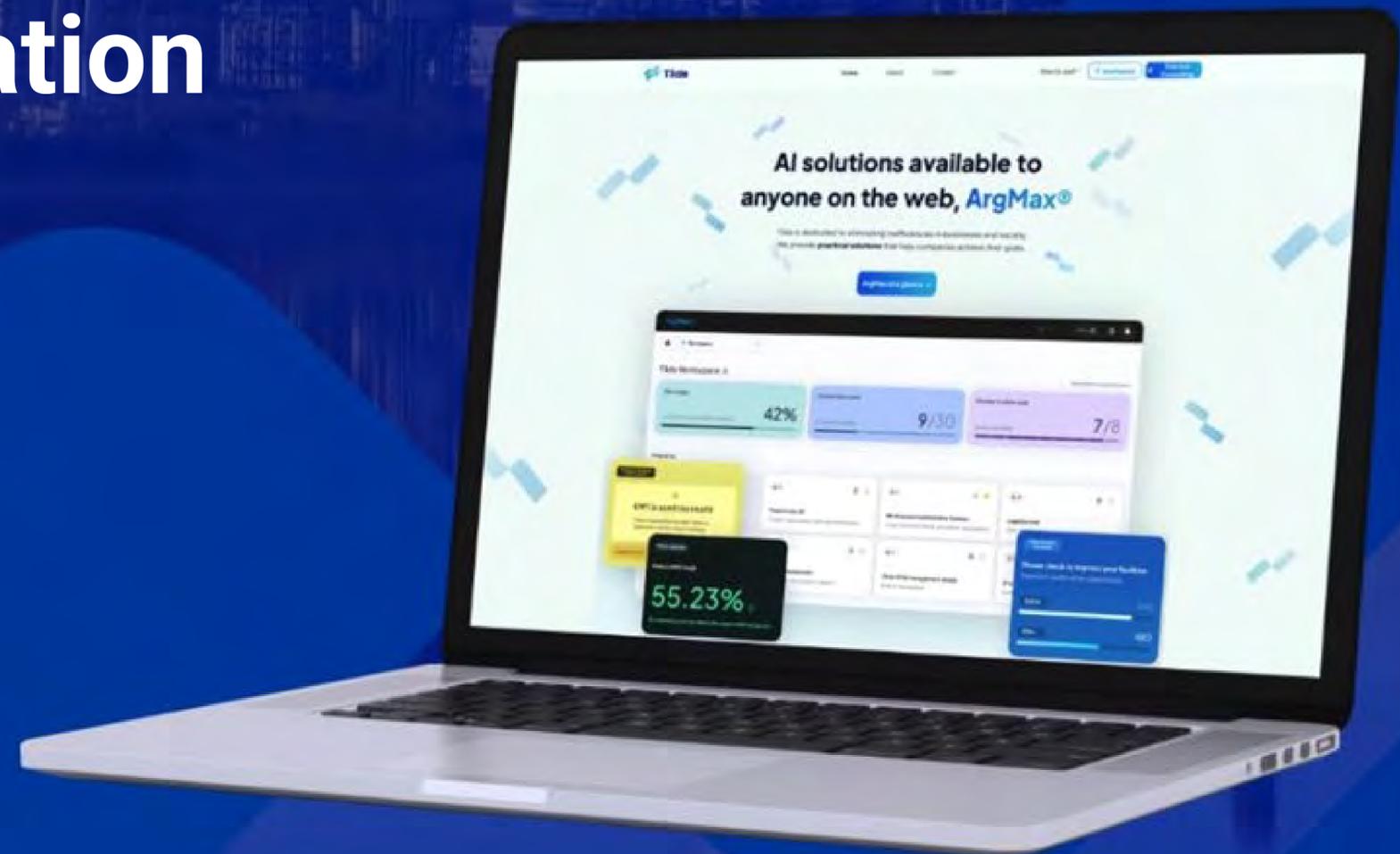


ArgMax®



Tilda

Unlock the Power of AI for Manufacturing Optimization



Problems for Manufacturing Intelligentization

Costly, difficult, and deficient solution



Why do we need
*Intelligent
Manufacturing?*

- ✓ Better productivity
- ✓ Better quality
- ✓ Lower cost & risk
- ✓ ESG

Market needs

AlphaGo of manufacturing

prescribing “action plans” for optimal facility control



Too Expensive

- Custom AI solutions cost \$100K-\$1M



Too Difficult

- AI knowledge or engineers required



Scarce Solution

- Very few prescriptive solution available in the market

ArgMax®



Tilda

ArgMax's AI automatically analyzes data, discovers trends, and identify areas for improvement without the need for expensive AI experts

1 Data Upload



2 Goal Setting



3 Constraints Setting



4 AI Prescription

Facility Operation Data

Molding Test 06

AI modeling progress: 0%

Buttons: Data, Goals, Constraints, Modeling

1 AI modeling step #1: Data

Uploading new data for AI modeling

Please select your data file to upload

Drop a file here to upload, or [click here to browse](#)

[Upload the selected file](#)

Upload

Optimization Goal Setting

2 AI modeling step #2: Optimization Goal

Select all output variables

At least one output variable must be selected

Grid of variables for selection:

- Average_Back_Pressure, Average_Screw_RPM, Barrel_Temperature_1-3, Barrel_Temperature_4-5, Barrel_Temperature_6-7, Clamp_Close_Time, Clamp_Open_Position, Cushion_Position, Cycle_Time, EQUIP_CD, EQUIP_NAME, Filling_Time, Hopper_Temperature, Injection_Time, Max_Back_Pressure, Max_Injection_Pressure, Max_Injection_Speed, Max_Screw_RPM, Max_Switch_Over_Pressure, Mold_Temperature_1-9, Mold_Temperature_10-11, Mold_Temperature_12, Mold_Temperature_2-3, Mold_Temperature_4-5, Mold_Temperature_6-7, Mold_Temperature_8-9, PART_FACT_PLAN_DATE, PART_FACT_SERIAL, PART_LNO, PassOrFail, Plasticizing_Position, Plasticizing_Time, Reason, Switch_Over_Position, Unnamed0

How to optimize selected output variable?

Select optimization goal for each output variable

PassOrFail: Maximize

Max_Switch_Over_Pressure: Minimize

Progress bar: STEP1 (checked), STEP2 (checked), STEP3 (active), STEP4, STEP5, STEP6, STEP7

Next

Constraints for Variables

3 AI modeling step #3: Constraints

Set constraints for selected variables

Check default settings and modify if necessary

Max_Injection_Speed

Select data type: number category

Missing data handling: remove row

Data types: numeric 100, character 0, null 0

Normal range: min 38.5, max 128.5

min: 38.5, max: 128

Modify Constraint

Prescription Results

4 AI modeling step #4: Results

Check AI modeling result

Review model performance



5 AI modeling step #5: Utilization

[Request new plan](#)

[View current plan](#)

Try new context values to find out optimal control values

Input values for context variables

Barrel_Temperature_1: 274.79998779296875 ≤ 280 ≤ 287.1000061035156

Barrel_Temperature_2: 274.20001220703125 ≤ 280 ≤ 286.5

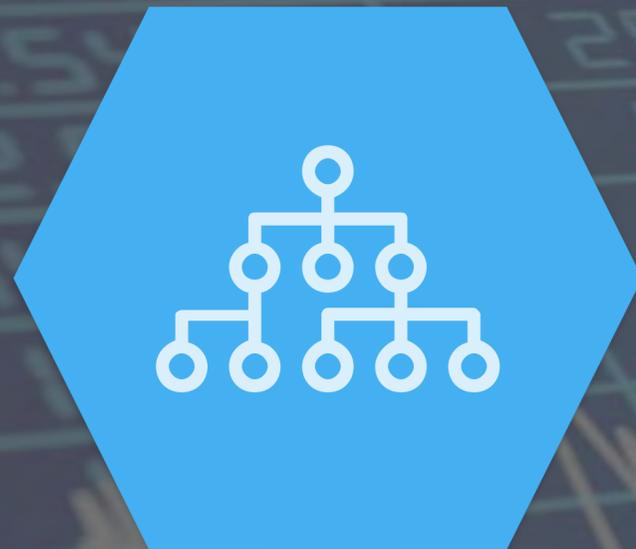
Barrel_Temperature_3: 274.1000061035156 ≤ 279 ≤ 285.79998779296875

ArgMax® Algorithm

Optimal control prescription using surrogate-search models

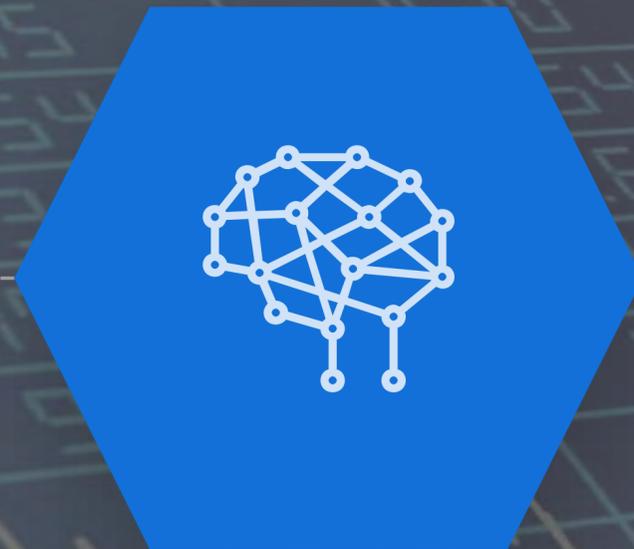


1. Collect



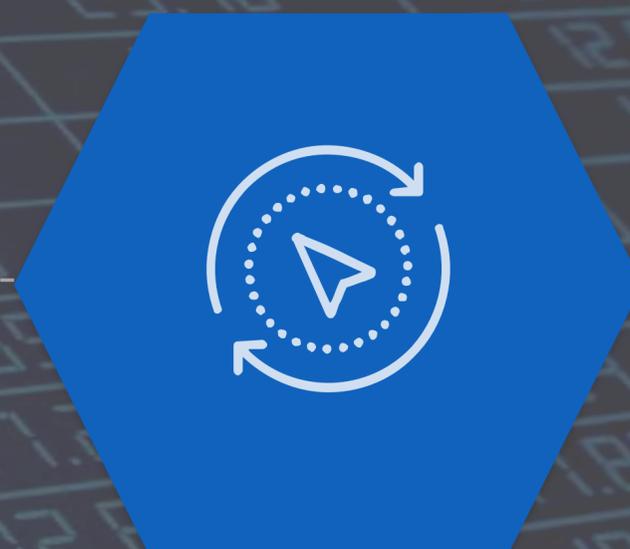
- Facility's historical operation data for AI model training

2. Model



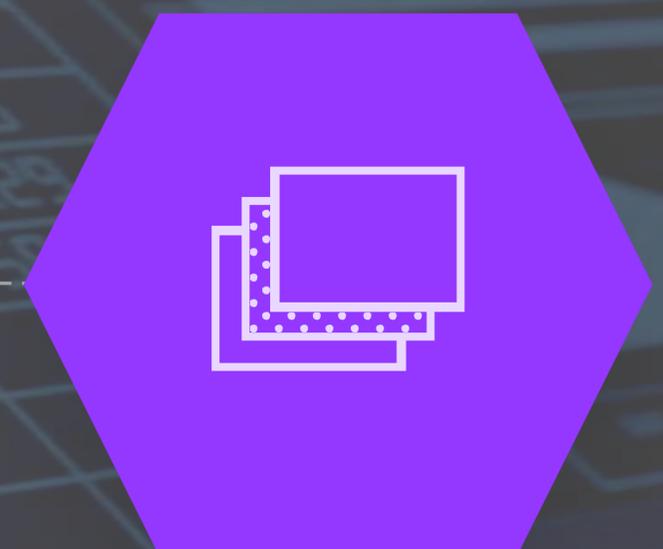
- Surrogate AI model mimicking behavior of the given facility

3. Search



- Combined with trained surrogate model, find the control values optimizing target output

4. Apply



- Apply the optimal control values to the actual facility

ArgMax® in Manufacturing & Other Industries

Manufacturing



Logistics



Healthcare



Finance



Solar System



Budgeting



ArgMax® Success Cases

Real-time equipment control and work standards optimizations



Pulp Refiner Energy Optimization

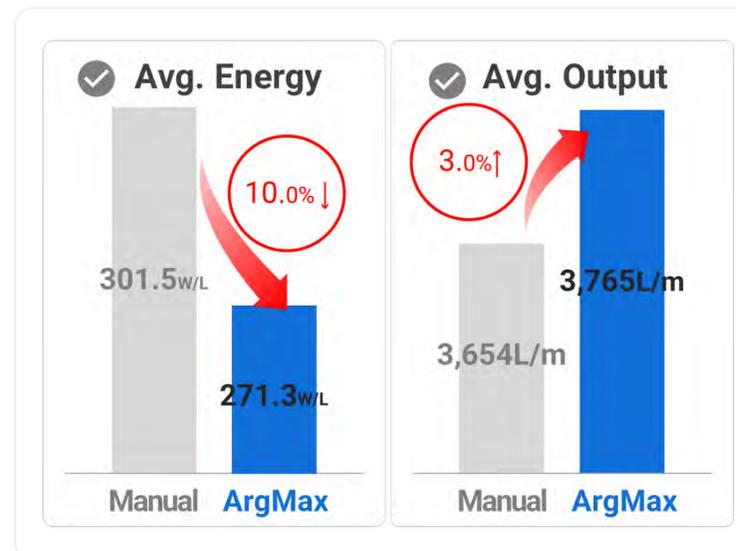


Hansol
한솔제지

- To reduce electricity used by multiple pulp refiners in paper manufacturing
- Actual test result applied to the factory facility

ArgMax Actual Test Results

Electricity used	10.0% ↓
Output	3.0% ↑



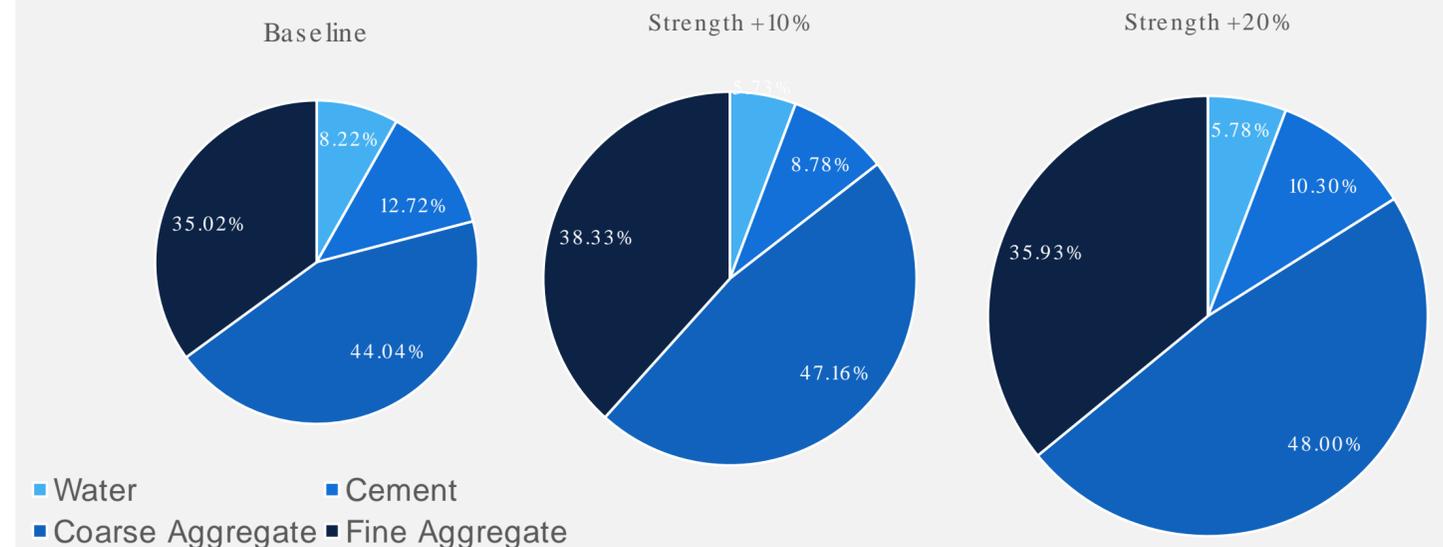
Concrete Strength Optimization

kaggle



- To find concrete recipe to increase strength with the the amount of cement, water, coarse & fine aggregate as variables
- ArgMax SaaS proved to work with this Kaggle open data

ArgMax Simulation Result



ArgMax® Success Cases

Real-time equipment control and work standards optimizations



Steel Rod Quality Optimization

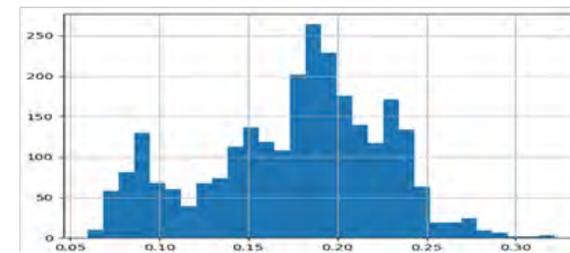
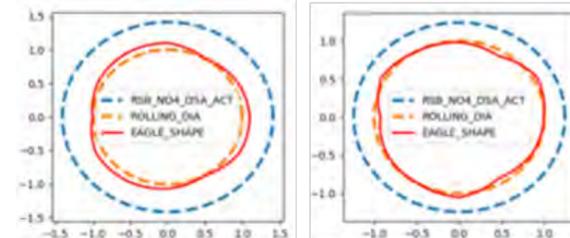


SēAH

- Rolling mill operation (tension, speed, etc.) optimization for special steel rod products

ArgMax Actual Test Result

Rod ovality (roundness error)	26.67% ↓
----------------------------------	-----------------



Aluminum Foil Quality Optimization

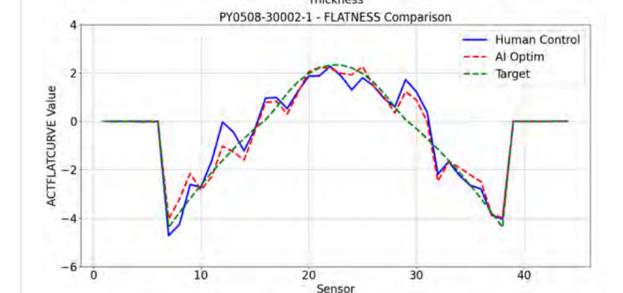
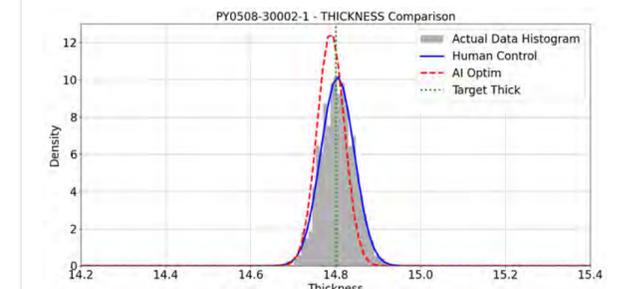


SAMA

- Work standard optimization to improve aluminum foil quality

ArgMax Actual Test Result

Work standard range	60% ↓
Thickness error	as-is
Flatness error	3% ↓



ArgMax® Success Cases

Process & scheduling optimizations



Slitter Throughput Optimization

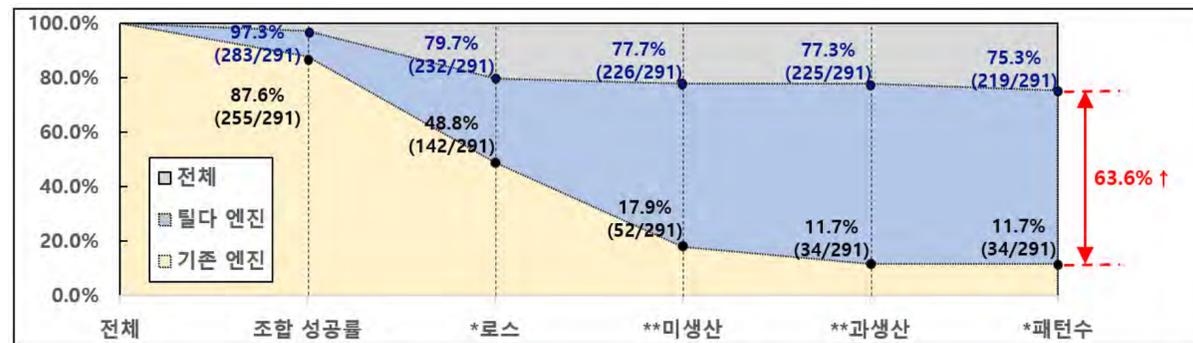


Hansol
한솔제지

- Order allocation optimization to reduce facility interruption rate and trim loss

ArgMax Actual Test Result

Interruption rate	29.4% ↓
Trim loss	23.4% ↓
Over & underproduction	100% ↓



Commodity Purchase Optimization

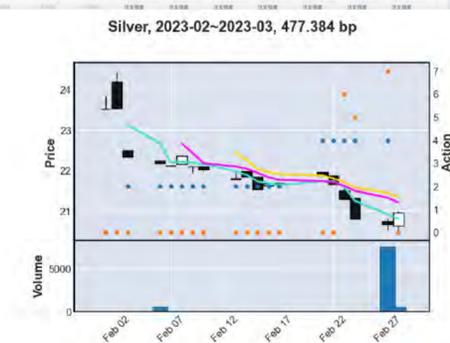
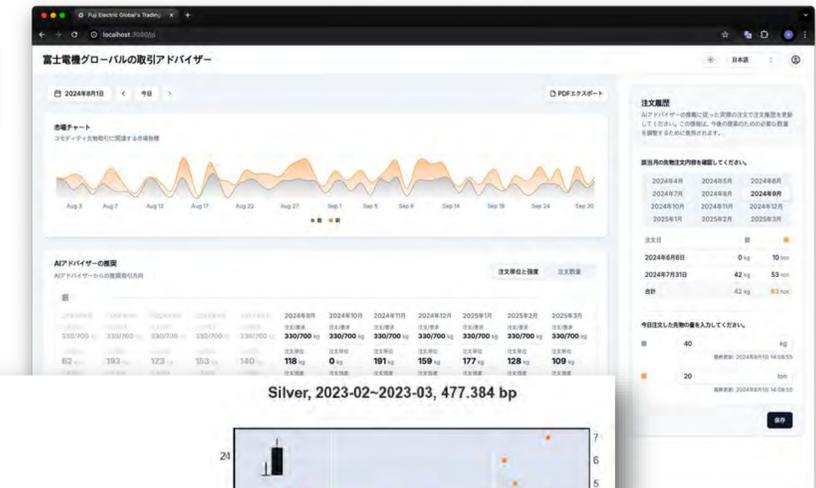


Fuji Electric
Innovating Energy Technology

- Ag & Cu purchase plan optimization to reduce cost

ArgMax Simulation Result

Performance 2.5% ↑



ArgMax® Success Cases

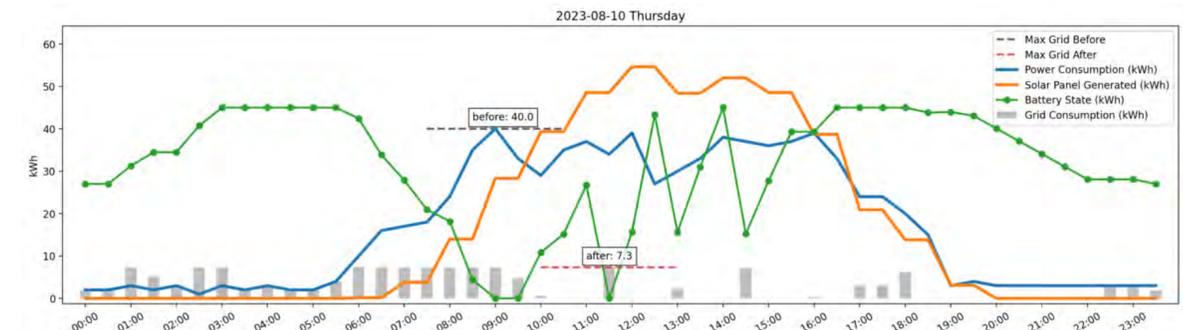
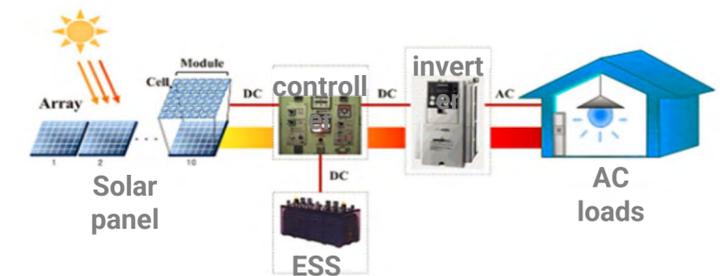
Optimal quotation & operation of self-consumption solar system



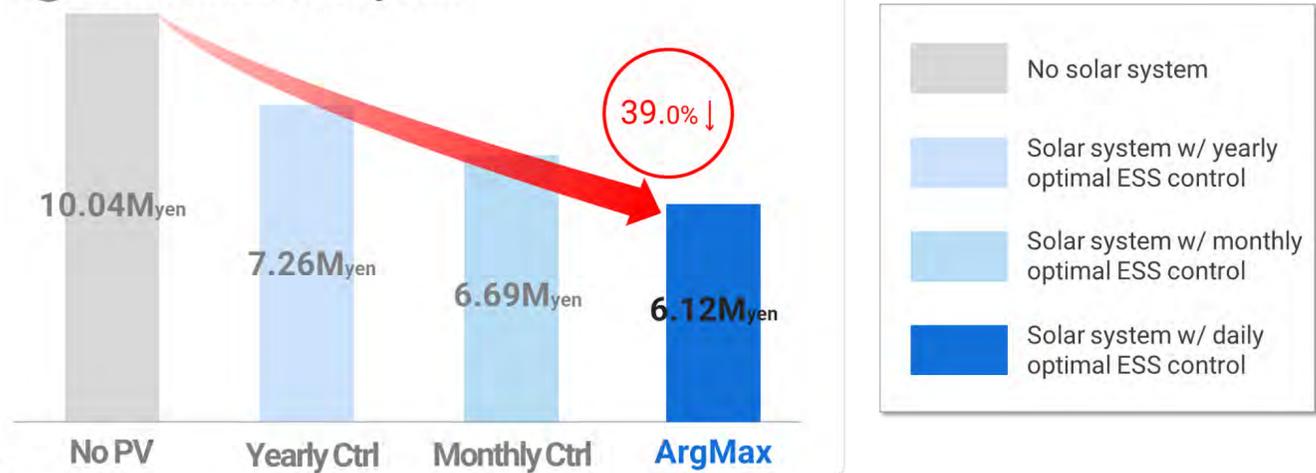
SolarSystemPlan&Control Optimization



- Japanese solar PV system market is changing from electricity sales to self-consumption purpose
- Consumer companies need the minimal system with optimal operations to reduce setup cost and electricity expenses
- EPCs require rapid quotes that they can present to their customers with clear and understandable justifications



Annual electricity bill



Growth Plan

Sales projection with region-wise & domain-wise SaaS expansion



Customer Feedback

“Not just a solution provider, but we want Tilda to be a business partner for our digital transformation.”

Custom
SaaS

\$230K

\$230K

\$500K

\$1.2M

\$7.7M

\$14M

2021

2022

2023

2024

2025

2026

2027



AI Championship (3rd)

Bigdata Startup (1st)

AI Testbed Korea (2nd)

Startup Solution Platform (2nd)

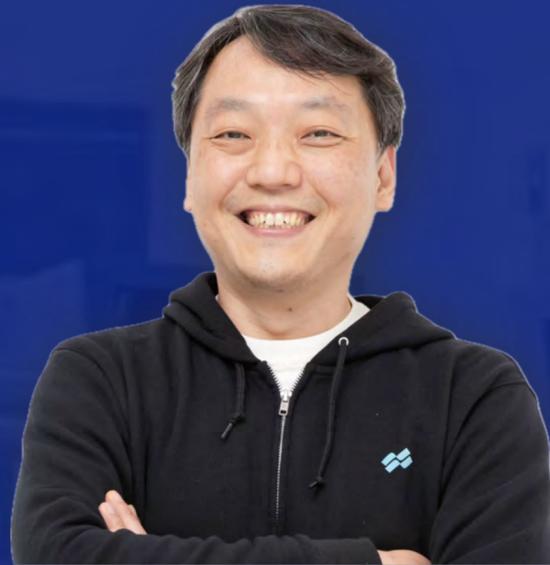
Best Startup (Woori bank)

Best Startup (D-Camp, June)

Team Tilda



Tilda



Ji-Ryang Chung, CEO

Work experience

- Tilda Corp. (2021-), Founder & CEO
- Minds&Company (2019-2020), AI adoption consulting firm, Partner
- Samsung Mobile (2011-2018), Principal engineer & Part leader

Education

- Texas A&M University (2004-2011), Computer Science (AI), PhD
- Seoul National University (1995-2004), Computer Science, BS

Team Leaders

Sang Hyun Lee
SaaS ML Team



Experience
Manager @ Minds&Company

Min Jun Kim
PoC/Production ML Team



Experience
Engineer @ NotaAI

Members



20

Engineers - 17

Backoffice - 2
Global Sales (JPN) - 1

Investors



Collaborators, Advisors



The Team: who we are, what we do!
**We maximize efficiency, to impact
both our future and society's**

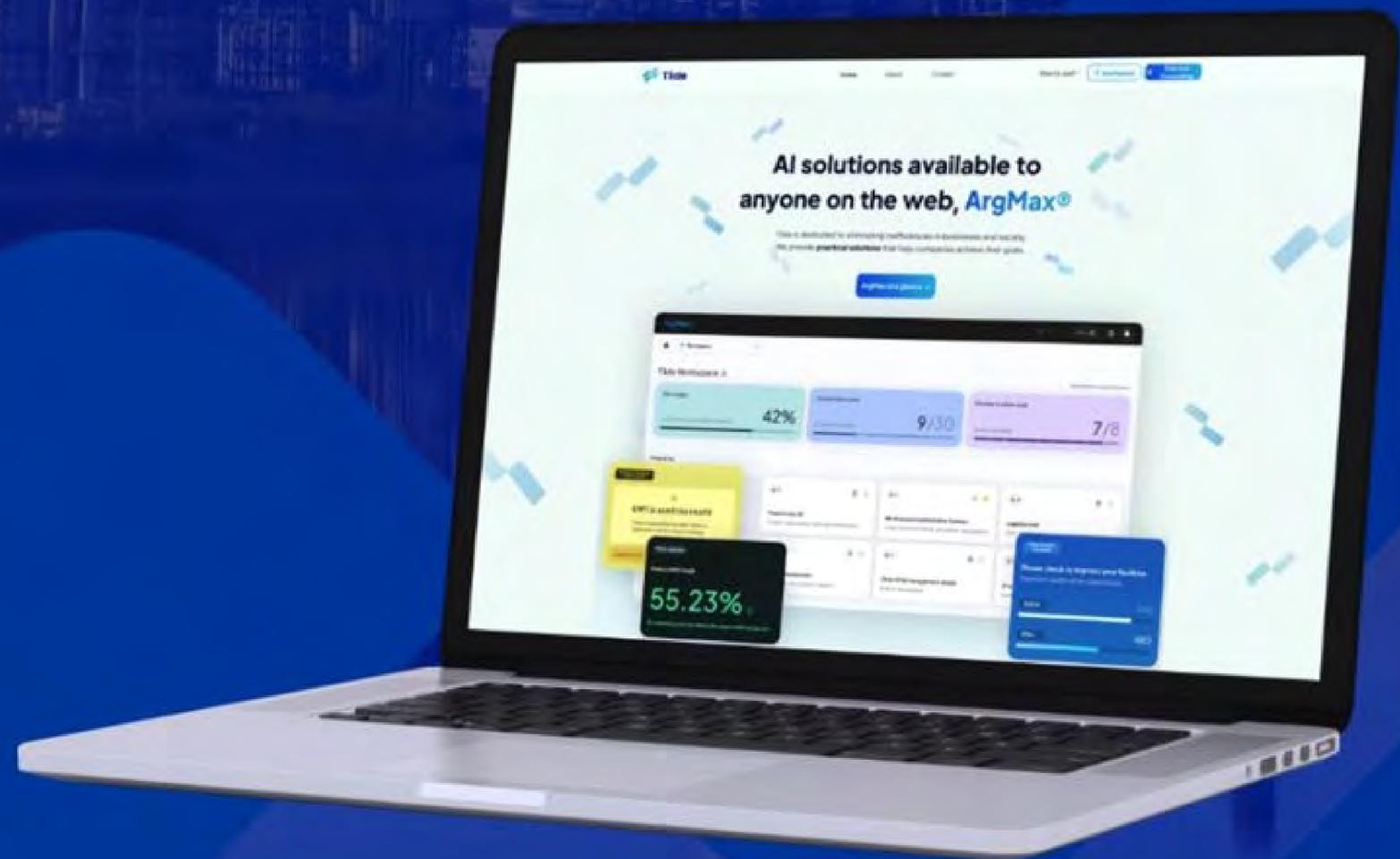


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