

Lessons for building a
Resilient Sustainable Management
DBA&MBA / DPA&MPA Program from 30 years
Navigating a Changing Education Landscape

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Jan. 1, 2022

- Dorcas University

We change the way business and policy
is done on the earth

An aerial photograph of a university campus. The image shows several large, multi-story buildings with flat roofs, interspersed with green lawns and trees. A paved road or walkway winds through the campus. The overall scene is a typical university setting with a mix of academic buildings and open spaces.

DORCAS UNIVERSITY educates and inspires a new generation of skilled, visionary and enterprising leaders to transform business & industry and public policy and create a more just, prosperous and green sustainable world.

Presidio University: A Future Plan of Commitment, Creativity, and Resilience

- 2021: 40 students, hybrid format, sustainability in every DBA&MBA/DPA&MPA courses
- 2021: Experiential Learning program
- 2021: Curriculum redesign around 10 PLOs
in Sustainable Management & Dual degree
- 2021: Faculty committee structure ensures academic management quality
- 2021: Independent study elective, Certificates in addition to Market Failures
and the Regulatory Environment course
- 2021: Independent Accreditation by SASCOC
Recognition by Net Impact Business as **Unusual** Survey
- 2022: Recognition by New York Times
Faculty recommitment to sustainability values
Major funding for program development from Enlight Foundation
- 2024: DU Accredited by SASCOC
- 2024: DU joins Amity University (India) Partner Network

Fall 2021: Debut of a Unique DBA & MBA and DPA&MPA Program in Sustainable Management

- Accepted its first DBA&MBA and DPA&MPA classes of 40 students in 2021
- Blended Learning Model: Face-to-Face one weekend/mo.
- Curriculum based on the ecological economics framework:
 - Business system operates within, & depends on the human system, which in turn resides within and depends on the earth's ecological system
- Defined around the triple bottom line approach to business
 - Environmental & social performance considered equally with financial performance.
- Unlike sustainability “track” approach within conventional DBA & MBA, *sustainability woven into every course.*
- Accredited by SASCOC through affiliation agreement

2021: Learning Through Experience Students

complete four intensive, real-world sustainability projects in our [Experiential Learning](#) program (companies are laboratories).



Over **350** real-world companies and organization have received advisory services from PU students and we have provided more than **100,000** hours of student advisory services over nine years.



Services of the San Francisco Public Utilities Commission



Partner Companies

Advanced Home Energy
Advanced Transport Dynamics
American Electric Power
Architecture for Humanity
BC3
Beanstalk Farms
Benefuels
Better World Club
Beyond Building Systems
Blue Lotus
Blue Sky Shipping
CA Growers' Collaborative
California College of Arts
Center for Resource Solutions
Chicago Solar Service
Cisco
City of Berkeley
City of Mountain View
CleanFish
Cork Supply Group USA
CSRWare
Current Energy
Drive Neutral
East Bay Municipal Utility District
ECOSnacks
Ecowpots, Inc.
Entelos, Inc.
Environmental Defense – Climate Corps Program
Environmental Forum of Marin
EOS Climate
Ford
Forest Ethics
Free Range Studios
French Patisserie

Frog Hollow Farms
Full Moon Farms
Fwrap
Gen 3 Solar
GoGo Granola
Golden Sky Energy Partners
Goodwill Industries
Green Computing & Sustainable Enterprise (GCSE)
Green Empowerment
Green House Gas Management Institute
Green Spa Network
Green Web Venture
Greenline Foundation
GreenVolts
HelioVolt
Hive Power
HP
IDEO
Innovest
Intuit
Keep the Delta Clean
Khlora
Kimoeko
Kwytza Chopstick Art
La Causa
Living Architecture
LJ Engineering & Manufacturing
Localicious
Lucid Energy Technologies
Made in Oakland (MIO)
Marmol-Radziner
Mattel
McKesson
Micro Finance Global Bank

My Farm
My Vida Verde
Natural Capitalism Solutions
NC Choices/Growers Choice
New Leaf Paper
New Voice of Business
Nobska
Oakley
Ocelot Clothing
One Block Off the Grid
Organic Vintners
Origo
Osmosis Spa
Parco Homes
Patriot Wheels
Peoples Grocery
Petaluma Bounty
Pharmacopeia
Promotional Product Solutions, LLC
Rana Creek Restoration Ecology
Real Change
Red Bull
REI
Resource Center (Chicago)
Revolution Rickshaws
Rising Sun Energy
Sam's Club
Service & Flow Computing
SF Dept of the Environment
SF Waste Water
ShoreBank
Small Village Enterprises
Social Fusion
Solar Cookers International

Sports Basement
Stone-Buhr
Sun Energy
Sun Power & Geothermal Energy
Sunnyvale Solid Waste Division
Sustainable Timbers
Swantonberry Farm
TCHO
Tech Soup
Tesselation, Inc.
The Fruit Guys
The Innovative Fashion Council
Turtle Island Films
Unimodal Systems
Urban Forest Mapping Project
Viva Terra
W Hotels
Wal-Mart
Whole Communities
Williams Sonoma
Wireless Industrial Technologies
Wise Directions
WorkClub
World Business Academy
Ethics Mark™ Award
Worldbike
WorldWatch Institute
Xocomaya Chocolates
Xtreme Homes

The 2021 DU DBA & MBA Curriculum

PU School of Management Curriculum				
	People	Numbers	Sustainability	Markets
1st Semester	Effective Management, Communication & Action	Managerial Accounting	Principles of Sustainable Management	Managerial Economics
2nd Semester	Evolutionary Leadership, Collaboration, and Systems Thinking	Operations and Production	Business, Government and Civil Society	Micro and Ecological Economics
3rd Semester	Strategic Management	Managerial Finance	Sustainable Products and Services	Managerial Marketing
4th Semester	Culture, Values, and Ethics	Economics, Capital Markets and the Law	Implementing Sustainability	Integrative Capstone

2022: Curriculum redesigned around 10 program learning outcomes (PLOs).

- PLOs as basis for curriculum definition enables controlled integration of course topics and ensures ongoing program quality
 - Stewarded by the core faculty
 - Each course defined largely by how it delivers a subset of PLOs
 - Adjunct faculty members come and go but PLOs help ensure commitment to sustainability values remains unchanged

DU Program Learning Outcomes



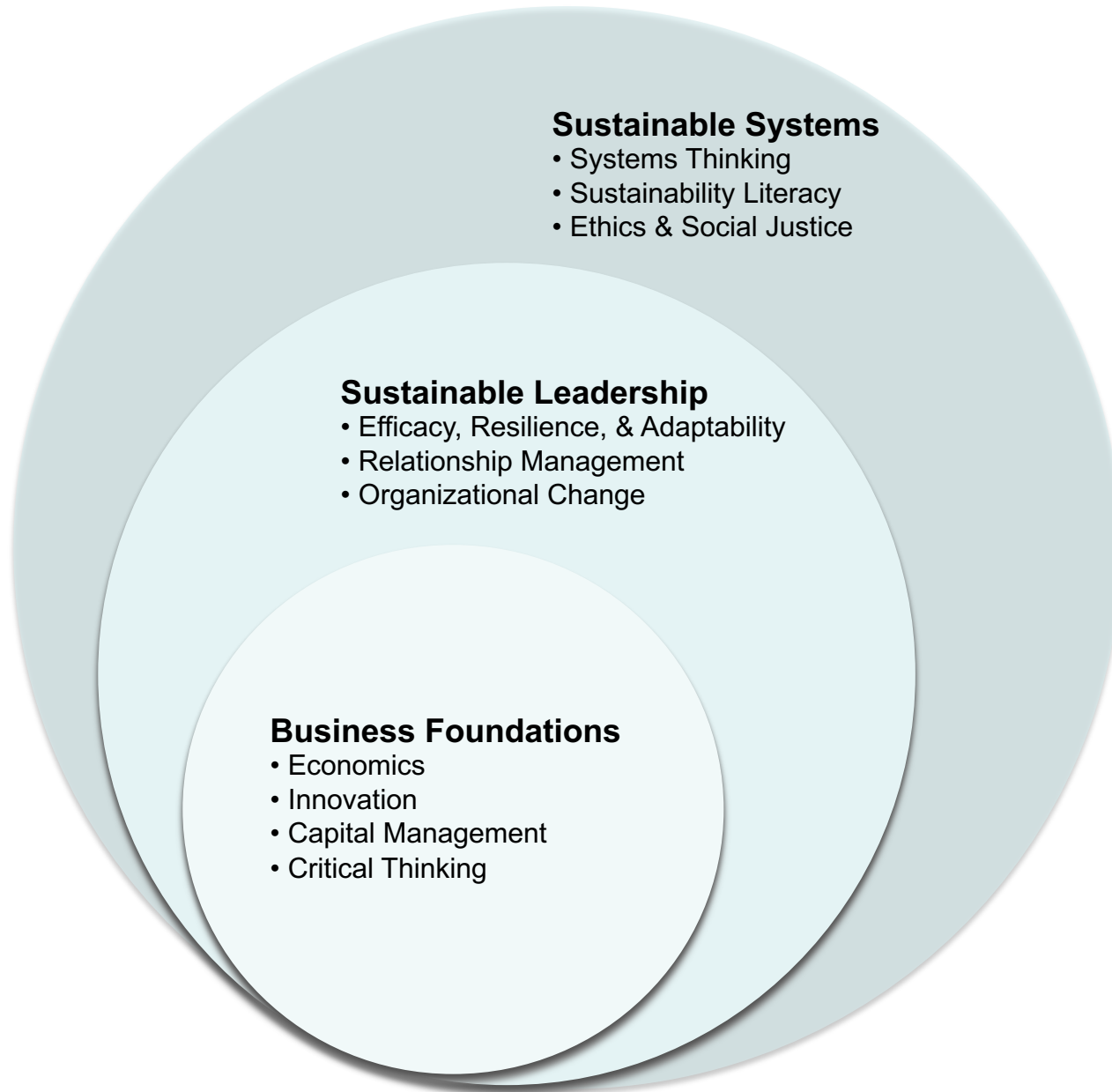
Business Foundations

- Economics
- Innovation
- Capital Management
- Critical Thinking

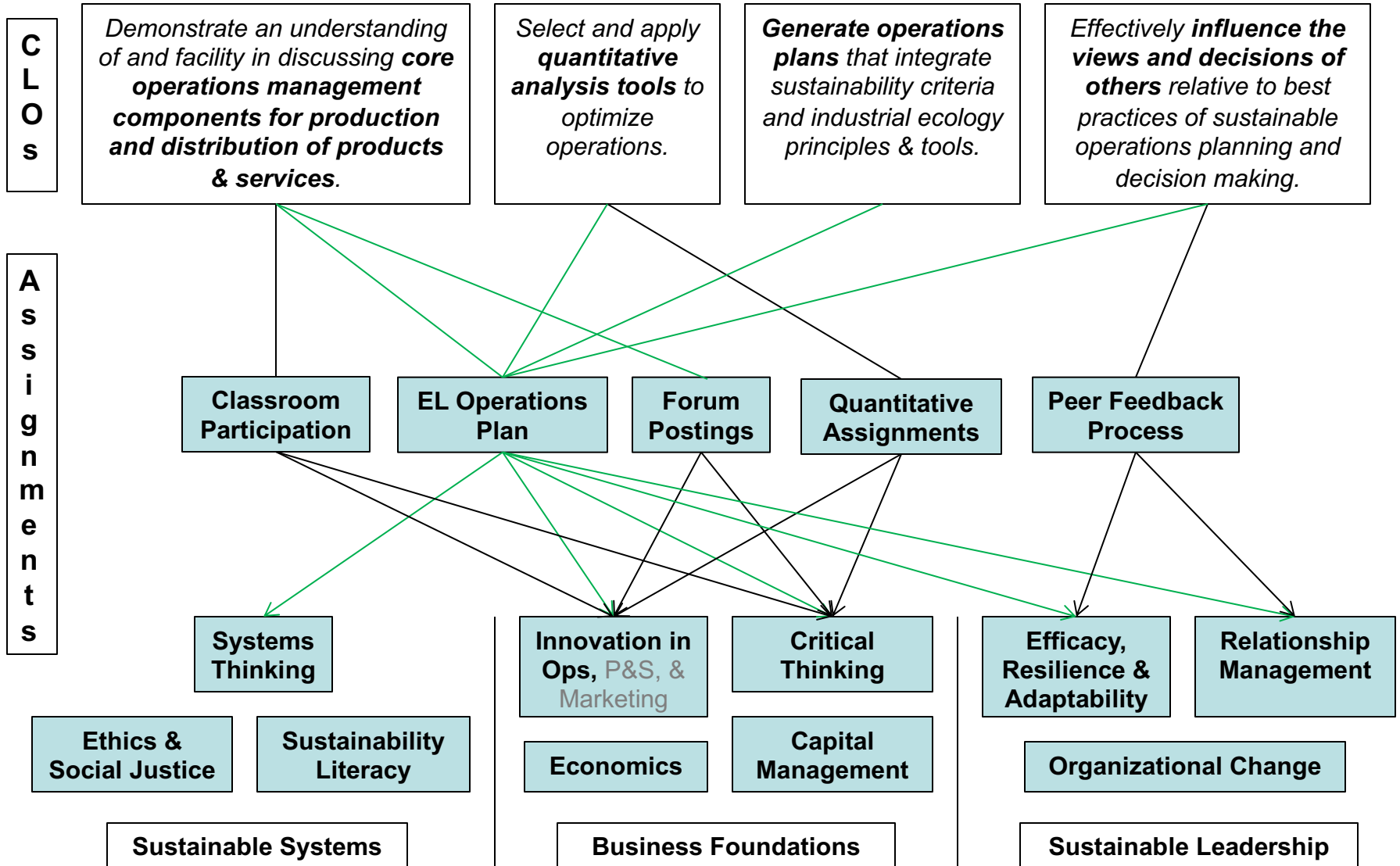
DU Program Learning Outcomes



DU Program Learning Outcomes



Operations and Production Learning Objectives



2021: DU offers first DPA&MPA in Sustainable Management & Dual DBA&MBA/DPA&MPA degree

- DBA&MBA Education alone is not enough.
- Government regulation often contributes to roadblocks. Business and government have to work together.

2022: New Faculty committee structure ensures academic management quality

- Admissions Committee
- Student Evaluation and Review Committee
- Recruiting, Development, and Retention Committee
 - Finding faculty with domain expertise, teaching skills, and knowledge of recent sustainability practice not easy
- Curriculum Development and Integration Committee
 - Curriculum innovation is critical
- Research and Case Development Committee

2022: DU Offers Elective Independent Study Program

- Focus on research or case study
- Proposals from students or faculty
- Project definition and financial support provided as needed and available
- Facilitated by Faculty Research & Case Development Committee

DU Offers Certificates to Advanced Practitioners

- Certificate in Sustainable Management
 - Applied Sustainable Strategy
 - Applied Sustainable Operations
 - Applied Sustainable Marketing and Product Development
 - Applied Sustainable Leadership
 - Sustainable Finance and Capital Management
- Certificate in Sustainable Energy Management

PU Expands focus on Cross Sector Solutions

- New 4th semester course on *Market Failures and the Regulatory Environment*
 - Teaches tools for establishing strategic co-operation between business and government as an often necessary vehicle to solve society's most pressing problems
 - Developed with support from the Lydia B. Stokes Foundation
 - Led by Associate MPA Program Dean Ryan Cabinte

SUS 7010: Introduction to Public Administration & Policy	SUS 6000: Civic Leadership, Decision-Making & Systems Thinking	SUS 6010: Principles of Sustainable Management	SUS 6195: Effective Management, Communication & Action
SUS 7030: Research Methods & Policy Evaluation	SUS 6025: Human Resources and Management Ethics	SUS 6130: Implementation of Sustainable Practices	SUS 6021: Quantitative Methods for Business & Public Administration
SUS 7060: Public Sector Finance	SUS 7080: Information Management, Technology & Policy	SUS 6210: Leadership for Sustainable Management	SUS 7025: Market Failure and the Regulatory Environment
SUS 7100: Sustainable Urban Development, Economics, and Policy	7090: Integrative Capstone Plan	Elective (Culture Values & Ethics; International Entrepreneurship; Clean Technology)	SUS 6025: Micro- and Macroeconomics

Enhanced
Focus
on
Integrated
Curriculum

Enhanced
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on
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Curriculum

SUS 6010: Principles of Sustainable Management	SUS 6195: Effective Management, Communication & Action	SUS 6000: Managerial Accounting	SUS 6060: Managerial Marketing
SUS 6130: Implementation of Sustainable Practices	SUS 6021: Quantitative Methods for Business & Public Administration	SUS 6110: Operations & Production	SUS 6090: Sustainable Products & Services
SUS 6210: Leadership for Sustainable Management	SUS 7025: Market Failure and the Regulatory Environment	SUS 6040: Managerial Finance	SUS 6050: Strategy
Elective (Culture Values & Ethics; International Entrepreneurship; Clean Technology)	SUS 6025: Micro- and Macroeconomics	SUS 6175: Capital Markets	SUS 6145: Integrative Capstone Venture Plan

SUS 7010: Introduction to Public Administration & Policy	SUS 6000: Civic Leadership, Decision-Making & Systems Thinking	SUS 6010: Principles of Sustainable Management	SUS 6195: Effective Management, Communication & Action	SUS 6000: Managerial Accounting	SUS 6060: Managerial Marketing
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SUS 7060: Public Sector Finance	SUS 7080: Information Management, Technology & Policy	SUS 6210: Leadership for Sustainable Management	SUS 7025: Market Failure and the Regulatory Environment	SUS 6040: Managerial Finance	SUS 6050: Strategy
SUS 7100: Sustainable Urban Development, Economics, and Policy	7090: Integrative Capstone Plan	Elective (Culture Values & Ethics; International Entrepreneurship; Clean Technology)	SUS 6025: Micro- and Macroeconomics	SUS 6175: Capital Markets	SUS 6145: Integrative Capstone Venture Plan

2022: Independent Accreditation by SASCOC

- Focus on academic rigor and financial health
- Culmination of a three year preparation effort
- State Council of Higher Education for Virginia

Recognition by Net Impact Business as **Unusual** Survey

- #1 DBA & MBA for Social Impact
- #2 DBA & MBA for Environmental Sustainability

- Amazon: The Ross School of Business (University of Michigan)
- Apple: Fuqua School of Business (Duke)
- P&G: Kelley School of Business (Indiana University)
- Start Your Own Company: Harvard Business School
- Work in Private Equity: Stanford Graduate School of Business
- Work in the Luxury Goods Industry: HEC Paris (“the top business school in Europe”)
- Global Education Without Leaving the Country: Yale School of Management
- **And To Change the World: Presidio University**

Graduates Leading Change toward Sustainability

- 200 graduates
- Sustainable leadership positions at Apple, Facebook, Google, PG&E, SolarCity, Del Monte Foods, Genentech, Northface, Salesforce, and Environmental Defense.
- City Sustainability managers: Austin, Baltimore, Berkeley, Mountain View, and Cupertino, CA
 - Executive Director – Urban Sustainability Directors' Network
- University Directors of Sustainability: Wake Forest University, University of Texas at Arlington, University of California at Riverside.

DU Spawns Sustainable Business Startups

- [EOS Climate](#), reduces the size of the planet's ozone hole for profit
- [Mission Motors](#), designs/prototypes products to power the next generation of intelligent and cost-effective electric & hybrid vehicles
- [TriplePundit](#), one of the world's most read news media websites on ethical, sustainable & profitable business - 350,000 monthly readers
- [The Can Van](#), mobile beer canning line for craft breweries

The DU Statement of Academic Intent (Core faculty recommits itself to key values)

Through the teaching of management professionals, *the PU faculty seeks to change business management and public administration to achieve actual, meaningful impact on sustainability outcomes.*

E.O. Wilson: The major challenge of the 21st century is to elevate all humans to a decent standard of living while preserving as much other life as possible. The environmental, social, and economic environment must change drastically if life, particularly human life, is to continue and thrive on earth.

This academic mission creates a **tension** between creating/teaching for student success in existing markets today while **disrupting** creating/teaching to create the world as we want it be. The status quo, and what the traditional experts would have us do about it, is not enough.

Each faculty member therefore aims to teach the state-of-art in what is known, but also provides a forum to create new knowledge, possibilities, and action. **We encourage our students to take on huge, intractable challenges and seek huge sustainability impact**, and lead others in doing so.

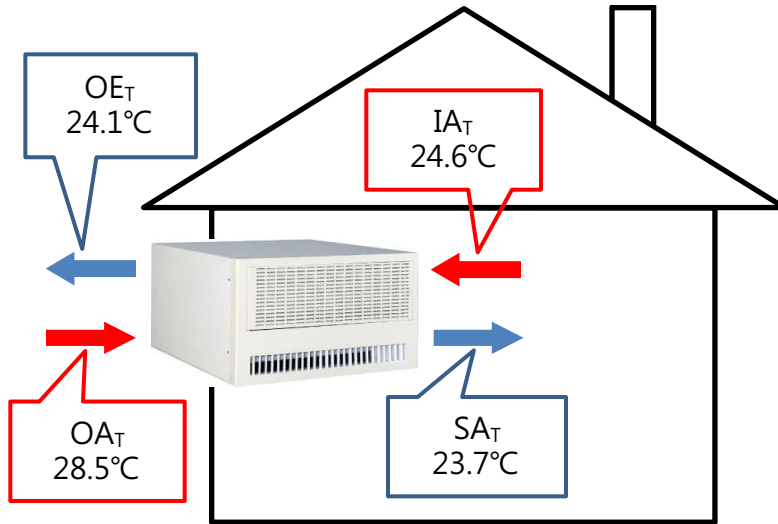
Health for All

Multi-Functional Isolated Negative Pressure Diagnosis Center (MIND)

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Jan. 1, 2021

Breathing building system

1. Theoretical basis



Sensible Heat Exchange Efficiency(E_c)

$$E_c = \frac{OA_T - SA_T}{OA_T - IA_T} \times 100 \%$$

$$E_c = \frac{28.5(^\circ\text{C}) - 23.7(^\circ\text{C})}{28.5(^\circ\text{C}) - 24.6(^\circ\text{C})} \times 100\% = 123\%$$

IA_T : Indoor Ambient Temperature

SA_T : Intake Air Temperature

OA_T : Outdoor Ambient Temperature

OET : Outdoor Exhaust Temperature

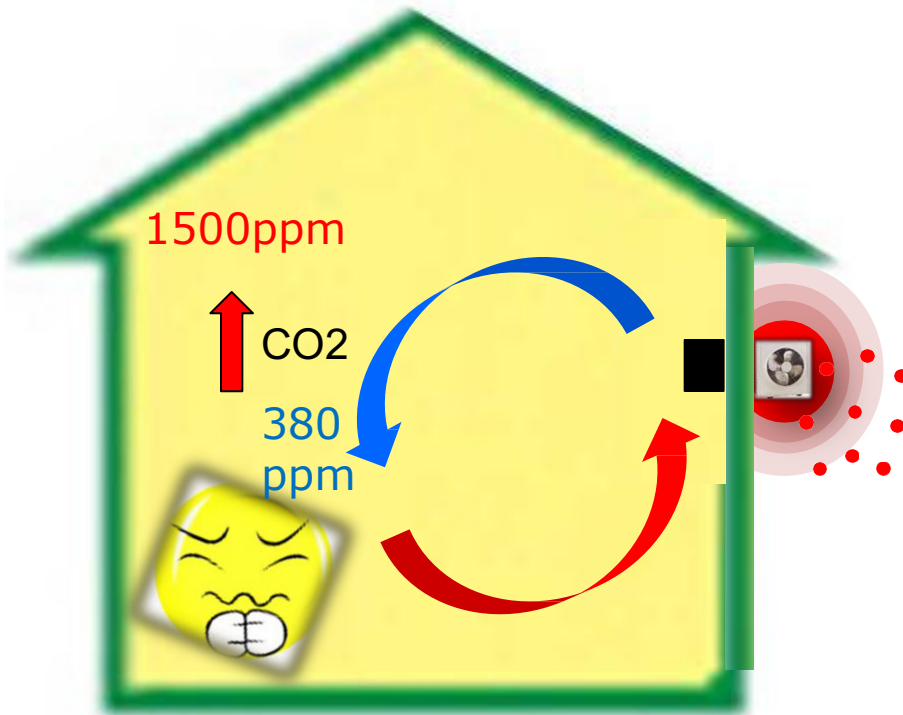
Item	Natural Air-Conditioner	Total Heat Exchanger
Energy conversion method	Water molecules - Two phase	Air
Fan power	Variable Air Volume	Constant Air Volume
Equipment power	Fan and Pump	Fan
Separation of intake/exhaust air	Entirely Separated	Separated by Highly Permeable Fibers
Air cross-contamination	No	Yes
Positive/negative environment	Yes	No
Sensible energy conversion efficiency	85%~150%	65%~78%

The natural air conditioner can reduce the indoor energy-saving benefits of the air-conditioning system and reduce the indoor CO₂ concentration. It can overcome the **cross-pollution of the air that the air purifier cannot handle CO₂ or the total heat exchanger still cannot eliminate**, and has multiple functions of cleaning, cooling and blocking air flow.

Breathing building system

2. Lack of existing air-conditioning-CO₂ problem of internal circulation system

Indoor :



- The humanity to strive for comfortably, relies on the use air-conditioning facilities massively, promotes the indoor environment comfort level.
- The heat to outdoor discharges because of the air conditioning the building, **easy to create the outdoor environment thermal pollution.**
- The humanity indoor the air conditioning, the carbon dioxide density promotion, **will cause the human body to be not comfortable, the working efficiency reduces.**

Breathing building system

3. Indoor air quality-JIS standard

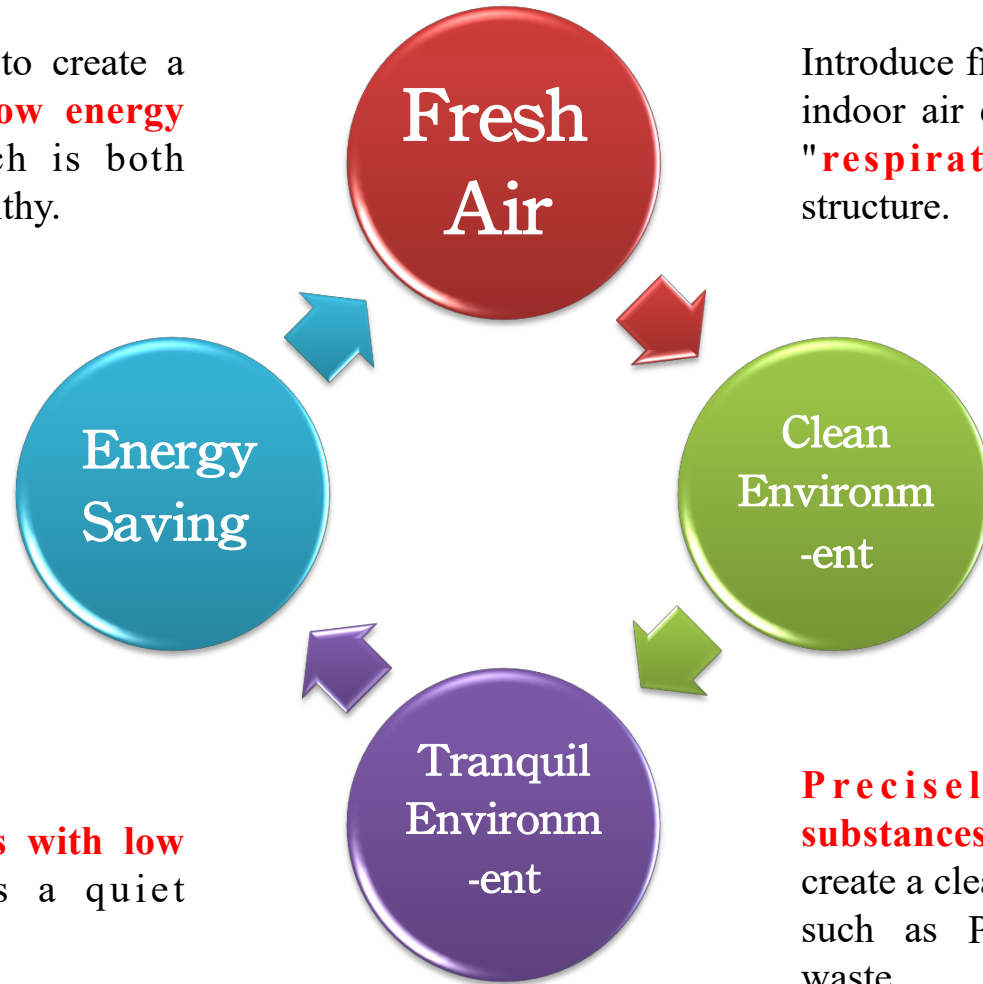
Substance	Limit Values	Frequency
PM	0.15 mg/m ³	Bi-monthly
CO ₂	1000 ppm	
CO	10 ppm	
Temperature	17 – 28 °C	
Relative Humidity	40 – 70 %	
Air Stream	0.5 m/s	
HCHO	0.1 mg/m ³	In summer after being built, reformed and fitted up

Breathing Building System

4. What can natural air-conditioners do for humans?

Use new technology to create a natural space with **low energy consumption**, which is both energy saving and healthy.

Introduce fresh air and create healthy indoor air quality to build a healthy "**respiratory system**" for the structure.



The system operates with low noise and creates a quiet environment.

Precisely isolate harmful substances from the outside, and create a clean indoor environment, such as PM_{2.5} and transportation waste.

Breathing building system - 5. Functional Analysis

Breathing building

- ✓ To improve indoor air quality of buildings to reduce energy consumption of air-conditioning compressor caused.

- ✓ Adopt natural air-conditioning system to improve indoor air quality, no need to use air-conditioning more than 50% of the year.
- ✓ Use remote monitoring and database management to collect environmental energy saving data, monitor equipment life, and remind users of equipment maintenance schedules.

- ✓ Confined space is too high CO₂ concentration.
- ✓ When exchanging both indoor air conditioning apparatus, fresh air and dirty air is easy to cross-contamination.

- ✓ Based on the principle of **pressure difference of water molecules**, the "full-air-air natural air conditioner" was developed to accurately separate the air flow, and fresh air was introduced into the room. **The indoor CO₂ concentration was controlled below 800 ppm.**

- ✓ External air pollution, such as PM_{2.5}, PM₁₀.

- ✓ AIOT technology to integrate indoor air quality monitoring system, import cooling operation.
- ✓ Build wisdom natural air-conditioning systems and environmental monitoring service management system integration interface.

Most energy saving

各國用電離尖計！
節能就是發電！



日本
發送尖峰簡訊

20%
折扣

美國
工業節電20%



南非
汰換耗電設備



南韓
限制用電大戶

二氧化碳過高、腦袋昏沉沉？

辦公室放這淨化空氣



華人健康網

PM 2.5

invisible, but deadly particles

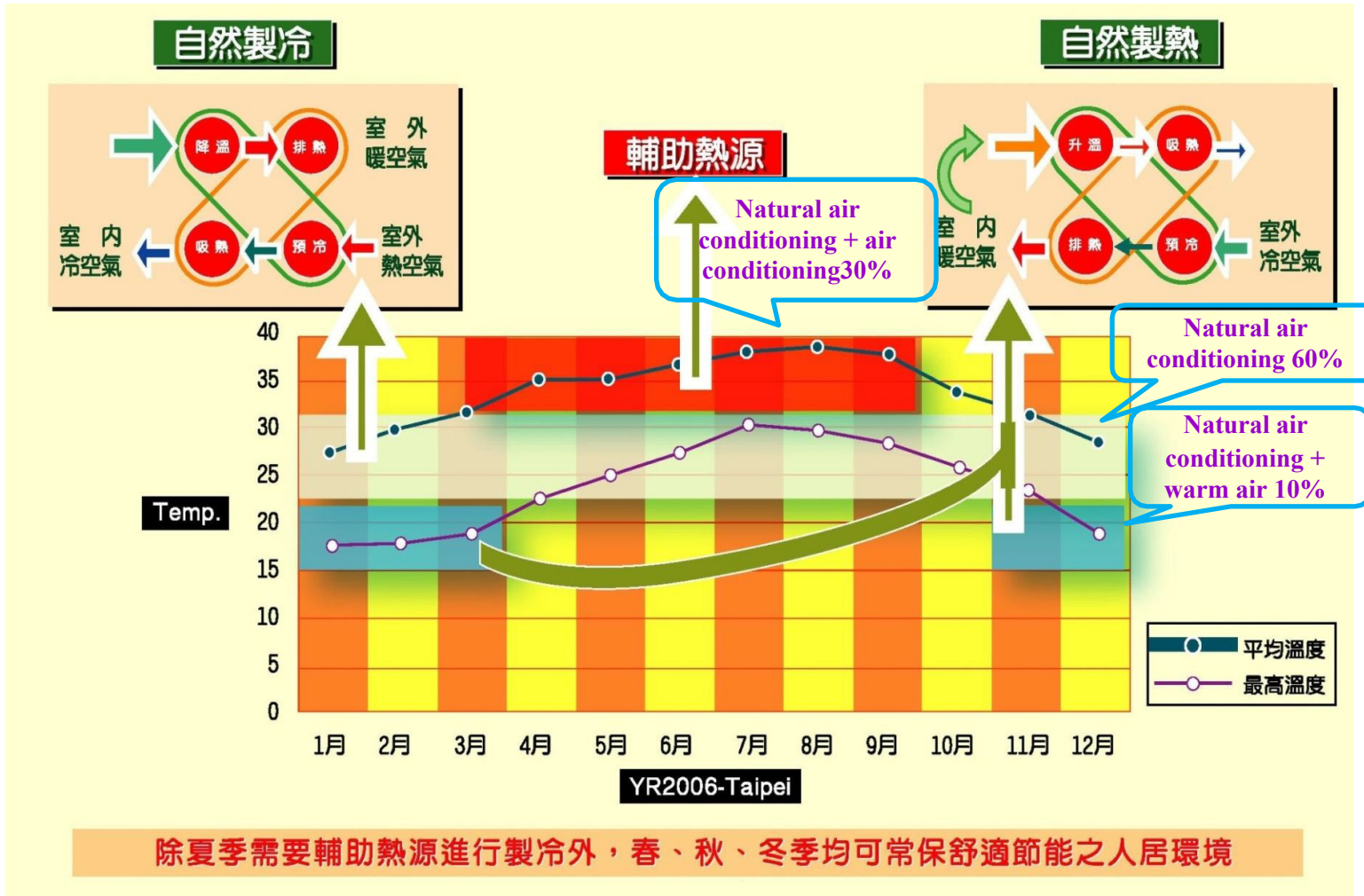
PM2.5

Breaking News

Issuing a warning on PM2.5

Breathing building system

6. Running characteristics



Breathing Building System

7. Measured indoor air quality and energy conversion efficiency

The natural air-conditioner has been field-verified and installed in the Hospital / Museum of Marine Biology / Office Building / School.

Has not installed -Taiwan waters hall

“whale shark area”

Time:98/8/2 am9 : 00

Population : 150

CO₂: **1083 PPM**

Temperature: 27.6°C

Humidity : 74.2%



Has installed -World waters hall

“penguin water tank”

Time:98/8/2 am11 : 00

Population: 300-400

CO₂: **734 PPM**

Temperature: 21.0 °C

Humidity : 76.5%



Comparison of measured air quality without / with installed natural air conditioner in National Museum of Marine Biology & Aquarium
(Original 2000 RT → Reduced energy consumption by 500 RT
(↓ 25%) after installation)

Taitung Berlin Long Term Care Center



Airflow separated to avoid cross contamination

Safe, fresh, healthy air



Additional isolation, sterilization equipment to eliminate indoor and outdoor air pollution sources to ensure that the introduction of fresh and healthy



Care Room



Event Hall



Dining Hall



Meeting Room



Lounge

POINT	DB (°C)
2F (h4) OA _T	32.7
2F (h3) SA _T	25.5
2F (h2) IA _T	25.9
3F (h4) OA _T	32.5
3F (h3) SA _T	25.4
3F (h2) IA _T	25.7

August 2005

Sensible Heat Exchange Efficiency(E_c)

$$E_c = \frac{OA_T - SA_T}{OA_T - IA_T} \times 100\%$$

$$2F = \frac{32.7 - 25.5}{32.7 - 25.9} = \frac{7.2}{6.8} = 106\%$$

$$3F = \frac{32.5 - 25.4}{32.5 - 25.4} = \frac{7.1}{7.1} = 104\%$$

National Museum of Marine Biology & Aquarium



Using

- **Natural air-conditioner**
- **LTD-VAVFCU**

Open for visits on April 28, 2006

- We are out to change the way business is done on the planet.

- Henry Yeh, Ph.D. in business
- President
- Dorcas University, VA