

Online control type total chemical dosing system(CCK)

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Abstract

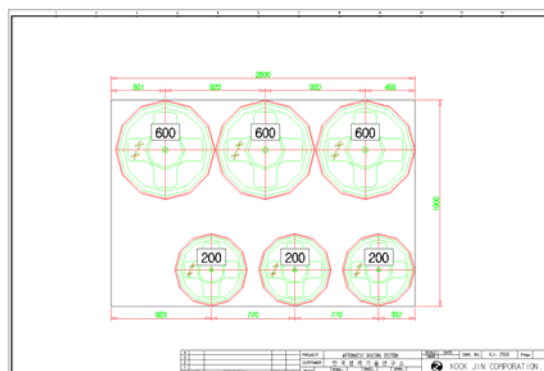
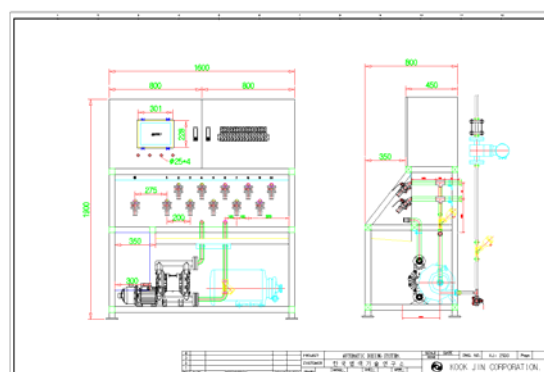
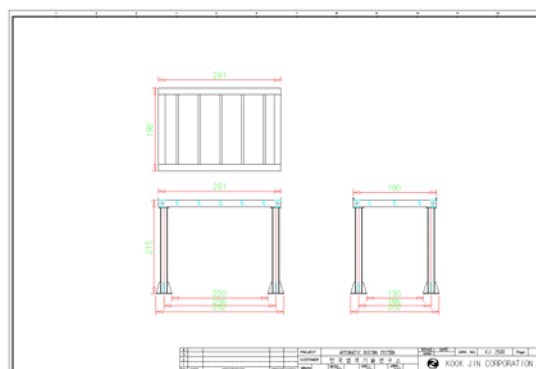
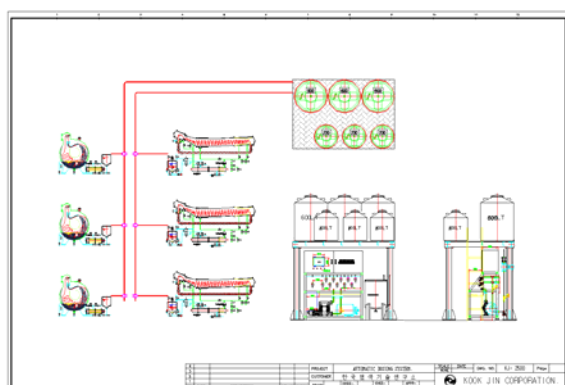
The trouble with small & medium dyeing company is balance and transfer of the chemical by man. And due to manual operation occur various environmental issues, and harmful elements in the human body. And the price of imported equipment (CCK) is very high. To solve these problems, this equipment was developed.

1. INTRODUCTION

Proceed dyeing process when, uses various chemicals. These chemical is most important of a fixed quantity supply. But most of the small & medium dyeing company is balance and transfer of the chemical by man. So, Quantitative supply very hard and difficult to determine the exact requirement of the chemical. In addition, the higher labor intensity of workers and the work environment is very poor. Thereby these various environmental issues and harmful elements in the human body occur. For automation of these operations developed but low price and high performance and remote control available will look out about equipment.

2. PRODUCTION OF EQUIPMENT

2.1 PLAN



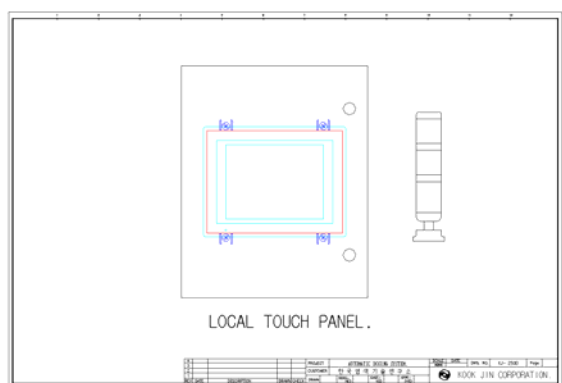


Fig. 1. Plan of chemical dosing system

2.2 EQUIPMENT SPECIFICATIONS

- Measurement : Electro-Magnetic Flow-Meter
- Distribution Valve : 3-Way Ball Valve(SUS316)
- Transferring Method : SUS316 Pump
- Allowance : $\pm 0.2\%$
- Measuring Speed : Max 100Lt/Min
- Transferring Speed : Max 100Lt/Min
- Transferring Pipe : SUS Polishing Pipe
- Pipe Connection : Clamp and parrel Connection
- Storage Method : SUS316 Pump
- Storage Tank : PE or SUS Tank
- Size(20ea) : 3,000mm(W) \times 600mm(D) \times 1,600mm(H)

2.3 EQUIPMENT FEATURES

- Correctness : By the special 3-way ball valve developed under the technical guide from Italy and electronic magnetic flow-meter, all auxiliaries are transferred correctly to the machine, in order of 1)auxiliaries distribution, 2)weighing 3)transferring.
- Fastness : By volumetric flow-meter and pump, weighing, and transferring is rapidly fulfilled at the same time.
- Safety : As there is water inside of pipe is glass-coated, it prevents the scale and also, fulfill continuous operation because the water has the roll of borderline between each auxiliaries.
- Convenience : The operator can use above system, easily and in conveniently by the use of local language and touch screen.
- Easy Repairs : The PC and PLC programs are easily and rapidly repaired because the system is very simple and has his own decision function and is controlled by internet remote control programmer.
- System Communication : It is very easy to communicate OA system.

2.4 EQUIPMENT CONFIGURATION

- Dosing Unit(Storage, balance and transfer device)
- Chemical Storage Tank and Liquid amount sensors
- Chemical Transfer Line
- Computer and total software
- Operation control monitor



Fig. 2. The actuality application

3. CONCLUSION

Table 1. Economic effects

Section	Before	After
Daily output	38,400y	42,000y
Production per man	16,600y	18,200y
Fraction defective	10%	5%
Labor cost	1billion	900million
Material cost	180million	150million

*Standard : 12ea Dyeing Machine, 60 workers, Monthly production 1,000,000yds

Table 2. Environmental effects

Section	Before	After
Total dust(TSP)	22,000 $\mu\text{g}/\text{m}^3$	Below300 $\mu\text{g}/\text{m}^3$
Below 10 μm dust	800 $\mu\text{g}/\text{m}^3$	Below150 $\mu\text{g}/\text{m}^3$
Formaldehyde	Over15ppm	Below15ppm
Alcohol type	Over87ppm	Below87ppm
Solution time	2hr	0hr

4. REFERENCES

- [1] CH. S. Kim, Y. G. Hong, and G. S. Bae; *J. Korean Soc. Dyers Finishers*, 13(6), 39-46(2001).