

# STRATEGY OF ENERGY SAVING AND FINDING NEW ENERGY RESOURCES FOR SUSTAINABILITY INNOVATION

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- **Achievements of POLYCO GROUP - OMEGA Institute**
- **Changing Method in Training for Employees**
- **Some results of applying energy saving and finding new energy resources for sustainability innovation**



Director of Institute of Science Technology & Training Omega

*Prof. Dr. Dinh Van Nha*

Date of birth: 8 August, 1948

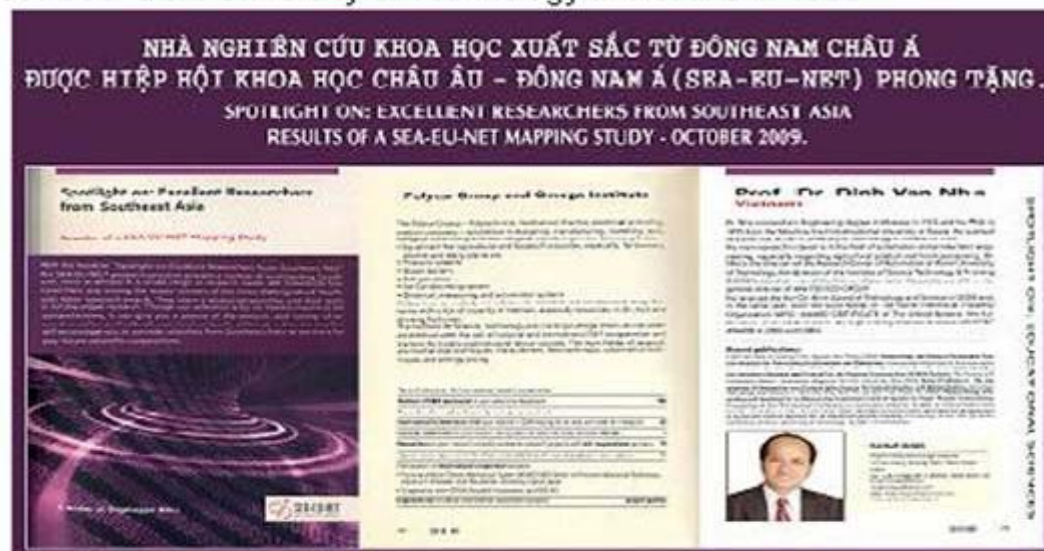
Place of birth: Nghe An province

Nationality: Vietnam

University degree: Moscow Engineering Constructional University in 1972

Doctor: 1975 in Moscow, Prof. Dr 1992

Post Doc: Delft University of Technology in Holland in 1985





Research areas: Automatic Control, Control Design

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## ***Positions Hold and Memberships***

- Director of the Research Center of Automation of Hanoi University of Technology (HUT) - Vietnam Ministry of Education and Training
- Director of Institute of Science Technology & Training OMEGA
- Vice General Director of POLYCO- GROUP
- Vice Chairman/Vice General Secretary of Viet Nam Automation Association.
- Member of Central Committee, Director of Vietnam Technology Renovation of Vietnam Association of Corporate Directors (VACD Association).
- Member of Central Committee of Vietnam Constructional Association
- Lecturer of Automatic Control department (HUT) since 15 June. 1976





POLYCO GROUP

*Chúc mừng năm mới*



SABECO HANOI

*Xuân  
Tân  
Mão  
2011*



**CÔNG TY CƠ NHIỆT ĐIỆN LẠNH BÁCH KHOA POLYCO**

Địa chỉ: Khu Công nghiệp Từ Liêm - Hà Nội

**CÔNG TY CỔ PHẦN BIA SÀI GÒN - HÀ NỘI**

Địa chỉ: Khu Công nghiệp Từ Liêm - Hà Nội





ISO: 9001 - 2000

# TẬP ĐOÀN POLYCO

## POLYCO GROUP



Chúc  
Mừng  
Năm  
Mới  
2010

Tập đoàn POLYCO chuyên thiết kế, chế tạo, cung cấp, lắp đặt, tư vấn kỹ thuật và chuyển giao công nghệ thuộc các lĩnh vực chuyên ngành sau:

- Hệ thống thiết bị cho ngành công nghiệp chế biến nông sản thực phẩm
- Các nhà máy sản xuất bia, cồn, rượu, sữa...
- Thiết bị áp lực.
- Lò hơi.
- Máy lạnh.
- Hệ thống Điều hòa không khí.
- Hệ thống Điện đo lường và Tự động hóa.

### NHỮNG THÀNH TỰU NỔI BẬT CỦA POLYCO:

- Giải thưởng Hồ Chí Minh về Khoa học và Công nghệ (2005)
- Huân chương Lao động hạng Ba.
- Giải thưởng và Huy chương Vàng của Tổ chức Sở Hữu Trí Tuệ Thế giới (WIPO) dành cho công trình KHCN xuất sắc nhất (2004)
- Hai giải nhất Giải thưởng "Sáng tạo Khoa học công nghệ Việt Nam" VIFOTEC (2000-2004).

### CÔNG TY CƠ NHỊT ĐIỆN LẠNH BÁCH KHOA

POLYTECHNICAL MECHANICAL, THERMAL, ELECTRICAL AND REFRIGERATION ENGINEERING CO., LTD

Địa chỉ: 24 Đại Cồ Việt, Hai Bà Trưng, Hà Nội

Email: polyco@ipt.vn; Website: <http://www.polyco.com.vn>

#### NHÀ MÁY CHẾ TẠO THIẾT BỊ NHỊT LẠNH VÀ THỰC PHẨM I

Địa chỉ: KCN Vĩnh Tuy, Q. Hoàng Mai, TP. Hà Nội.  
ĐT: 84.4.38217780/7781 / 7 7 8 2 • Fax: 84.4.39742385

#### NHÀ MÁY CHẾ TẠO THIẾT BỊ NHỊT LẠNH VÀ THỰC PHẨM II

Địa chỉ: Khu Công nghiệp Từ Liêm, TP. Hà Nội



WORLD INTELLECTUAL PROPERTY ORGANIZATION

## WIPO AWARD CERTIFICATE

VIETNAM NATIONAL AWARD FOR SCIENTIFIC AND  
TECHNOLOGICAL CREATIONS  
(Hanoi, March 2005)

On the occasion of the Scientific and Technological Innovations Awards  
Organized by the Center for Promotion of Invention and Innovation (CPIII)  
In cooperation with Ministry of Science and Technology, the Ministry of Industry,  
the Ministry of Agriculture and Rural Development, the Ministry of Education  
and Training and other government agencies and organizations and  
on recommendation of the National Examination Council  
of the of Vietnam Scientific and Technological Awards

The WIPO Award for the best invention  
is hereby awarded to:

*Prof. Dr. Dinh Van Nha, Eng. Mai Kien Lien*  
*Prof. Dr. Dinh Van Thuan*

For the invention of: "Research, design and manufacture of equipments for producing line  
of drinking Vanghau beer, etc"



Geneva and Hanoi  
March 2005

*Kenji Hirai*  
Director General  
(WIPO)



***Prof.Dr Dinh Van Nha: “Some results of saving energy and finding new energy resources for sustainability innovation” March 2-4, 2011, Hanoi Vietnam***

## Some results of applying energy saving and finding new energy resources for sustainability innovation (1)

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**Abstract:** This talk presents some achievements of POLYCO Group - OMEGA Institute and some results of applying energy saving and finding new energy resources for sustainability innovation.

It has always focused on chosen business and rapidly grown with significant achievements over the past 17 years. Nowadays, it is one of the leaders in Vietnam in the fields of designing, manufacturing, installing thermal and refrigeration equipment and food processing plant for beverage and milk companies. Scientific ideas and technological creations have helped us updating and investigating new techniques, applying high technology, promoting high level of knowledge and Vietnam creation internal force, and bringing about scientific achievements as well as high economic effectiveness. We have successfully installed hundreds of plants throughout the country that bring benefit to the State and companies by saving thousands of billions VND in comparison to the investment by importing such products with the same quality.



## **Some results of applying energy saving and finding new energy resources for sustainability innovation (2)**

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Due to the important and the urgent need of applying energy saving in industrial plants, we have recently been developed and provided solutions for energy saving in brewery plants. Such solutions include: electrical consumption saving system in brewery plants; energy saving system that collects thermal steam generated from Houblon brewing to reduce the total amount of steam used in the plant; steam system for burning Metal gas generated from waste water processing system to additionally supply steam for the plant; carbon dioxide recovery system. During the period 2005-2009, we have successfully applied 14 energy saving projects for Beer companies in Vietnam. Finding new energy resources for sustainability innovation is also a critical issue not only for Vietnam since the traditional energy resources are becoming rare. As a solution to this issue, a new cooking gas system has been developed and introduced by Prof. Dr. Tran Binh. This cooking system uses gas which is generated by burning biomass and clean coal and thus has many advantages in order to save energy and protect environment.

## **Some results of applying energy saving and finding new energy resources for sustainability innovation (4)**

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- POLYCO has reached the first ranking award of „The Vietnam scientific and technological creations“ two times (VIFOTEC 2000 and 2004), Award and Golden Medal of World Intellectual Property Organization of UN (WIPO) for the best invention - Hanoi 2005.
- Prof. Dr. Dinh Van Nha has been named in the list of „Spotlight on: Excellent Researchers from Southeast Asia“ presented by EU-SEA NET at the second International Conference (EU-SEA NET), Bogor, Indonesia, 11/2009.
- Ho Chi Minh Award on Vietnam Science Technology in 2005 .


## 17 YEARS OF ACHIEVEMENTS POLYCO GROUP - OMEGA



Polyco Group has now 17-year experience in the field of thermal, mechanical, electrical engineering and refrigeration since established (05.05.1995) with full of challenges. POLYCO Group is getting stronger, that confirms their chosen professions is right, and the correctness of training method for officials and employees which are constantly until now. The approaches are as following: learning new technologies, update the advanced scientific knowledge in the world, and always explore problems consciously, do research and work creatively. To overcome the difficulties of mechanical engineering, along with production, the company focused on the market development in order to meet the requirements of businesses and customers. We invested modern equipments machine cutting tools, hydraulic machine, air-cap machine for strokes, plasma welder generator, welding equipment automatically Plasma - Tig, poly sprayer - urethan... which are made in EU.



## 17 YEARS OF ACHIEVEMENTS POLYCO GROUP - OMEGA



POLYCO Group has created a reputation and credibility with customers in Vietnam and abroad in the field of Food and Beverages with more than 300 projects (many of that are EPC) ... Nowadays, the Group has enlarged with 09 member companies, 03 research institutes and universities, 14 associate companies. We have installed successfully hundreds of technological devices with international standards. With 17 years experience building and development, up to date, the Group POLYCO become reliable strategic partner of hundreds of well-known corporations such as the Krones, KHS, Siemens, VN Association of Beer - Alcohol - Beverage, Saigon Joint Stock Corporation Beer - Alcohol - Beverage, Hanoi development Investment Corporation and Trade Import Export Vietnam Hanoi, Vietnam Dairy Products Joint Stock Company (Vinamilk) and many companies in the field Food & Beverage ...

## 17 YEARS OF ACHIEVEMENTS POLYCO GROUP - OMEGA



With the massive work meet international standards, POLYCO Group is now a leading company of Vietnam in the fields of design, manufacture, supply materials, equipment, installation, technical consultation, transfer technology in a turnkey mode which got benefit of thousands of billion VND for the State and enterprises with Foreign equivalent in quality. The growth of the POLYCO through each work shows the power of an international company with professional staffs, modern equipments, utilize internal sources of knowledge and innovate new technologies quickly. Taking advantage of that, the POLYCO Group continues in future with practical criteria such as creatively exploration, developing internal resources, equipment innovation, improvement skill of employees ... Goal is to increase annual sales from 20 to 25%, income per capital increased from 15 to 20%.

## 17 YEARS OF ACHIEVEMENTS POLYCO GROUP - OMEGA



To be successful today, the Group POLYCO-OMEGA is particularly interested in human resources, recruitment of technical staff, and skilled workers.

The employees of POLYCO Group are engineers, the best students of the university, experts in the country. There are people that work here as a contest, each day is an idea, create a new, struggling to grow, to conquer the heights of science. With the rigorous recruitment, the staffs must have a high level of technical capability and skill, to meet the most demanding customers' requirements.

Leadership POLYCO always aware of having talent but I know how to use and develop their strengths, thus creating a favorable work environment, every individual has the opportunity to develop their abilities, regular access to new technologies, new scientific knowledge of the world, working in the management according to ISO 9001-2000, is chair and participate in research and application of many scientific and technology at all levels ...



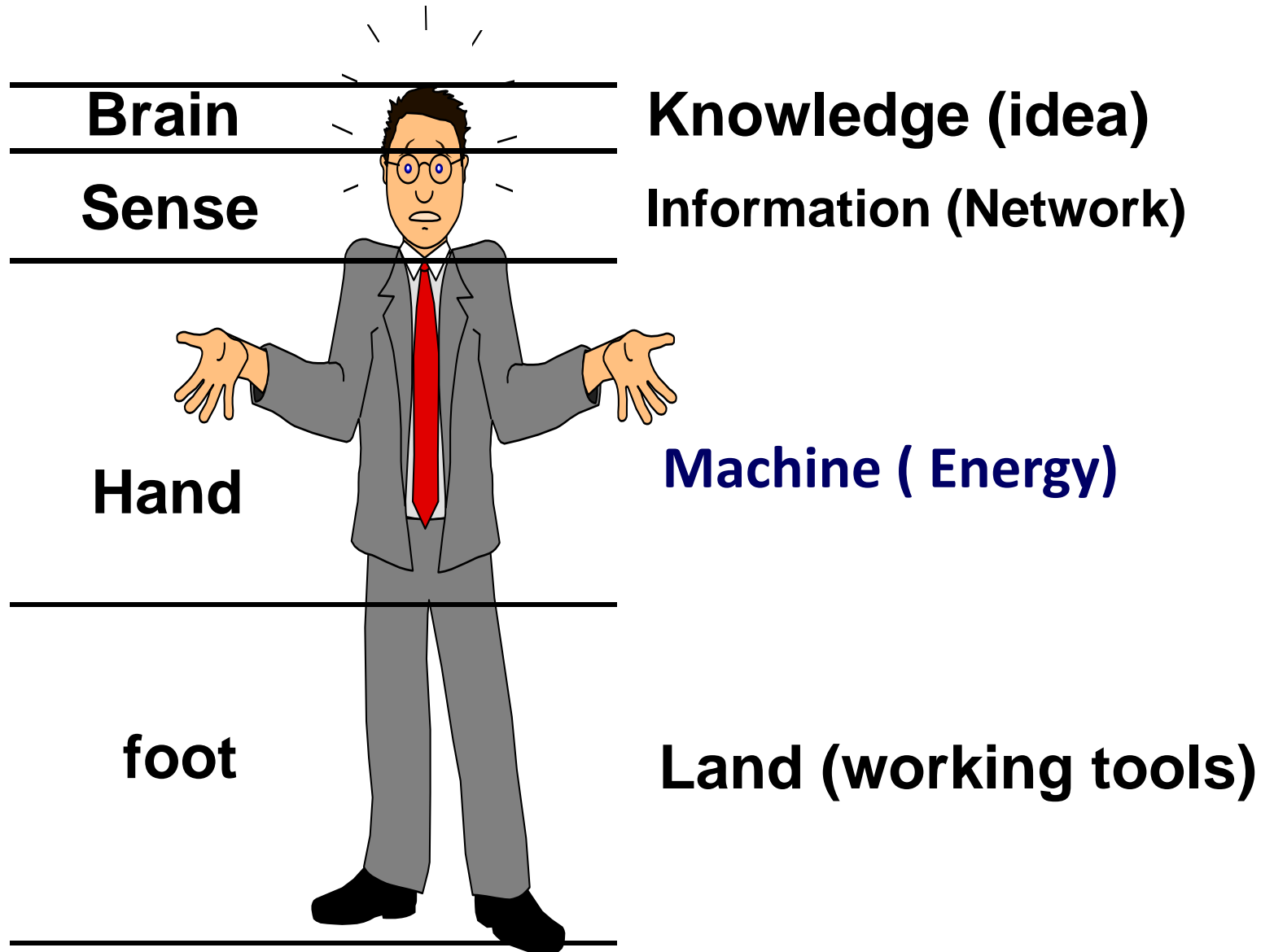
## 17 YEARS OF ACHIEVEMENTS POLYCO GROUP - OMEGA



With the new graduate student, our company must complete the "Phase 2" in the training process, which is to help students access to practical, proven systems and the knowledge they have learned. We remove the distance of the basic theory to reality. We can train an entire skeleton from management to operational and technical, technological mastery of a variety of plants of modern food processing (including the team of engineers Food Chemistry, Mechanical Engineering, Automation, Measurement and automatic-control ...), from workers to a Technical Director, Polycos can complete a food processing plant under way general contractor, turnkey, which means we can take from design, construction, operation and maintenance stages until the entire plant. With experience, ability to work effectively with the guideline of "Quality, industrial arts and modern technology" with the word "Faith" in the business, Polycos-Omega Group will continue to rise to reach new heights with the works of modern science, contributing significantly to the development of industrialization and modernization of the country.

## Renewal forms of training and human resources.

### The development of the world



## Renewal forms of training and human resources.

### Other important trends



Thế giới  
ngày nay

**TỐC ĐỘ**

Walt Disney cứ

5 phút công bố một  
sản phẩm mới

Sony mỗi giờ xuất  
xưởng 3 sản phẩm  
mới

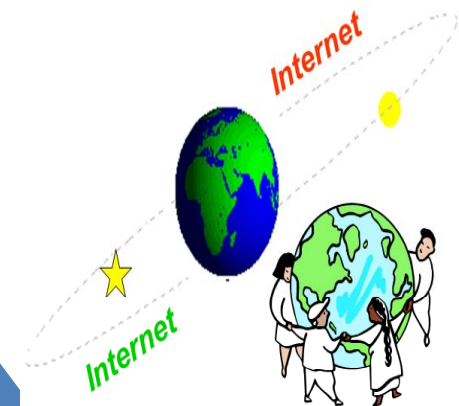
Nguồn:  
[http://www.augere.es/foun/inicio/agenda/34.asp?id\\_pagina=34&categoria=&id\\_agenda=](http://www.augere.es/foun/inicio/agenda/34.asp?id_pagina=34&categoria=&id_agenda=)

Changing  
business  
practices

trend

Integratio  
n and  
globalizati  
on

Development of  
information  
technology



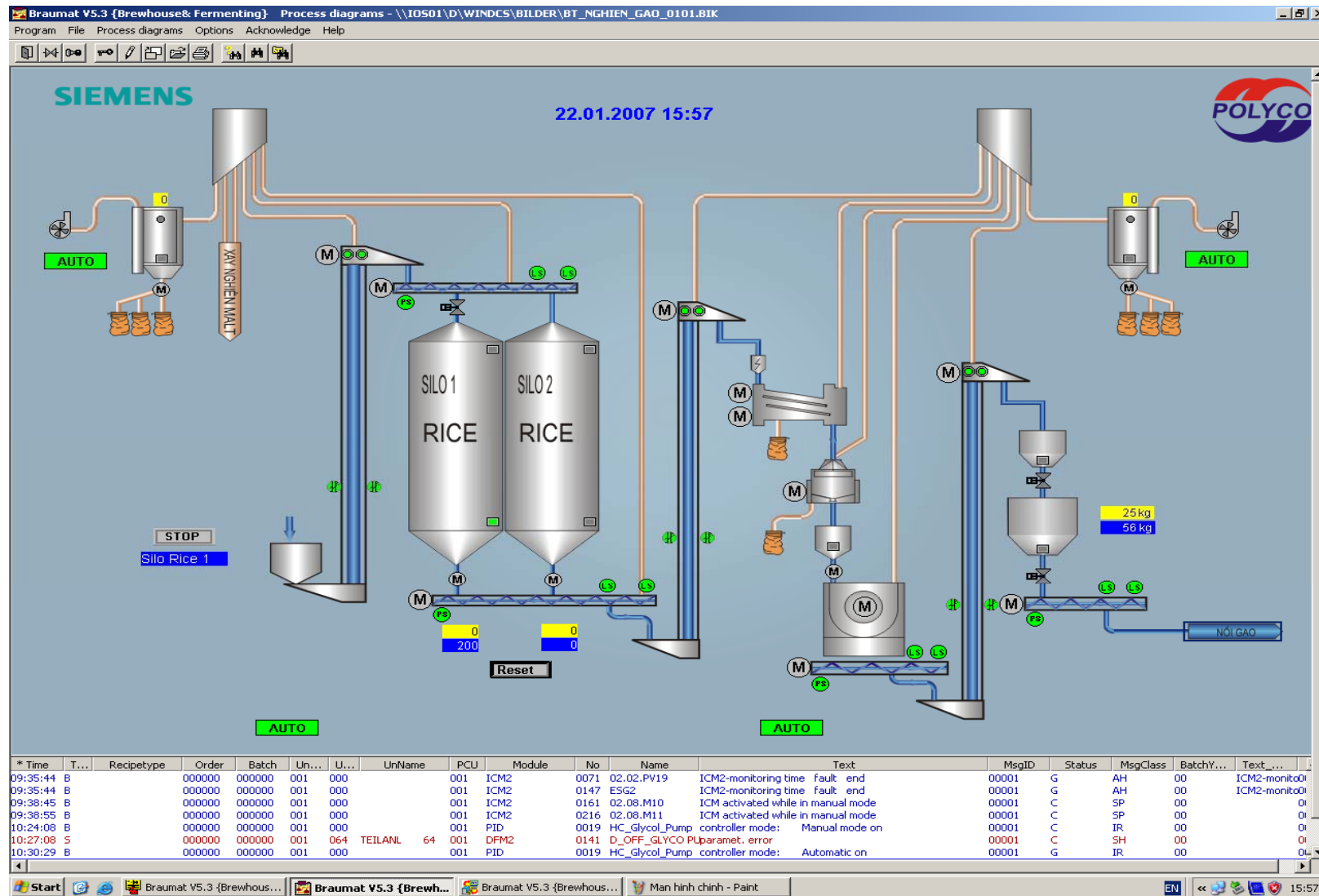


## Renewal forms of training and human resources.

### Change or **die**

<b>Vision</b>	<b>skills</b>	Promotion	Resources	Action Plan	=	<b>Change</b>
	<b>skills</b>	Promotion	Resources	Action Plan	=	<b>Chaos</b>
<b>Vision</b>		Promotion	Resources	Action Plan	-	<b>Anxiety</b>
<b>Vision</b>	<b>skills</b>		Resources	Action Plan	=	<b>Refusal</b>
<b>Vision</b>	<b>skills</b>	Promotion		Action Plan	=	<b>disappointed</b>
<b>Vision</b>	<b>skills</b>	Promotion	Resources		=	<b>Dream</b>

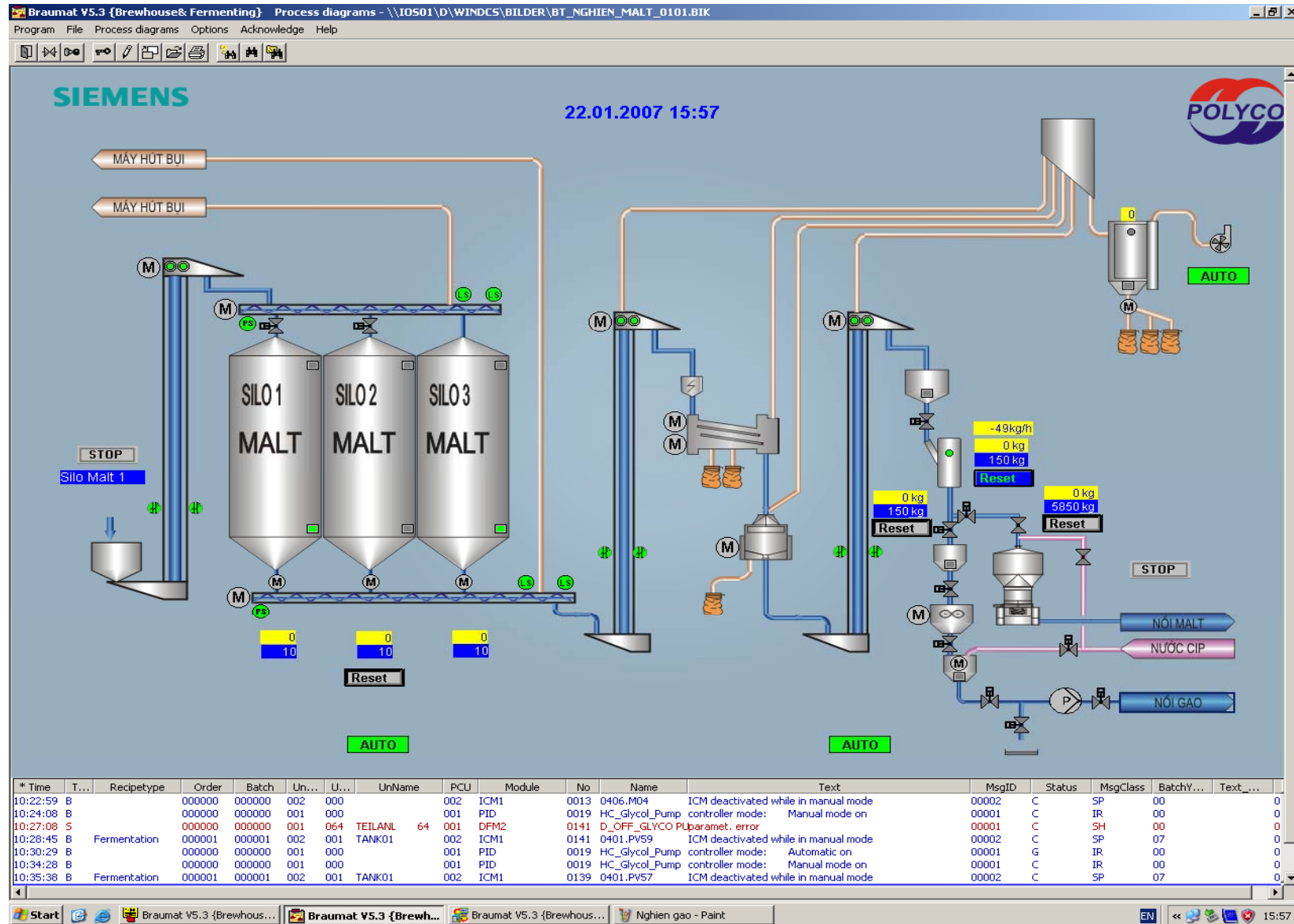
# Some Using Save Energy of Our Designing DCS, SCADA Systems : RAW MATERIALS PROCESSING



polyco@fpt.vn

## RICE MILLING SYSTEM

# RAW MATERIALS PROCESSING

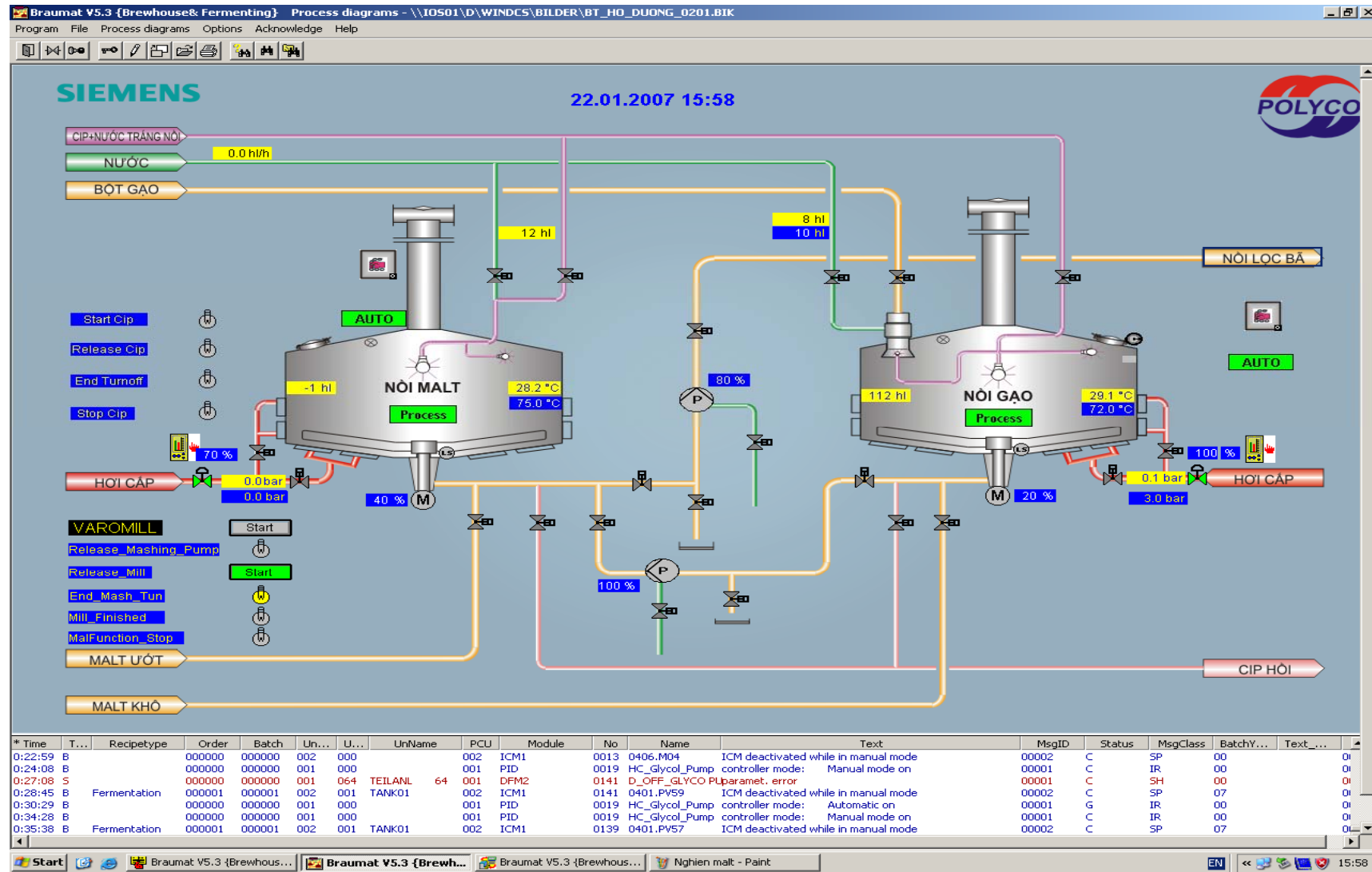


polyco@fpt.vn

Malt MILLING SYSTEM



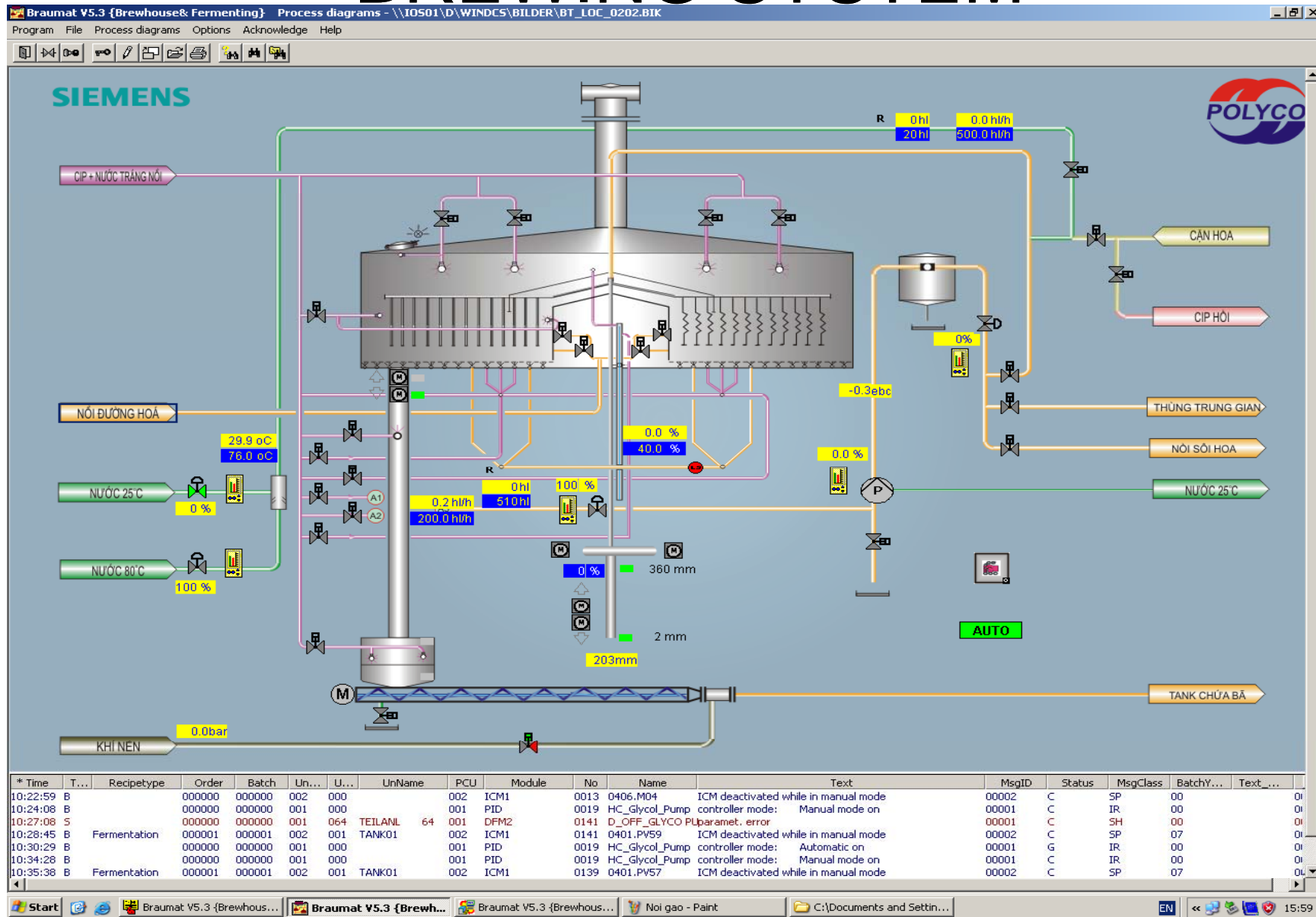
# BREWING SYSTEM



polyco@fpt.vn

RICE TANK AND MALT TANK

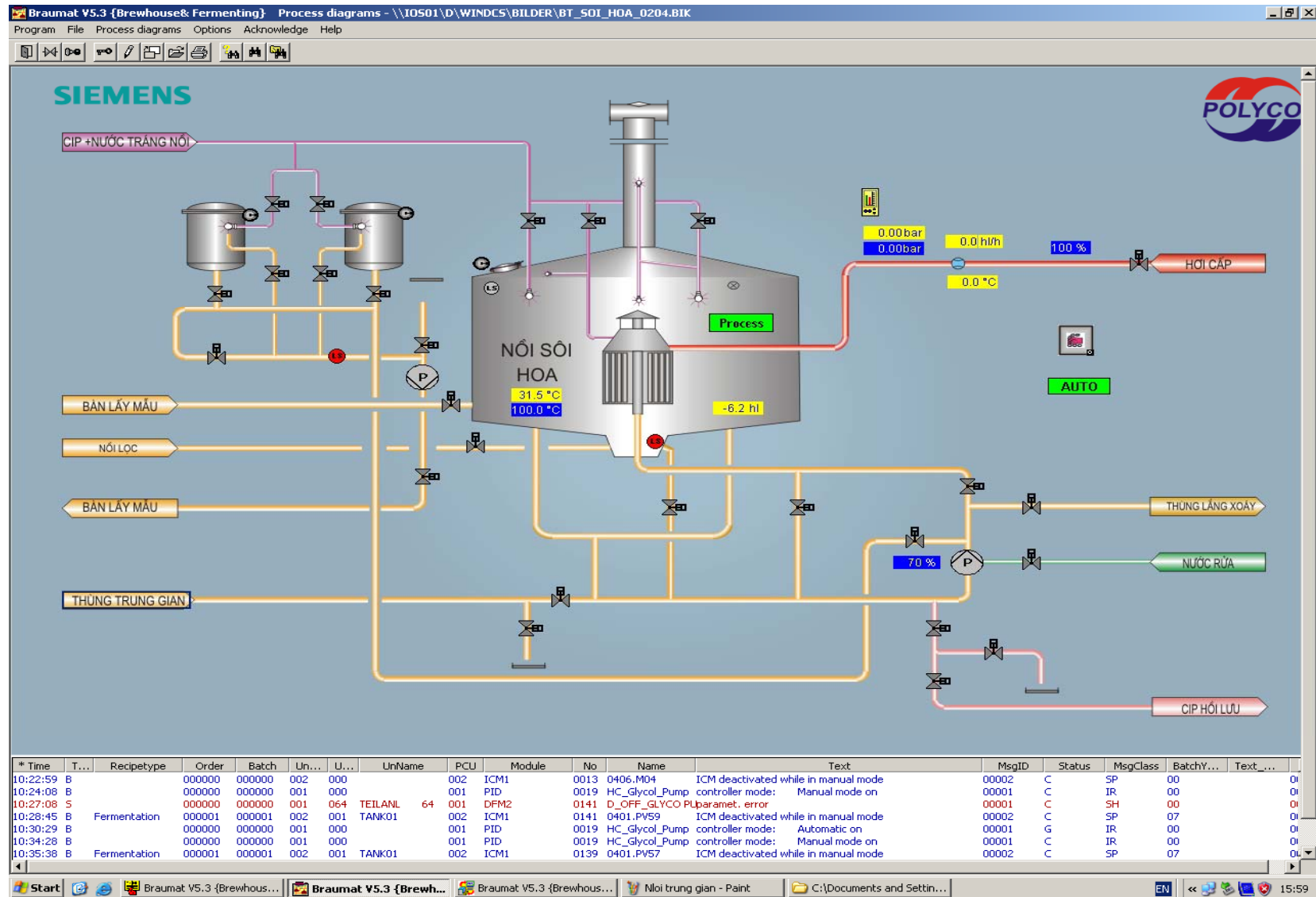
# BREWING SYSTEM



polyco@fpt.vn

FILTRATION TANK

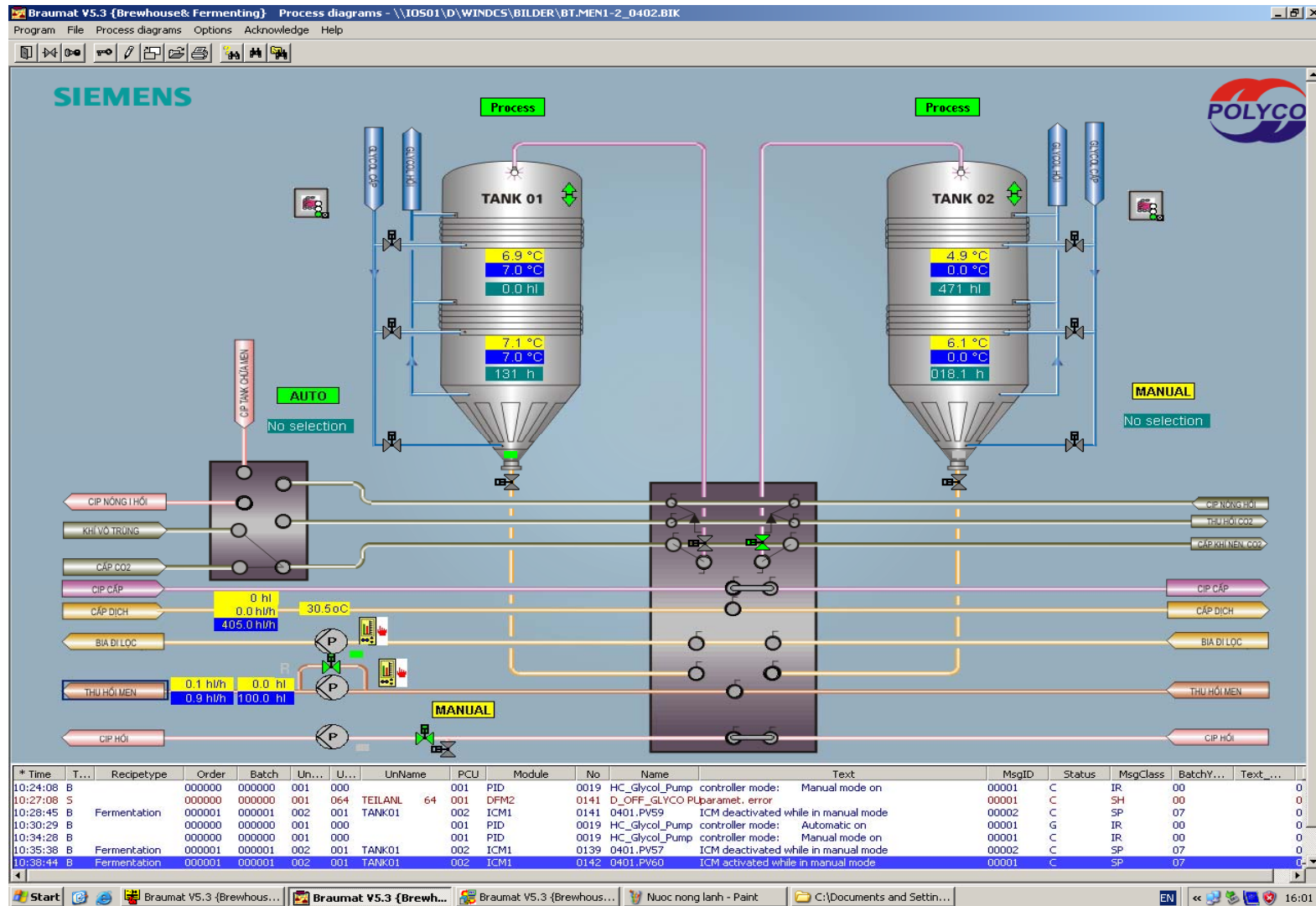
# BREWING SYSTEM



polyco@fpt.vn

HOUBLON TANK

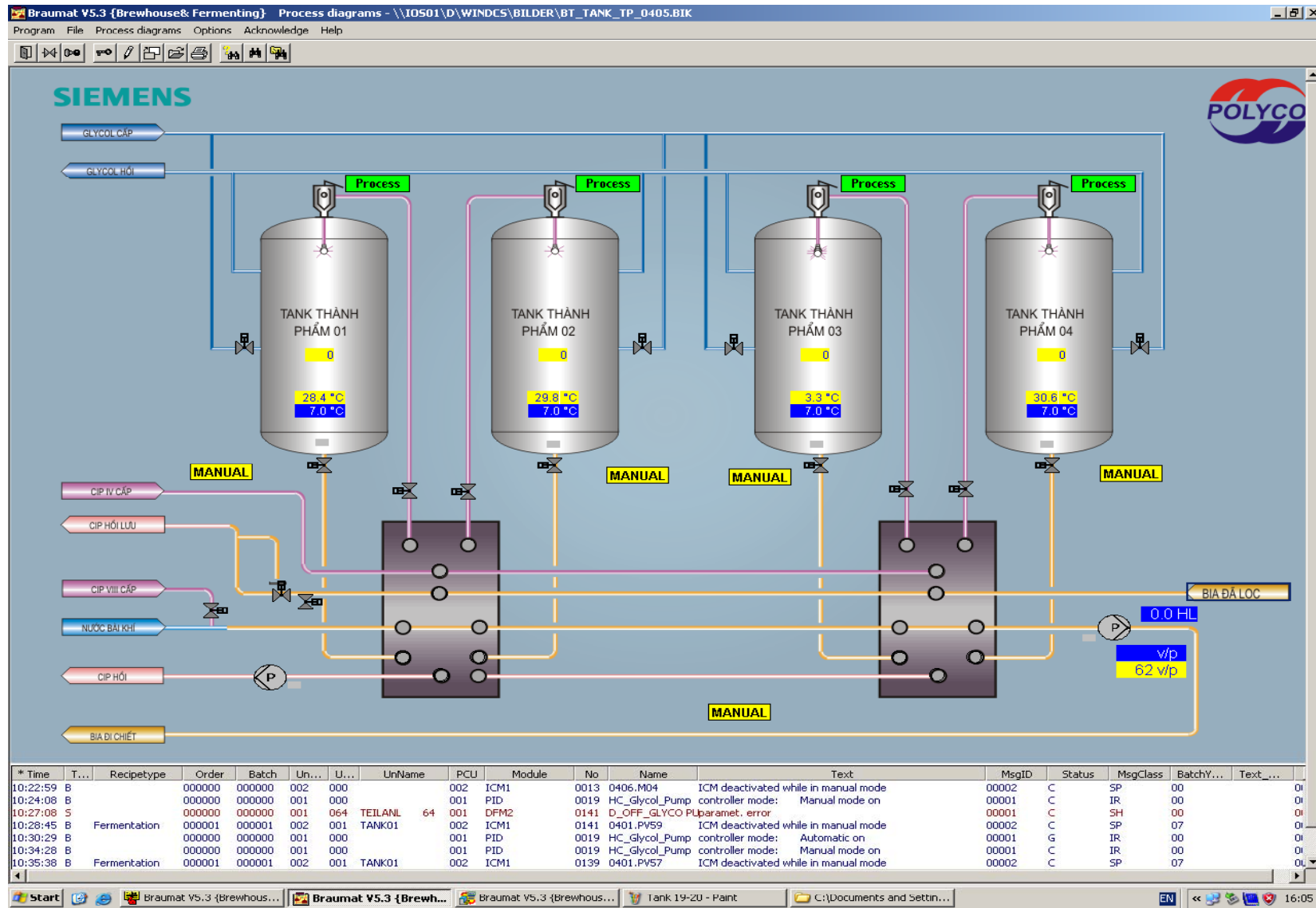
# FERMENTATION TANKS



polyco@fpt.vn

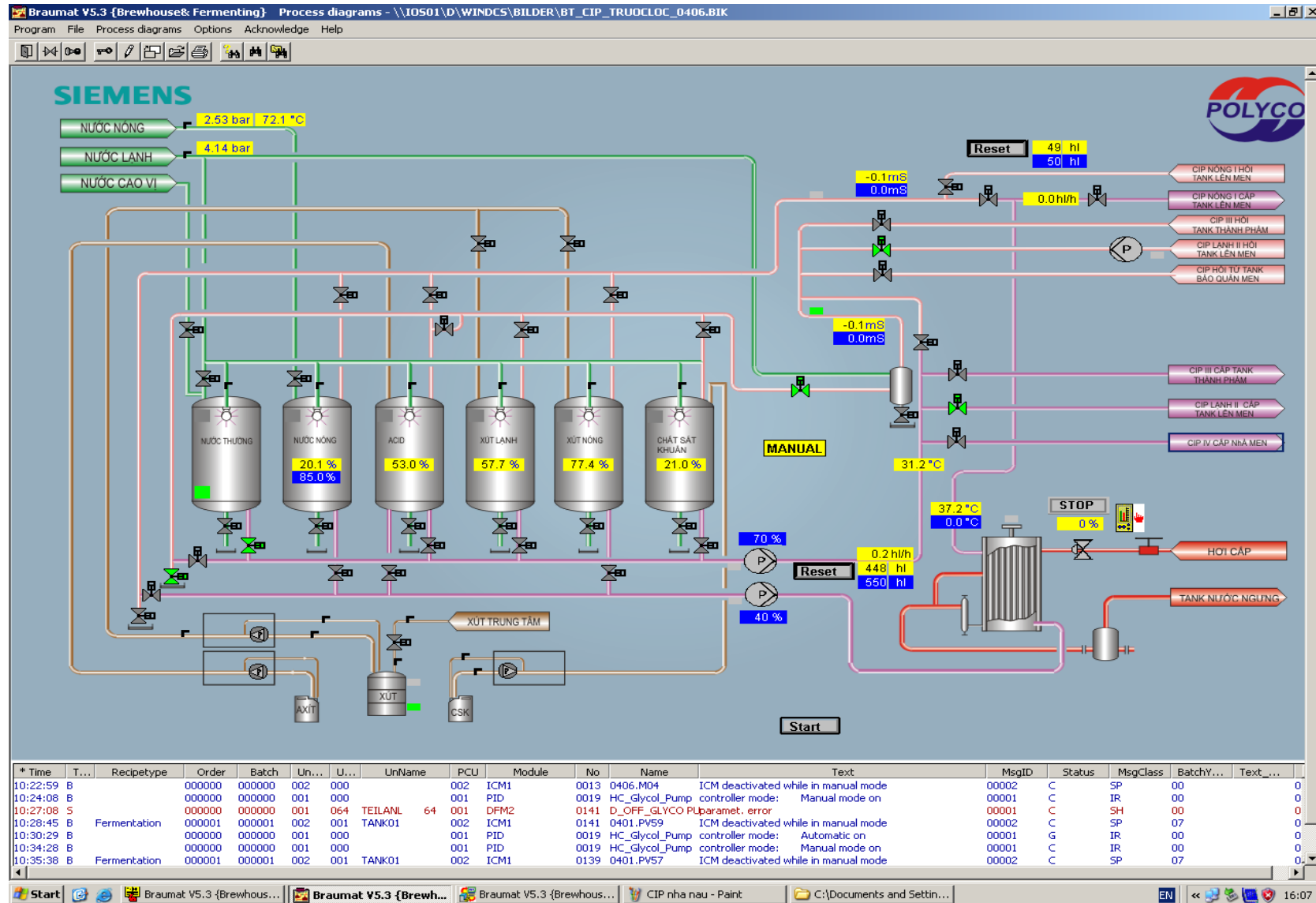
Tank 1 AND 2

# PRODUCT TANKS





# CIP SYSTEM



polyco@fpt.vn

**CIP BEFORE FILTRATION –**  
**CIP For Fermentation and product tanks**



**GIẢI THƯỞNG SÁNG TẠO KHOA HỌC CÔNG NGHỆ VIỆT NAM NĂM 2000, 2004**

**GIẢI THƯỞNG HUY CHƯƠNG VÀNG CỦA TỔ CHỨC SỞ HỮU TRÍ TUỆ - WIPO**

**DÀNH CHO CÔNG TRÌNH SÁNG TẠO KHCN XUẤT SẮC NHẤT VIỆT NAM NĂM 2004**

**(LĨNH VỰC CƠ KHÍ - TỰ ĐỘNG HOÁ)**



Yogurt Plant for  
VINAMILK Project

[polyco@fpt.vn](mailto:polyco@fpt.vn)



**GIẢI THƯỞNG SÁNG TẠO KHOA HỌC CÔNG NGHỆ VIỆT NAM NĂM 2000, 2004**  
**GIẢI THƯỞNG HUY CHƯƠNG VÀNG CỦA TỔ CHỨC SỞ HỮU TRÍ TUỆ - WIPO**  
**DÀNH CHO CÔNG TRÌNH SÁNG TẠO KHCN XUẤT SẮC NHẤT VIỆT NAM NĂM 2004**  
**(LĨNH VỰC CƠ KHÍ - TỰ ĐỘNG HOÁ)**



Với tiêu chí “Chất lượng, Mỹ Thuật Công Nghiệp và Công Nghệ Hiện Đại”, Tập đoàn POLYCO luôn giữ vững vị trí đứng đầu trong lĩnh vực thiết kế, chế tạo và lắp đặt hệ thống thiết bị cơ khí - tự động hoá trong ngành công nghiệp đồ uống và nông sản thực

Our criteria is ‘Quality, industrial fineness and modern technology’. With knowledgeable staff, skillful labor and modern equipments, POLYCO will maintain its leading position in the field of designing, manufacturing and installing mechanical-automatic systems in beverage and food-processing industries.





# Some results of finding of new energy resources





ISO 9001:2000

## LIST OF PROJECTS WHICH APPLIED ENERGY SAVING SOLUTIONS

No.	Period	Content	Investor	Evaluation	
1	2005 - 2006	<i>"The design, equipment supply and installation of the brewery Saigon Daklak, capacity 25 million liters per year"</i> - Using the inverter system to save energy consumption (devices only operate according to their load)	Company shares Saigon beer Daklak, Buon Ma Thuot, Daklak Province	- 20-25% Electrical energy savings	
2	2006 - 2007	Use the inverter system to save energy consumption (The devices operate only according to their load)	Beer & Co. stock NGK Ha Long - Quang Ninh	Energy saving power 20-25%	
3	2006 - 2007	Use the inverter system to save energy consumption (The devices operate only according to their load)  "The design, complete equipment supply, construction and installation of Saigon Brewery Binh Tay, capacity 120 million liters per year"  - Installation of energy saving systems new thermal evaporation from the United Houblon cooker to reduce the amount of air supplied to the entire plant.	Company stock Saigon Binh Tay - Tan Dong Hiep B Industrial Park, Binh Duong Province	- Tiết kiệm năng lượng điện 20-25% - Tiết kiệm năng lượng hơi 25-30%	
4	2006 - 2007	Use the inverter system to save energy consumption (The devices operate only according to their load)  "The design, complete equipment supply, installation and Saigon Brewery Tay, capacity 25 million liters per year"	Beer Company stock Saigon Tay - Lot 22, 1 Tra Noc Industrial Zone, Q. Binh Thuy, Can Tho City	Energy saving power 20-25%	
5	2006 - 2007	Use the inverter system to save energy consumption (The devices operate only according to their load)  Package 8: "Home cooking - machinery and equipment in the" under "Investment project construction and capacity expansion Huda beer from 50 million liters per year to 100 million liters per year"	Hue Beer Company - Phu Bai Industrial Zone, Thua Thien Hue	Energy saving power 20-25%	





ISO 9001:2000

## LIST OF PROJECTS WHICH APPLIED ENERGY SAVING SOLUTIONS

6	2006 - 2007	<p>Inverter system used to save power consumption under load characteristics.</p> <p>"The design, complete equipment supply, installation and construction of breweries Saigon Hanoi, capacity 90 million liters per year"</p> <ul style="list-style-type: none"> <li>- Use the inverter system to save energy consumption (The devices operate only according to their load)</li> <li>- Installation of energy saving systems new thermal evaporation from the United Houblon cooker to reduce the amount of air supplied to the entire plant.</li> <li>- Installation of flue gas generated from gas metal wastewater treatment system to provide additional steam plant systems.</li> </ul>	<p>Joint Stock Company Hanoi Saigon Beer - A2CN8 small and medium industrial zones in Hanoi, Tu Liem</p>	<p>Energy saving power 20-25% - Save energy slightly 30-35%</p>
7	2007 - 2008	<ul style="list-style-type: none"> <li>- Use the inverter system to save energy consumption (The devices operate only according to their load)</li> </ul> <p>"The design, equipment supply projects designed capacity brewery Daklak Saigon, from a capacity of 25 million liters per year to 70 million liters per year"</p>	<p>Company shares Saigon beer Daklak</p>	<p>Energy saving power 20-25%</p>
8	2007 - 2008	<p>System design home cooking, fermentation tank systems, refrigeration systems, boiler systems, compressed air system - JSC Vietnam Hanoi Beer and Beverages"</p> <p>Using the inverter system to save energy consumption (devices only operate according to their load))</p>	<p>Joint Stock Company Vietnam Hanoi Beer and Beverages.</p> <p>Location: Tien Son industrial zone - Tien Du district - Bac Ninh</p>	<p>Energy saving power 20-25%</p>
9	2007 - 2008	<p>"Design, fabrication and equipment supply capacity from the brewing capacity of 20 million liters per year to 50 million liters per year"</p> <ul style="list-style-type: none"> <li>- Using the inverter system to save energy consumption (devices only operate according to their load)</li> </ul>	<p>Beer Company stock Saigon Quy Nhon - KV5 Tran Quang Dieu Ward, Quy Nhon City, Binh Dinh Province</p>	<p>Energy saving power 20-25%</p>



ISO 9001:2000

## LIST OF PROJECTS WHICH APPLIED ENERGY SAVING SOLUTIONS

10	2007 - 2008	<p>"Design, fabrication, equipment supply plant 25 million liters of beer per year"- Using the inverter system to save energy consumption (devices only operate according to their load)</p> <p>- Use the inverter system to save energy consumption (The devices operate only according to their load))</p>	<p>Joint Stock Company Hanoi Red Beer Hanoi - Vietnam Phu Tho Tri</p>	<p>Energy saving power 20-25%</p>
11	2008 - 2009	<p>"The design, equipment supply and installation of the brewery Saigon Tay capacity from 25 million liters per year to 40 million liters per year"</p> <p>- Use the inverter system to save energy consumption (The devices operate only according to their load)</p>	<p>Beer Company stock Saigon - Tay - Lot 22, 1 Tra Noc Industrial Zone, Q. Binh Thuy, Can Tho City</p>	<p>Energy saving power 20-25%</p>
12	2008 - 2009	<p>"Supply and installation of equipment in the DVA system installation and equipment for projects in Ha Noi Brewery Vung Tau with a capacity of 50 million liters per year capable of expanding to 100 million liters per year"</p> <p>- Use the inverter system to save energy consumption (The devices operate only according to their load)</p>	<p>Beer Joint Stock Company Hanoi Vung Tau - My Xuan A Industrial Zone, Tan Thanh District, Ba Ria Vung Tau</p>	<p>Energy saving power 20-25%</p>
13	2008 - 2009	<p>"Design, fabrication, equipment supply and plant 50 million liters of beer per year"</p> <p>- Use the inverter system to save energy consumption (The devices operate only according to their load)</p> <p>- Installation of energy saving systems new thermal evaporation from the United Houblon cooker to reduce the amount of air supplied to the entire plant.</p>	<p>Beer Corporation Saigon Ly - IZ Thanh Liem district, Ha Nam Province</p>	<p>Energy saving power 20-25% - Save energy gas 30-35%</p>
14	2008 - 2009	<p>Design, fabrication, equipment supply plant 50 million liters of beer per year"</p> <p>- Use the inverter system to save energy consumption (The devices operate only according to their load)</p>	<p>Beer Joint Stock Company Hanoi Nghe An - Nam Cam IZ, Nghie Loc district, Nghe An Province</p>	<p>Energy saving power 20-25%</p>

# Some results of finding of new energy resources



## Non-toxic wood stoves

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However, few people pay attention to the **hazards** of the smoke emissions (mainly carbon monoxide and other toxic gases) as fuel for cooking anything in any kind of lack of oxygen. Currently, more than 3 billion people, or half the world's population, cook in their homes using traditional fire in the stove to boil fossil fuels and biomass fuels. According to UN statistics, the number of deaths due to indoor air pollution can be up to 1.5 million - 1.6 million people each year, meaning the world every 20 seconds with 1 dead because of toxic gases due to cooking in the home, including women and children account for no less than 85%!

*A common type is the kitchen stove of firewood filled with smoke emission*



# Non-toxic wood stoves

---

**Big question /Task to all mankind and scientists and technological experts in the world:**

1. Save energy for cooking ?
2. How to reduce emissions of CO, CO<sub>2</sub>, SO<sub>2</sub>, carbon black and other toxic gases around the globe?

Actually, there are several works/researches work on these issues but their solutions are costly, not fit the pockets of the poor and still inadequate of technical and technological level in order to apply widely.

Thus the problem of energy saving cooking and especially to reduce toxic gas emissions contribute to climate change mitigation remain unresolved completely



**Non-toxic stove  
(USA)**



# Non-toxic wood stoves



According Envirofit, this kitchen can

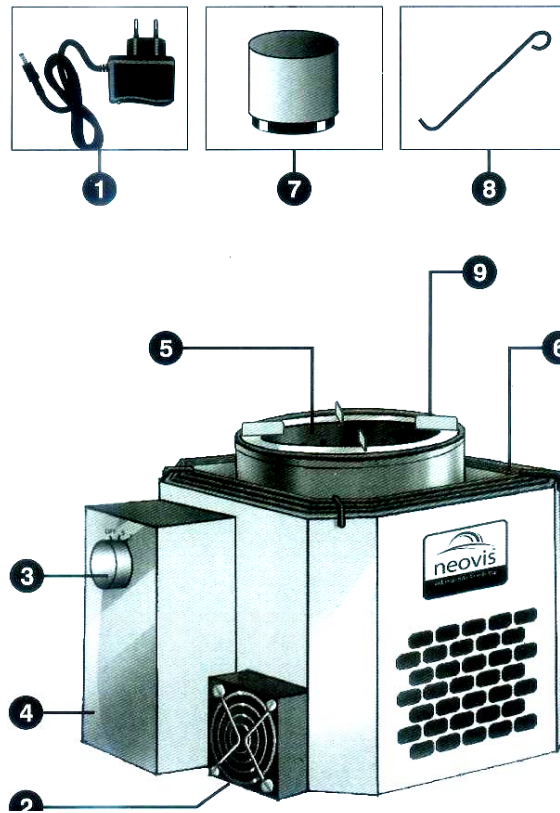
- Reduce harmful emissions (CO) to 80%, 50% of firewood
- Reduce cooking time

→40% said it was a revolution for Indian cooking and for billions of poor people worldwide.

→The selling price per unit in the kitchen at about \$ 25 to \$ 72 depending on the accessories attached.

→Therefore , the invention of non-profit company Envirofit International (Colorado U.S.) saves energy for cooking for the whole world by using this stove.

→Shell Foundation is financed and implemented in India and sold Africa to serve the poor in order to save energy and reduce harmful to humans and the environment.



*NEOVIS stove (India) and BP Group (Vietnam)*

## Vietnamese magic flame



## Vietnamese magic flame



Vietnamese magic flame from husk



# Advantages



- **Smokeless (Đun ít khói)**
- **Less toxic gas e.g (Thải ít khí độc) (CO<sub>2</sub>, CO ,Carbon đen ,SO<sub>2</sub> , NO<sub>2</sub> và các loại khí độc khác)**
- **High efficiency (Hiệu suất cao)**
- **Fast and very good burning (Nhen nhóm nhanh , cháy đượm và bền lửa)**
- **Using simple and easily (Sử dụng dễ dàng và tiện lợi)**
- **Economy (Tiết kiệm kinh phí đun nấu)**
- **Low price (Giá bếp rẻ tiền)**
- **Savings from 15 million to 20 million tones of firewood per year**
- **Saving over 50% of biomass fuel (estimated savings from 15 million to 20 million tones of firewood per year), Getting more 1,5 bilion USD per year.**
- **Reduce 2 times and the cooking time of hardship for women**
- **Reduce more than 85% immediate reduction tens of millions of tons of toxic gas into the sky each year. It is posible to export CDM for sustainability development of the world.**
- **Saving over 50% of biomass fuel**



# Conclusion



Nowadays, finding solutions of energy saving and new energy resource, which are clean and renewable as alternative energy resources for those derived from coal and oil, are urgent issues for Vietnam and worldwide. Energy, as forecasted, will be exhausted after 30 years. **So we, the government, scientists have much to do to get big fund for research to find new energy. There is a strong need of investment in science and technology in this field. The international cooperation are extremely important for sustainability development of Vietnam and the world.** Vietnam is the second biggest country, exporting rice, like one of the biggest country have the wastes from rice productions like husk, straw, woods...that would need utilized.

**→That is why we have to find and use methods of applying energy saving and finding new energy resources for sustainability innovation.**