Glass Inventory Storage, Loading Systems, Cutting Capacity and Yields...
How to Bring Productivity Back!

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"It makes little sense to expand glass cutting capacity when current machinery is operating less than 30% of the time. The real problem is inventory storage and retrieval!"

How to fix your glass cutting department... Where do we start?

1) *Increase Storage capacity without adding space*
2) *Increase cutting capacity with existing equipment*
3) *Increase cutting yields*
4) *Increase safety*
5) *Decrease labor cost*

OptiLoad

The typical glass cutting machine operates <u>just 30%</u> of the time.

The <u>remaining 70%</u> is waiting for glass to be loaded or breakout to be completed!

IT'S GETTING WORSE!

Glass cutting is getting more complex. New products, including an exploding inventory of coated glass, are lowering efficiency and yields while demanding a larger inventory footprint.

What needs to be fixed?

- Drastically increase number of SKUs in storage

- Decrease footprint consumed by inventory

- Reduce labor handling of raw glass inventory

- Increase capacity on <u>**existing cutting equipment**</u>

- Raise cutting yields

Typical commercial system with access to 12 glass SKUs
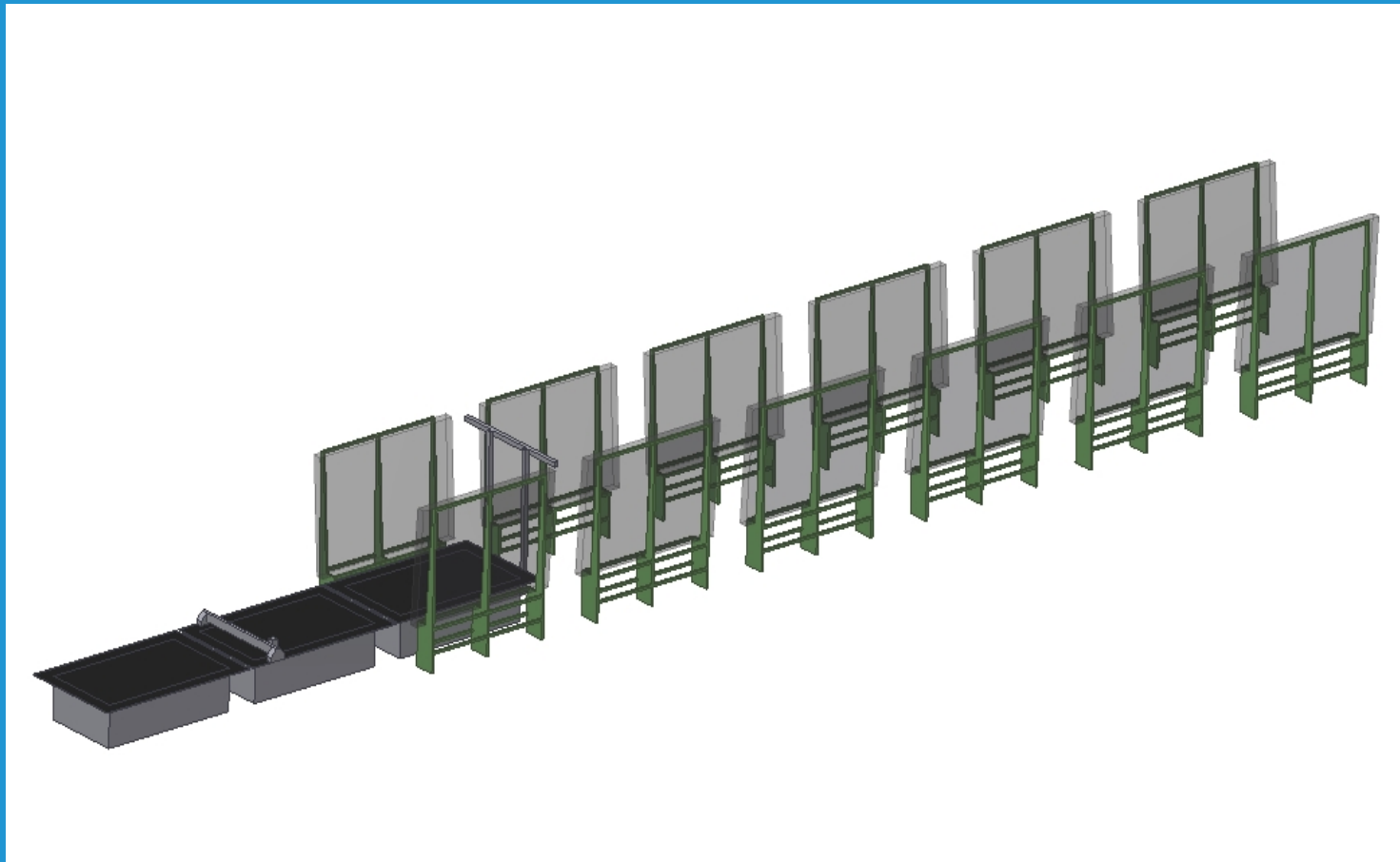
- Line length of nearly 120 feet
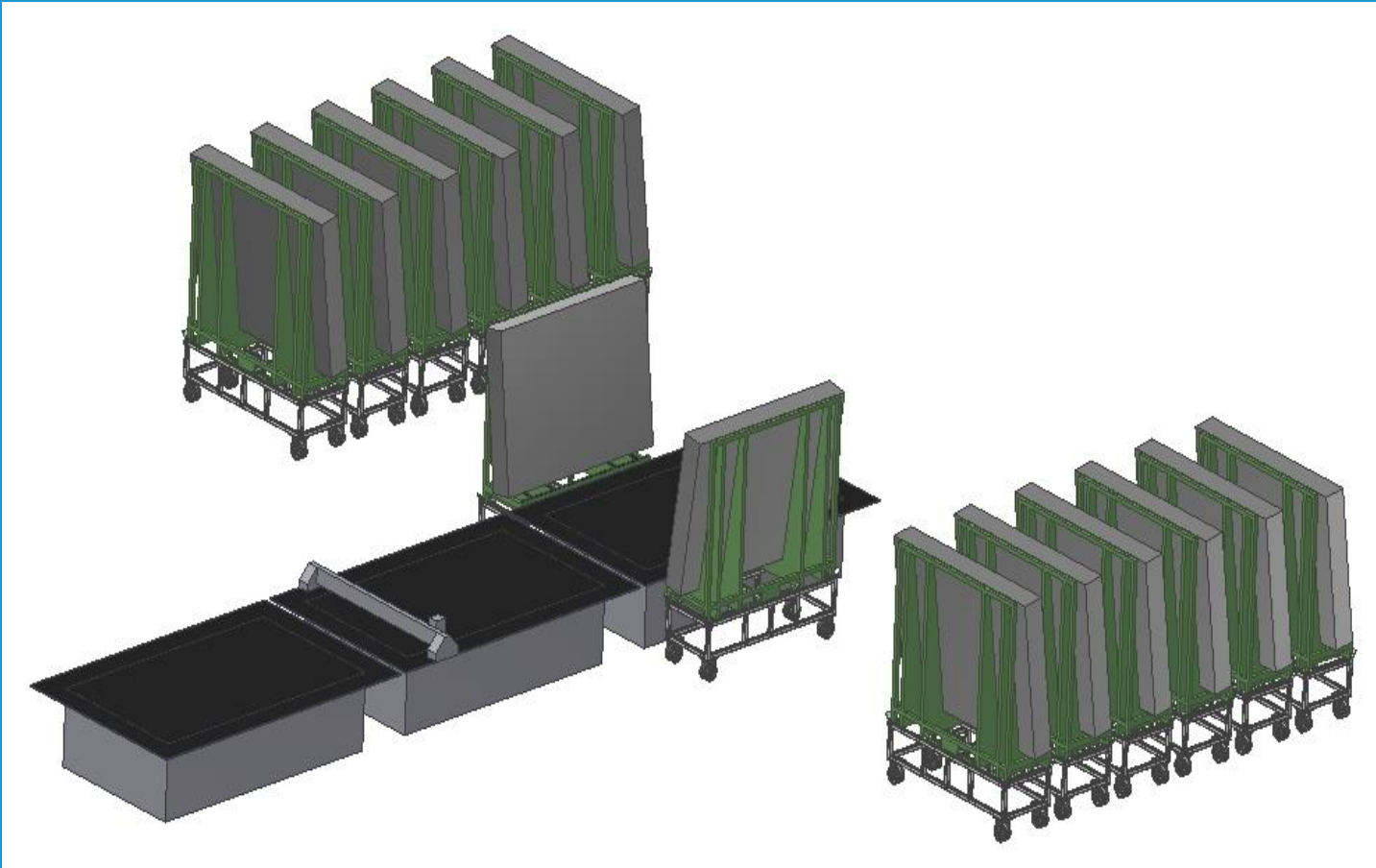- 1108 square feet of floor space
- 92.3 square feet per SKU.

Automated residential system with access to 8 glass SKUs
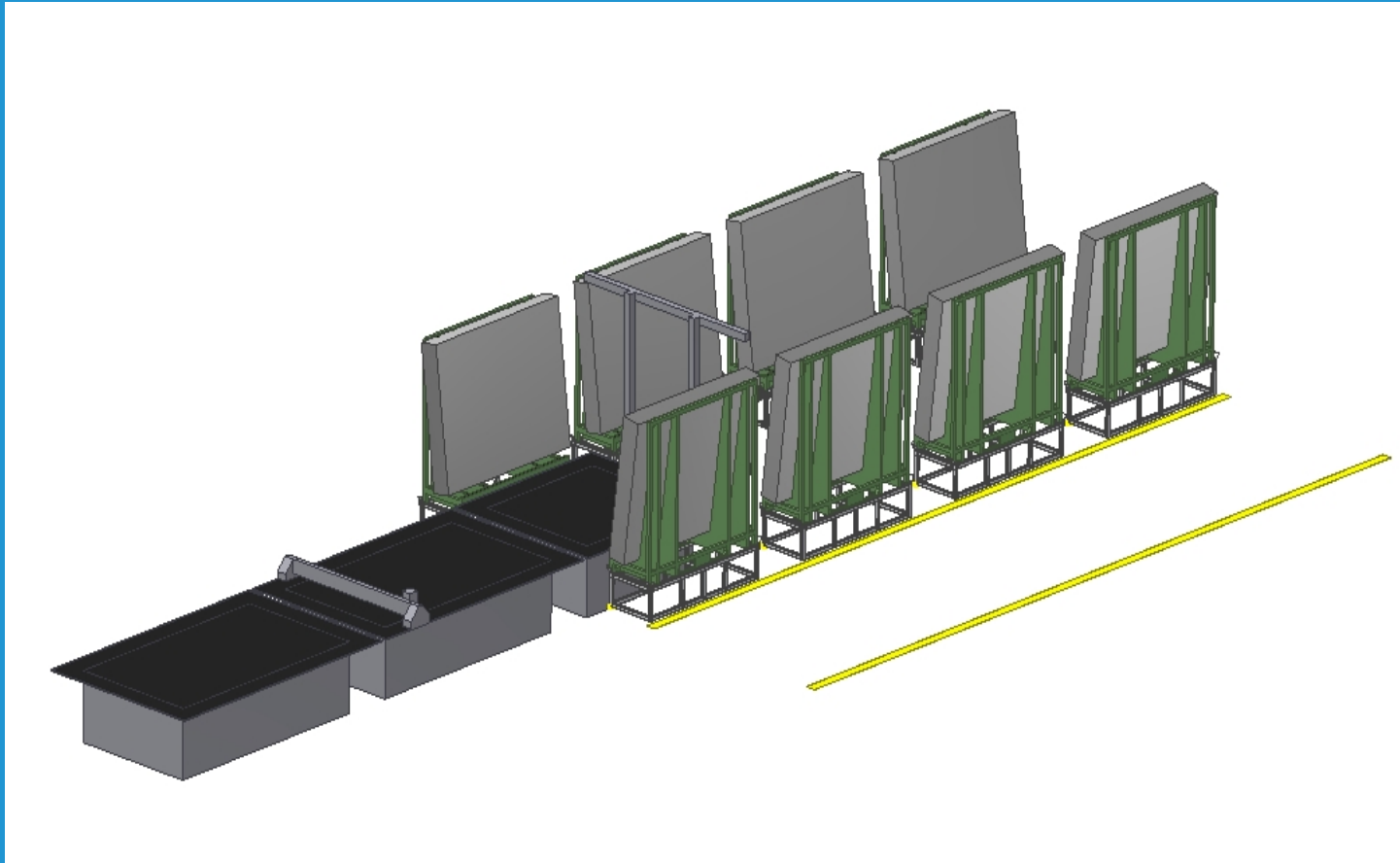
- Line length of nearly 70 Ft.

- 1366 square feet of floor space including needed isles

- 171 square feet per SKU

Manual residential system with access to 14 glass SKUs

- Line width of nearly 50 FT.

- 944 square feet of floor space

- 71 square feet per SKU

Optimize the space you have:

- The reality is that space needs to be optimized. It is not possible in most plants to expand the amount of space allocated to glass storage. The space is just not available, and the selling margins for this increased inventory will not justify it! Dense storage of glass used to be a nice thing to have, but now it is becoming necessary to compete.

- Obviously, dense storage is not enough. This inventory will need to be efficiently moved from storage to glass loading.

- Cost is an issue. How can a dense storage and glass loading system be justified?

OptiLoad System will:

- **Store** much more inventory in the same or even smaller footprint

- **Offer** flexible layouts to fit your existing space

- **Inventory** multiple sizes

- **Eliminate** all labor loading your glass cutter

- **Operate** as fast as your glass cutter can cut

- **Create** a safer environment

INTEGRATED AUTOMATION SYSTEMS

OptiLoad moves the pack to the loader!

Dense Storage Shuttle

- Stores and delivers any size up to 102 X 144

- Can be loaded from one or both sides

- Is easily expanded and customized

Turn Table Access

- Designed for 72 X 84 or 72 X 96

- Capable of 2, 3 or 4 stations

Shuttle base

Turn table

INTEGRATED AUTOMATION SYSTEMS
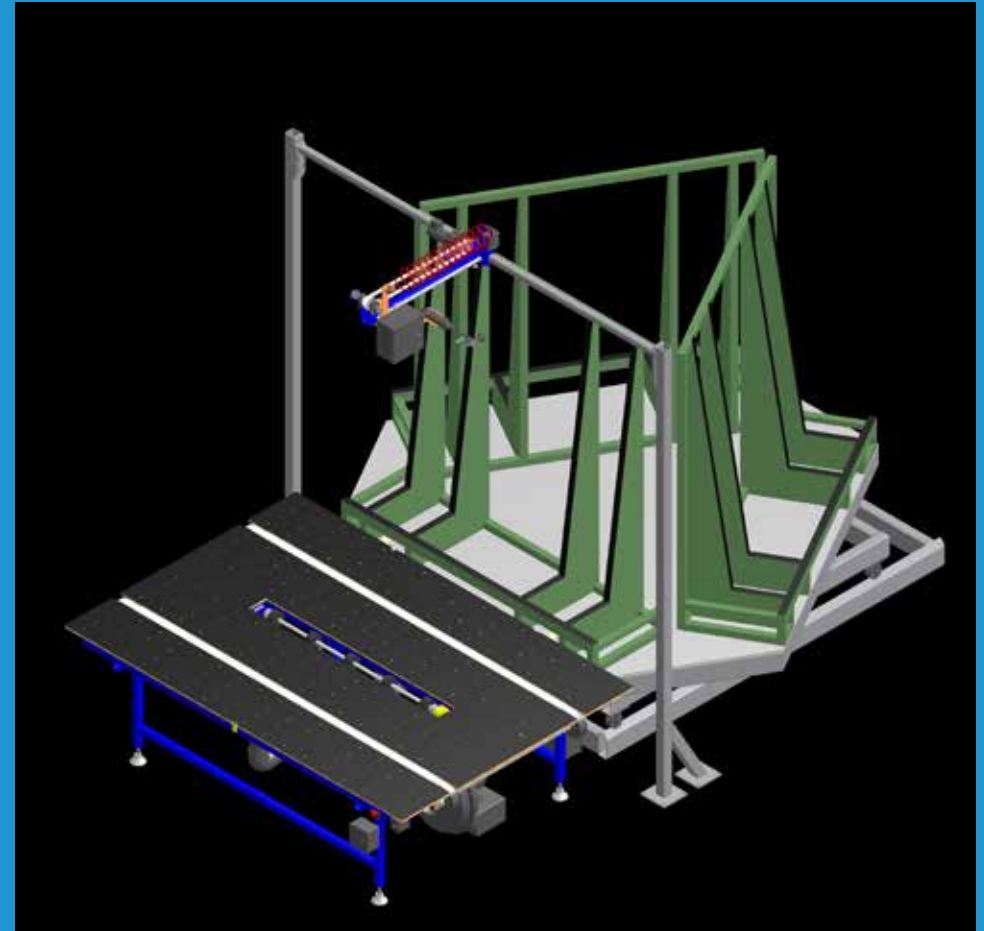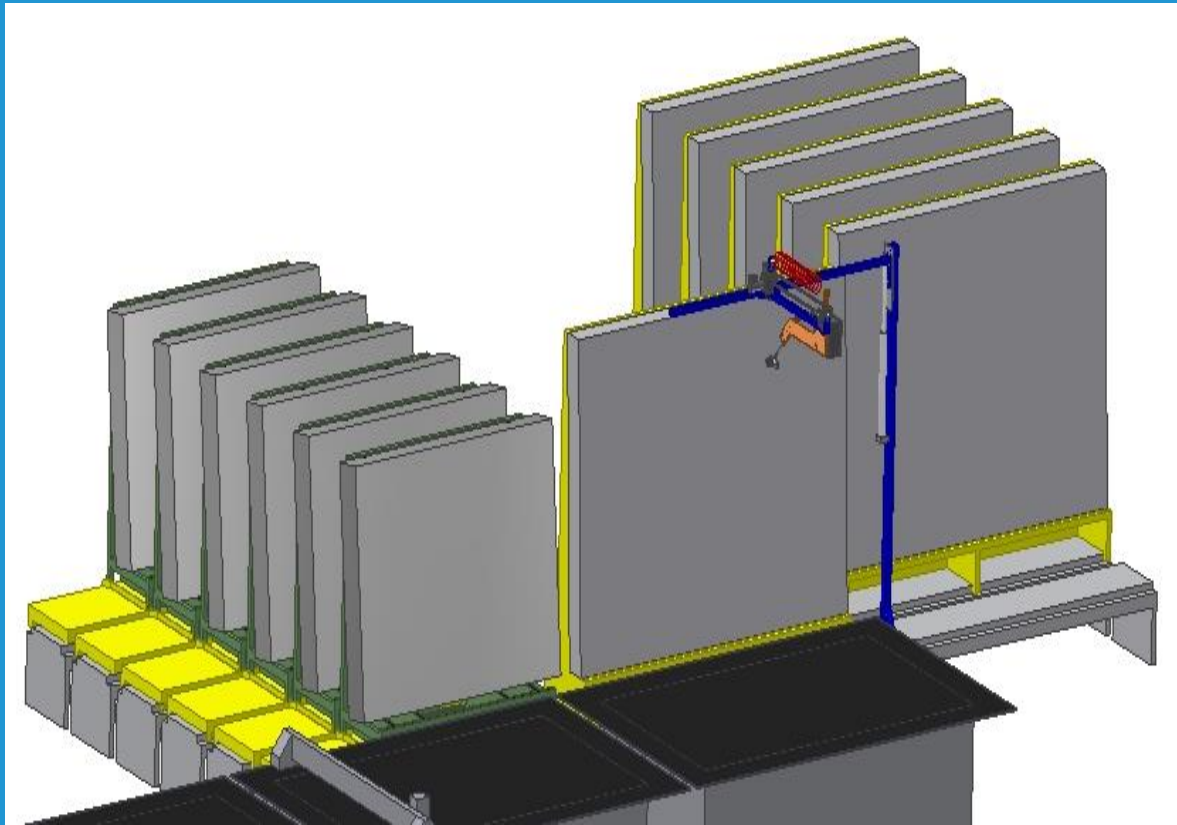
Our Free Fall Device is intelligent

- Since our vacuum cup is computer driven, it always knows its location

- No time is spent searching for the next lite in a rack

- It knows where the moving center of gravity is even as it gets further into the rack. This makes it very gentle when dropping glass

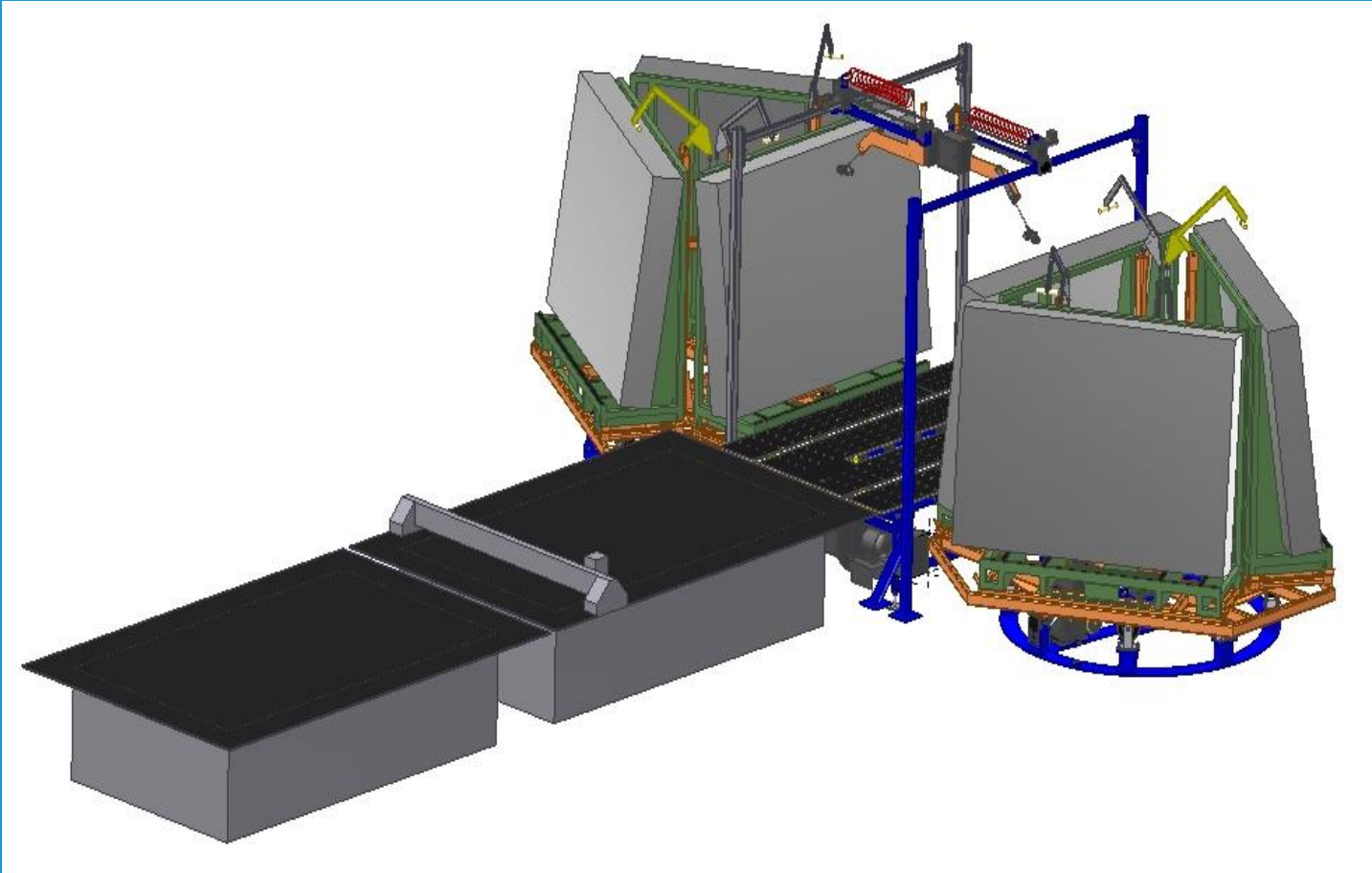- These design improvements make this a much quicker and more reliable device.

INTEGRATED AUTOMATION SYSTEMS

OptiLoad system with access to 12 glass SKUs of any size (dense storage)
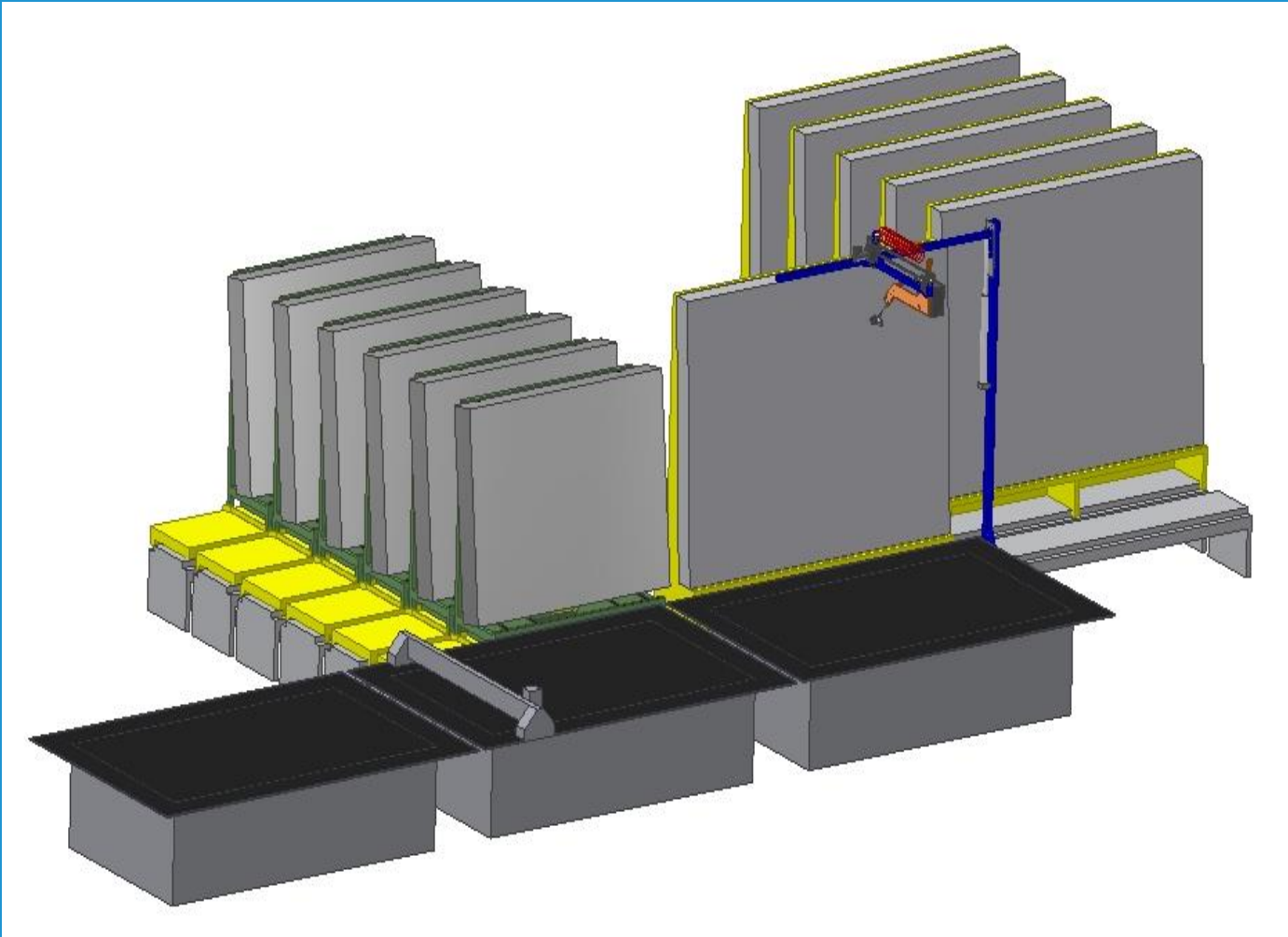
- Line width of 26 feet.

- 600 square feet of floor space

- 50 square feet per SKU

An OptiLoad system with access to 6 SKUs of racked glass

- Line width of 29 feet.

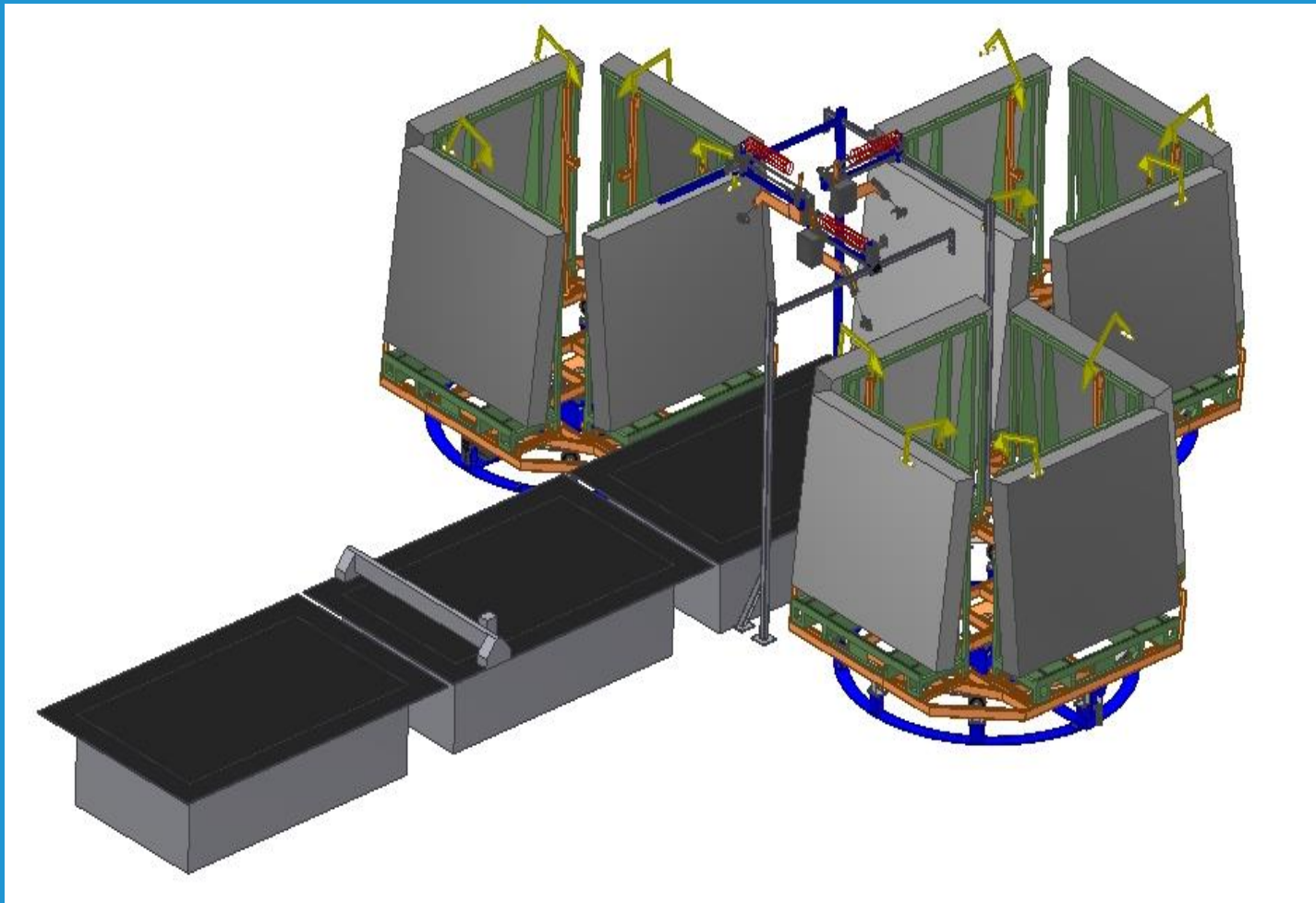- 300 square feet of floor space

- 50 square feet per SKU

An OptiLoad system with access to 24 glass SKUs of mixed sizes (dense storage)
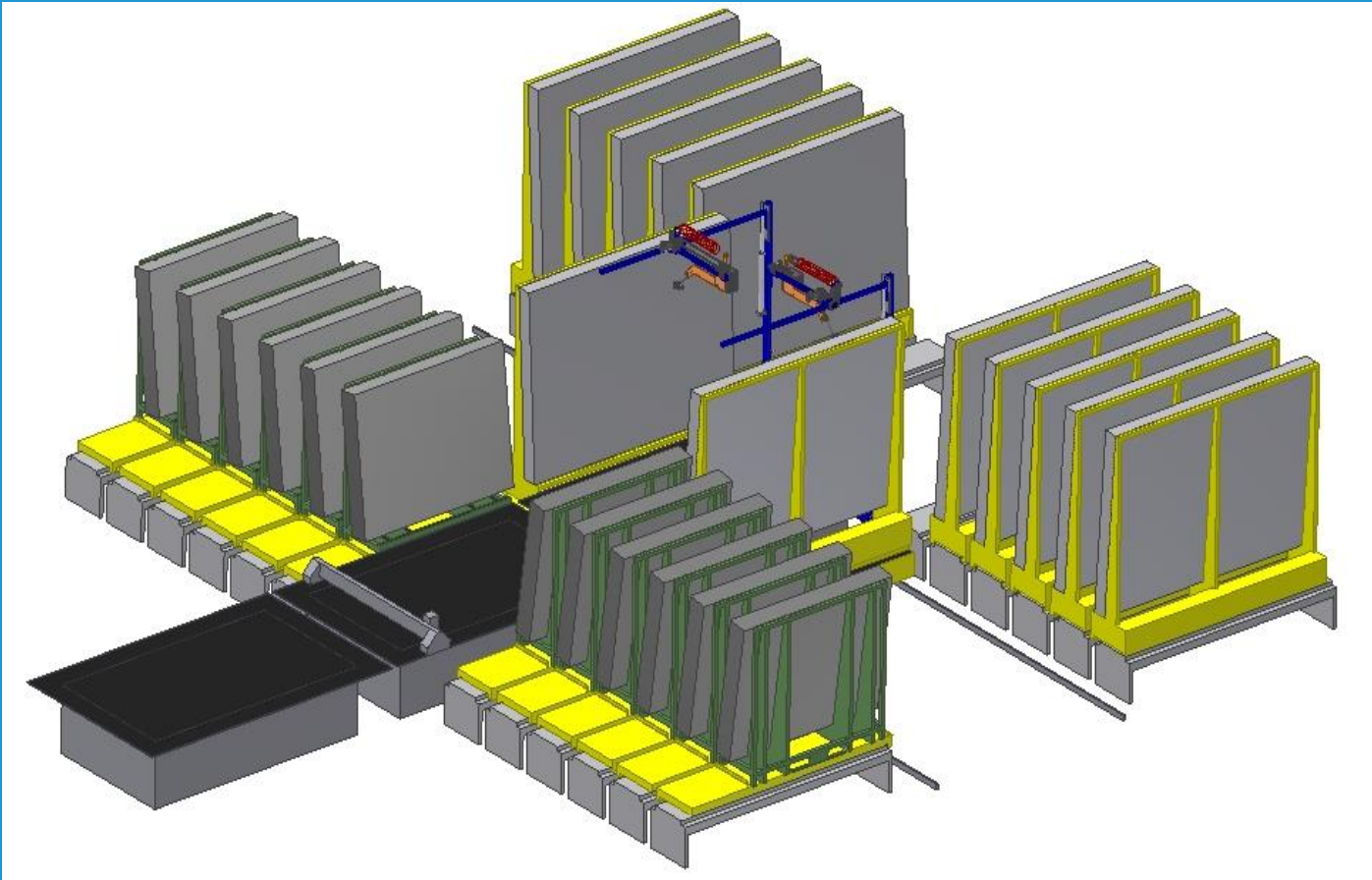
- Line width of 43 feet.

- 1523 square feet of floor space

- 63 square feet per SKU

An OptiLoad system with access to 12 SKUs of racked glass

- Line width of 29 Ft. and length of 55 feet.

- 953 square feet of floor space

- 79 square feet per SKU

How to double cutting utilization

- To go from 30% to 60% utilization of your glass cutting machine, have the raw glass ready when it is needed!

- Take advantage of your software's capability to do this job without wasting precious time of a valuable asset.

- This will require an organized storage location for each SKU.

- It is less expensive to do this than to add additional cutting capacity.

Raise cutting yields

- Adding an additional raw size will improve yields, often greater than 5%. This requires more inventory, but not necessarily more space.

- If additional inventory is not organized and automated, it will gridlock your cutting department! This can't be done manually.

- Won't the increased number of SKU's kill my capacity? What surprises many, is after adding a second size, the total number of cutting patterns for a run actually goes down. The following example eliminates almost 1 ½ hours of cutting time to produce the same schedule!

Add a second size, up yields 6.6%

(72x84) VS (72x84 & 72x96)

Release	1 Size	Sheets	Lites	Material Used (SqFt)	Yield	2 Sizes	Sheets	Lites	Material Used (SqFt)	Yield	Yield	ΔSheets	ΔMaterial
Release 1 [5345]	TOTAL	45	243	1890	86.5	TOTAL	41	243	1866	87.6	1.1	-4	-24
	72 x 84	45	243	1890	86.5	72 x 84	17	103	714	84.3			
						72 x 96	24	140	1152	89.6			
Release 2 [5313]	TOTAL	56	399	2352	83.9	TOTAL	45	399	2118	93.2	9.3	-11	-234
	72 x 84	56	399	2352	83.9	72 x 84	7	32	294	77.4			
						72 x 96	38	367	1824	95.8			
Release 3 [5307]	TOTAL	62	326	2604	84.9	TOTAL	54	326	2490	88.7	3.9	-8	-114
	72 x 84	62	326	2604	84.9	72 x 84	17	95	714	88.2			
						72 x 96	37	231	1776	88.9			
Release 4 [5289]	TOTAL	37	232	1554	89.0	TOTAL	35	232	1536	90.0	1.0	-2	-18
	72 x 84	37	232	1554	89.0	72 x 84	24	147	1008	89.2			
						72 x 96	11	85	528	91.5			
Release 5 [5273]	TOTAL	90	370	3780	71.2	TOTAL	70	370	3156	85.3	14.1	-20	-624
	72 x 84	90	370	3780	71.2	72 x 84	34	203	1428	84.9			
						72 x 96	36	167	1728	85.7			
Release 6 [5248]	TOTAL	53	330	2226	90.2	TOTAL	49	330	2172	92.5	2.2	-4	-54
	72 x 84	53	330	2226	90.2	72 x 84	30	186	1260	93.0			
						72 x 96	19	144	912	91.7			
Totals		343	1900	14406	82.6		294	1900	13338	89.2	6.6	-49	-1068

Payback analysis

Assuming you purchase $2,000,000 of glass per year and are cutting on two shifts:

1. Yield savings of 6.6% will equal $132,000 per year

2. Eliminating 1 direct labor per shift saves $60,000

3. Reduced patterns result in a throughput increase of 14.2%

4. If you double your throughput because you are not waiting for glass, in addition to avoiding the capitol expenditure for another cutting line, you actually reduce the capitol and labor cost of your cutting operation by 50% (per square ft.) thus increasing your gross margins!

7 things *OptiLoad* will do

- *Dramatically increase your capacity*
- *Increase the number of glass types you can access*
- *Decrease your cutting fixed cost (per square ft.)*
- *Significantly lower your labor cost*
- *Increase your safety*
- *Raise your cutting yields*
- *Raise the bar with competitors!*

If it's INTEGRATED and it's OPTIMAL It's IAS!

OptiGas FastGas ThermalCheck OptiLoad