URBAN MACHINE

Urban Machine applies the power of Artificial Intelligence (AI) to mechanically and efficiently remove metal from deconstructed lumber and regrade it, rendering it a valuable, locally available, and sustainable framing and finish building material. Tapping into this resource would create local economic opportunities, diversify and shorten lumber supply chains, reduce embodied carbon, and lessen the burden on our forests. Currently this resource is underutilized due to several challenges: Deconstruction is labor intensive, the cost to dispose of wood has been relatively inexpensive (though rising), regrading is required, and matching supply volumes with demand is difficult to control. On a recent project, Urban Machine brought their equipment onsite where the existing building was deconstructed and 60,000 board feet were salvaged using their technology. The owner was able to obtain higher quality wood from this old building, with tighter grains, than virgin wood being grown quickly in today's forests. Although Urban Machine is still in the pilot phase, with $5 million in new funding, they are hoping to expand their reach through new partnerships, pipeline projects, and building updated versions of their robotic technology on trailers to launch in the field.

Urban Machine's goal is to make salvaged wood cost competitive with virgin wood. The cost to denail by hand is an estimated $2-3 per board foot, which raises the cost of the end product. Urban Machine's AI brings this cost down to roughly 30 cents per board foot. Urban Machine takes lumber that is deconstructed from old buildings, places it on a conveyor that feeds the wood through a series of visual sensors that detect nails, screws, and other metal debris, and removes them with robotic arms fixed with the appropriate tools. The output is a lumber product with retained structural integrity ready for reuse in construction.

Urban Machine can also process smaller wood pieces and species like spruce, pine, or fir to be used for cross-laminated mass timber products. Currently, there is no mass timber manufacturer in California. They are located closer to concentrations of timber forests for their source of inputs. Combined with California's forest thinning needs for wildfires, processing a high volume of salvaged wood could create enough supply to justify an in-state mass timber facility with the associated economic benefits. Urban Machine could provide for a model that reduces regional waste, minimizes landfill burdens, secures lumber supply chains, and massively reduces the embodied carbon of lumber through reuse. Excitingly, some of the leading developers with sustainability goals in the Bay Area are committing to pilot projects with Urban Machine.