grief the spawner forcing you to make another syringe + spawner unless you use a block protector
- Make sure your spawner is on the floor facing upwards as Withers tend to grief the blocks above them/near their heads - this prevents the Wither from griefing the spawner
- Highly recommend automating Dew of the Void, as that is probably one of the most annoying ingredients when you are crafting Matter Transmitters/Receivers

Nuclear Age

Power: *Extensive - see* **Power** *below*
Tools: Hazmat Suit if you haven't already, EU Reader,
Goal: Make an Atomic Calculator
   Subgoal: Nuclear Reactors and reactor automation

Power: A lot of endgame power is locked behind RTG Pellets and therefore Plutonium, notably key pieces of Advanced Generators multiblock, Calculator Plugs, Extreme Reactor Fuel Rods, and Deep Resonance (only Plutonium, no RTG Pellet)
- Advanced Generators Gas Turbine turned out to be one of the most efficient ways to generate EU. It generates 125 EU/t per Turbine, as long as the latter is made from Manyullyn, Vibrant or Advanced Alloy (the highest tier). The Turbine can easily run on IE Biodiesel, or other Ender IO's fluids, like Rocket Fuel and Fire Water.   *- AlbyNexus*
- Calculator Plugs are constant passive power, which has initially steep material costs (almost all of it can be quarried except Plutonium) ranging from a 5x5 multiblock to a 21x21 with 440 plugs that produces ~83k rf/t
   - Do note that is 440 RTG Pellets to complete this build
- You will eventually need an Extreme Reactor to produce Blutonium and eventually Ludicrite, which is used in Draconic Evolution recipes, but ER is locked until next age when you can make Purified Obsidian
- If you can automate ghast tears or get emeralds and nether stars reliably early on, Deep Resonance Crystals are a solid jump in rf/t

Tips
- You can actually advance through a significant portion of this age while still concurrently in the previous (Automation) Age by setting up nuclear reactors and a mass fabricator, it's just that you can't use a replicator yet without the pattern storage
- You ready for this? Forestry Sturdy Casings are 6.4 mb of UU each, EIO Basic Capacitors take ~4.7mb of UU each, EIO Machine Chassis are ~8.8mb, RFTools Machine Frames are 12.5mb of UU

- Normally these UU prices aren't worth it, but considering the nerf to each of these recipes, they are a bargain at this rate, if your EU isn't being used to power a Molecular Transformer, they should be making UU for these items
  - [Redcatone's UUM spreadsheet](#)
- Your first iridium needs to be compressed from shards from dungeon loot (most of mine came from End Cities while searching for Elytra and mineshafts), highly recommend spending an iridium plate on a molecular transformer as it is more EU efficient to make each iridium than replicating it via UUM (~20m eu vs 9m, not counting scrap cost)
- There are two six-chamber reactors builds that I think surpass all the others in terms of functionality: a very popular uranium-efficient build that uses 7 Quad-fuel rods and produces 420 eu/t, and another one that uses 19 Dual-Fuel rods and produces 380 eu/t (https://imgur.com/rLbAXg3) (credits to /u/SuperKael on reddit who I stole this design from)
  - The latter converts to over 38 tiny piles of plutonium at slightly lower eu/t whereas the former only makes 28 piles of plutonium, and considering plutonium's importance in later stage powergen, I would recommend the latter build
- Reactor Pressure Vessels are very efficient upgraded versions of IC2 Nuclear Reactors, however converting the 380 eu/t, 19 dual-fuel rod reactor produces roughly about 18.k hU/s, which requires over 9 LHE's (36 Iridium) and the associated steam boiler/kinetic turbine set ups to manage all of the heat - overall it can be very clunky but powerful at 650 EU / tick eu/t once fully setup
  - 19 Dual Fuel Rod build converted to Pressure Reactor (https://imgur.com/a/DmKLD)

Atomic Age

Power: Endergenic Generators, T4 Environmental Tech Multiblocks
Tools: Nutrition Module, End Forged Tools
Resource Gen: ET T4 Void Ore Miner
Goal: Make a NeoTech Electric Crucible
        Subgoal: Nutrition Module

Tips
- Having access to Atomic Calculator lets you create End Diamonds, which can be used to make ET Stabilized Ender Pearls
  - A diamond tree with an assimilator produces Flawless/Weakened Diamonds at a very fast rate, one will be all you need
- T4 Void Ore miners with 12x speed upgrades are one of the best forms of resource generation in the pack (better than Builder Quarry and certainly better than an upgraded Quantum Quarry), barring creative options like quarrying dimensions of pure emerald blocks or creative items, and if the power requirements are too much, a T4 Void Ore

miner with 6x speed upgrade, and 6x Accuracy upgrades is only about 5-6k rf/t and with a colored lens provides plenty of whatever resource you need

- Craft a Nutrition Module, and a Hunger/Health processor and never look back
    - A Nutrition module restores health/hunger points passively as long as it is in your inventory somewhere and has hunger/health points, and at a much faster rate than Regen II or Saturation II (almost immediately, just needs a small cooldown to recognize you lost health/hunger)
    - A stone assimilator can be used on the amethyst and tanzanite trees for passive health and hunger gain respectively
- While I still prefered to use the AA drill as my go to pickaxe, End Forged tools are a nice unbreakable alternative for axes/swords/hoes and are compatible with EnderIO Farming Stations
- Conductor Masts combined with Weather Stations + Transmitters can easily generate a lot of RF. The costs are just flawless diamonds and blaze rods, which you can get from the diamond tree and a blaze farm respectively.
- A weather controller is one of the earliest forms of automatic weather control that is accessible after getting electric diamonds and nether star - making two of them (one to cancel rain when next to a rain sensor and another one to make it day automatically when it is night) allows for solar panels to run almost constantly
- Environmental Tech T4 Solar Panels provide ~40k rf/t each, and at this point the only real cost to the materials are the 40 Nether Stars that each multiblock requires. Two of these multiblock solar panels can run you well into the End Game until you need to start powering dimensions
    - Note that Last Cables are slightly buggy and won't connect to a T4 Solar Panel Controller directly, but you can hook up multiple EnderIO Conduits to one, and then have those connect to Last Cables, or setup a bank of RFTools power cells next to each panel
- There are two major quirks with the storage chambers:
    1) A completely empty storage chamber will accept any type of circuit from most forms of item piping and input it INTO THE FIRST SLOT, which is the only slot that piping seems to recognize.
    2) A storage chamber can accept additional circuits of the exact type that is present in its first slot. So if you had an analysed sideways F gray circuit in the first slot, you can pipe additional ones there. No stable, no unanalysed types of that circuit will be accepted though, and no other analysed circuits can be piped into that chamber.
- This implies you'll need to make about 28 storage chambers (14 for each circuit and its stable counterpart).
- Given the above, this is the mess that my circuit extraction system looked like: https://imgur.com/a/FR0KN
    - The precision chambers will still produce random circuits if fed cobble. With max upgrades (you need a 1:1 on energy:speed) it produces over a circuit a second.

- If you don't want to deal with that mess, you can also easily use upgraded Storage Drawers, and then move the entire system to AE2 down the line
- The flawless calculator works as a very large bag, portable crafter, energy module, and all four calculators right ouf of the gate. Shift-right click to adjust it. *-Jon S*
  - *With the module workstation you can also add more modules. E.g more storage/energy, even a teleport module.*

New Age

<u>Power</u>:
<u>Tools:</u> NeoTech Tools (Fortune V with up to 5x5 Mining area), Infinity Booster Wireless Crafting Terminal
<u>Goal</u>: Make a TechReborn Machine casing
  Subgoal: **AE2**, NeoTech Ore Processing

Tips:
- You finally have access to AE2 when you are able to make the Thermal Binders (crafting component of Inscribers)
  - Precision Chambers can let you extract damaged/dirty circuits at a 100% rate from a block, and depending on the block they are extracting from, can provide the exact circuit you are looking for - remember to check JEI to see which blocks provide which circuits
  - The sideways "F" gray circuit can be extracted from Calculator Reinforced Stone as the recipe in JEI is broken
  - When automating Carpenters, you can use a combination of RFTools Control and AA ESDs (or even only AA ESDs) to assign which slot items will only be inserted into (ESD) or limit the total number of a certain item in a carpenters inventory (RFTools Control)
    - Alternatively, you can also use ME Interfaces to automate a carpenter, but they will clog up significantly if you put too large of an autocrafting order (blocking mode does not seem to work)
    - In the GUI of an Actually Additions ESD, it recognizes the Carpenter's inventory slots starting at 12, as the other inventory slots were dedicated to the output/ghost items
    - Another option is counting item filters (EnderIO) or translocators in regulate mode (diamond nugget) to limit how many circuits can be in the carpenter at a time. - Redcatone
  - As soon as you have AE2, it's highly recommended to start a Singularity farm and automate Quantum Entangled Singularities as each Draconic Core will require one

- Note that each pair of singularities are recognized as entirely different items, so you cannot use a filtered item collector to pick singularities up
    - It is possible to pick the up automatically, each pair has a different nbt tag to differentiate them. Any filter that can ignore nbt *should* work *- Redcatone*
- When you get a wireless crafting terminal, you can bind it to a hotkey. Then you only need to have it in your inventory to open it. This saves a hotbar slot. *- red*

- If you are struggling for clay/silicon, a Void Resource miner with cyan lens is worth the investment (or you can convert/upgrade the original void resource miner that you used for mica instead)
- The biggest draw to NeoTech Machines is their *speed* rather than their efficiency, as when fully upgraded they can process 8 items every 16 ticks, or 2 ticks per item making it the fastest RF based processing machines in the pack, and second only to impractically overclocked IC2 machines
    - **Warning**: Using AE2 export bus to export ores/items that NeoTech machines (specifically the Electric Crusher) cannot process will CRASH the server/game
    - Fully upgraded Electric Logger has a range of 65x65, coming from someone who built a base out of a wooden Pagoda, be careful
    - You can use NeoTech machine lines to process iron, gold, lead, tin, copper, lapis, redstone, diamond, and emerald and leave the rest for either EIO Sag Mills,

Technological Age

Power:

Tools:

Goal: Make a Machine Structure block

Subgoal: Singularity Automation (if not done yet), Upgrade Calculator Circuit Automation, see AE2

Tips
- Despite what the in game guide may say, you do not need a multiblock structure behind the Vacuum Freezer to make Tungstensteel. *- Hangy*
- This was the age I spent the most time in as I was heavily setting up infrastructure for the rest of the modpack. If you haven't noticed already but this pack revolved around building something, tearing it down, and then replacing it with something better - this is the age where that vicious cycle stops as most of your machines now approach endgame
- Although less 'techy', Immersive Engineering Arc Furnaces can handle most of the same recipes as the TR Industrial Blast Furnace at a much faster rate with 100% less chance of explosions, the only reason you would need an Industrial Blast Furnace is to make Hot Tungstensteel for the Angel Ring (and upgraded Mekanism factories)

- Note that TR Blast Furnaces and Industrial Grinders will explode if given MV DESPITE what the tooltip may say in the pack
-

Space Age

<u>Power</u>:

<u>Tools:</u> Space Suit, Atmospheric Analyser

<u>Goal</u>: Make a Mekanism Steel Casing

Subgoal: Make a crappy rocket, Obtain Dilithium, make a better rocket, make a sweet space station, obtain Zirconium, Cadmium, Mercury, and Tantalum (on Mars, Neptune, Mercury, and Eris respectively)

Tips:

- Make sure to carry extra buckets of fuel, or a tank of fuel, fueling station, and RF source to power the fueling station WHENEVER you fly your rocket, otherwise you'll be forced to teleport back off the planet, construct another rocket and re-fly it back to the planet
    - An EnderIO fluid tank can be used to fill your rocket without the need of a fueling station. Just take the tank and right click the rocket.
- A 5x5 quarry at each of these planets provides more than enough resources to last you into the endgame
- Try to avoid using a builder or anything that causes several block updates in space while you have oxygen vents running, as the constant recalculation can cripple the server with lag
- DATA collection is not possible, nor is it required in this modpack. If you're using a guide to help you with Advanced Rocketry you can skip everything satellite related.
- FTB Chunk loading util doesn't seem to play nice with loading Advanced Rocketry planets. Extra Utils Chunk Loading Ward required for rftools Builder quarries. (Just the Builder needs to be loaded.)

Mechanical Age

<u>Power</u>: Gas-Burning Generators

<u>Tools:</u> Configurator, Atomic Disassembler

<u>Goal</u>: Make a Draconic Core

Subgoal: Automate HDPE Pellets, Mekanism Circuits, Alloys, Creative Tank Gasses, Creative Tank Liquids

Tips:

- Gas-Burning Generators are very powerful and efficient for their setup cost, for example if Joules -> RF Conversion was allowed, each Gas Burning Generator could generate up to 28k rf/t, that's more than most ER Turbine configurations (except with Ludicrite) all for some steel, chrome, and zirconium. However note that this is only brought up as context, as power conversion between systems is against the intention of the modpack, and Mekanism power conversion is turned off in the pack

- A Mekanism Fusion Reactor is not required for progression, the D-T fuel is prepped inside a Chemical Reactor

Draconic Age

<u>Power</u>: Draconic Energy Storage
<u>Tools:</u> Staff of Power, Draconic Equipment, Advanced Dislocator, Item Dislocator,
<u>Goal</u>: Make the Angel Ring
> *Subgoal:* kill some dragons, make a T7 Draconic Energy Orb, DE Energy Crystal Network

Tips:
- If you found a way to automate the killing of the end dragon, please let me know in the discord so I can add it here, otherwise the only alternative is to create a Dragon Dimension and go trigger happy with a bow
- The trick to NOT getting the Chaos Guardian to despawn is to stay within the Obsidian pillars that house the crystals, thus you are soft-locked into the fight and cannot teleport or move away from the island to recover
    - Note that the Chaos Guardian is still bugged in 1.10 and have heard reports of it despawning in front of people's vision, but as long as you don't leave / die where the obsidian pillars are, you have a chance
    - Otherwise if you manage to chunkload the whole area the Chaos Guardian will never despawn
    - Since you cannot leave to rest, it's recommended you bring multiple Draconic Capacitors with you
- If you don't care about crafting the Angel Ring (which isn't important for the Creative Vending Upgrade), you can skip out on Tungstensteel altogether, although it is the Angel Ring that brings you into the next age and nets you the trophy

Creative Age

<u>Power</u>: Creative Capacitor (500k / Block)
<u>Tools:</u>
<u>Goal</u>: Make the Creative Vending Upgrade
> *Subgoal:* Make the Creative Capacitor, Make the Creative Fluid Tank, Make the Creative Gas tank, kill more dragons

Tips:
- Dimensional builder energy requirements are rather low once you add in Efficiency essences

- I've used about 3 dimensions total: one for dimensional shard quarrying (used Digital Miner to get it easier), another one for honey, and lastly a 3rd one for a dragon dimension
- If your eu production isn't up to scale (it should be), you can also make a UUM dimension to help replicate iridium reinforced plates faster
- You can use a dimension editor to insert a matter receiver (make sure to power it beforehand) if the original receiver was destroyed (eg by a stray dragon or two)
- Once you gain access to Dimensional Shards, the Calculator Atomic Multiplier is the closest this pack offers to EMC duplication of any resource
  - As far as I can tell the Atomic Multiplier quadruples any stackable item/block that isn't blacklisted
  - The blacklist can be found in the configs but some of the important items are Solar Panel V/Solar Panel VI (Solar Flux Reborn), all creative items
  - The recommended duplication list are: DE Chaotic/Awakened Cores, SolarFlux Solar Panel IVs, ET Solar Panel Controller Tier 4, IC2 Enriched Sunnarium Alloy, and if you're really desperate / impatient like me, you can duplicate crated beeswax/pollen/royal jelly
  - I ended up making 20 Creative Capacitors in total as the Atomic Multipliers each used about 1.5M rf/t while in process: 16 for the Vending Upgrade, and 4 for the base energy cost to support the Atomic Multipliers
    - **WARNING:** If u have a DE Wyvern/Draconic Capacitor Activated in your inventory, the game will CRASH and you will LOST your world if you hold a Creative Capacitor Bank (this because the Capacitor will try to charge something which has got infinite energy)

If you want more text based guides for certain modpacks, feel free to message me on Discord as Vyraal1 and I'll see what I can do
(Current: NaBT, Sprout)