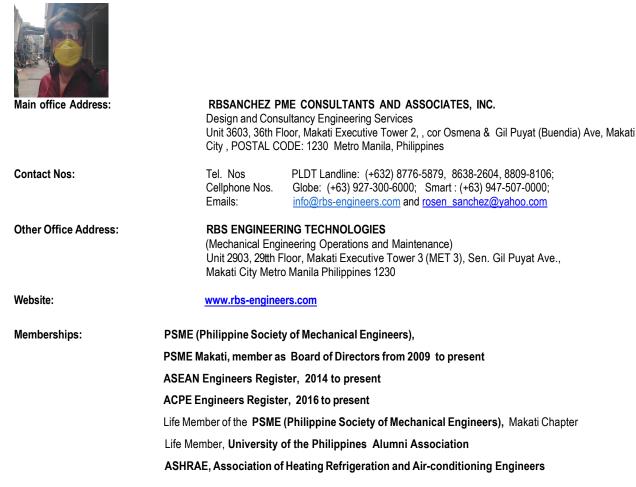
#### EXECUTIVE SUMMARY and CV of ROSENDO "ROSEN" B. SANCHEZ (PME)

Professional Mechanical Engineer

PRC License No. 3999



#### SUMMARY OF PROFESSIONAL EXPERIENCE:

**B.S. degree in Mechanical Engineering (with CUM LAUDE HONORS) from the University of the Philippines (U.P.)**, Diliman, Quezon City, Metro Manila (Graduated 1979).

PRC BOARD EXAM M.E.TOPNOTCHER, 1<sup>ST</sup> Place, with the Highest Score Achievement in the government Licensure Examinations from PRC for Mechanical Engineers in 1981

PROFESSIONAL EXPERIENCE: RBS has thirty-eight (38 years) of engineering and project and business management experience starting from Year 1979 in Shell Tabangao Refinery as Project Engineer. Since he has participated in the BURJ KHALIFAH Dubai design project (2006-2007), INDUSTRIAL SERVER FARMS AND CLEANROOMS, OIL AND PETROCHEMICALS, SMOKE AND POLLUTION CONTROLS, LAKE AND RIVER WATER OPERATIONS, OFFSHORE AND MINING EXTRACTION OF MAGNETITE IN CAGAYAN. RBS have also done several hundreds of consultancy projects across various industries (kindly see company profile).

LONG-TERM MAJOR CLIENTS: RBS have repeat and long-term clients for over the last twenty (20) years as an engineering design and project management consultant.

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AWARDS:

# SOME RBS ACTUAL CFD CLIENTS :



**RBS RECOGNITION AND AWARDS:** 

**PSME "TOME AWARDS**" as "THE MOST OUTSTANDING MECHANICAL ENGINEER" in Research and Innovations Consultancy by National P.S.M.E. (Philippine Society of Mechanical Engineers) and by the **Professional Regulation Commission** at SMX PSME Convention Center of Year 2018.

AWARDED <u>"THE MOST OUTSTADING MECHANICAL ENGINEER</u>" IN CONSULTANCY by <u>PSME-NATIONAL BOARD (Philippine</u> <u>Society of Mechanical Engineers)</u>. The Award was presented in a Testimonial Dinner at the SMX Convention, Mall of Asia. by Commissioner of PRC-Profesional Regulation Commission November 11, 2011).

PART OF THE HISTORY OF DESIGN ENGINEERING of the "WORLD'S TALLEST BUILDING as Design HVAC Manager – <u>Dubai Burj Khalifa project in Dubai, UAE.</u> He is the signatory to all the HVAC design and construction drawings "MECHANICAL ENGINEER ON RECORD".

"THE GOLDEN GLOBE AWARDS" by Golden Globe Annual Awards for Outstanding Filipino Achievers. Awarded at the Manila Hotel Centennial Ballroom last April 5, 2019 for "Outstanding and Significant Achievements in Mechanical Engineering"

#### "THE BEST MECHANICAL ENGINEERING DESIGN AND CONSULTANCY SERVICES" by the ASIA PACIFIC EXCELLENCE AWARDS COUNCIL (APAC), Awarded December 15, 2018.

EUROPEAN BUSINESS AWARD, by Socrates Nomination Committee. Awarded for 'Manager of the Year'' 2020 for contributing to International Engineering Design Projects for the Burj Khalifah Dubai "WORLD'S TALLEST BUILDING"

#### DETAILED BIO-DATA AND HISTORY OF ROSENDO "ROSEN" B. SANCHEZ (PME)

#### COMPANIES AND LIST OF PROJECTS HISTORY:

#### From April 2007 – present:

Principal Consulting Engineer (PME) RBSANCHEZ PME Associates and Consultants Inc. RBS Engineering Technologies Unit 3603, 36th Floor, Makati Executive Tower 2, , cor Osmena & Gil Puyat (Buendia) Ave, Makati City , POSTAL CODE: 1230 Metro Manila, Philippines

#### <u>SAMPLE LIST OF PROJECTS AND CONSULTANCY SERVICES HANDLED PERSONALLY BY RBS IN</u> <u>MANILA. PHILIPPINES (</u>April 2008 – present)<u>:</u>

<u>Araneta Cyberpark 2</u> – Araneta Center, Cubao. HVAC system design engineer and consultancy for the 86,688.58 sqm building. 2016



<u>Robinson Place Antique.</u> HVAC system design engineer and consultant for the 18,241.69sqm building 2015.



<u>SM BLOOM</u> RESIDENCES – 450,000 sqm Cluster of Buildings SM Bloom at Parañaque City. HVAC system design engineer and consultant for the 450,546 sqm residential building. 2015- ongoing.

Starmall BPO at C.V. Starr Avenue Philamlife Village, Las Piñas City. HVAC system design engineer and consultant for the 20,673 sqm building. June , 2015

<u>NCCC Mall – Buhangin New City Commercial Corp</u>. at Buhangin District, Davao City, Davao del Sur. HVAC system design engineer and consultant for the 26, 703.95 sqm building. 2015

<u>HVAC DESIGN SERVICES FOR HVAC SYSTEMS City Mall – BULUA Cagayan De Oro City</u>. HVAC system design engineer and consultant for the 8,726 sqm building. August, 2015

<u>City Mall – IPONAN - Cagayan De Oro City.</u> HVAC system design engineer and consultant for the 10,509 sqm building. August, 2015

<u>City Mall – ISULAN – Sultan Kudarat</u>. HVAC system design engineer and consultant for the 8,159.53 sqm building. 2015

Starmall Mactan Cebu. HVAC system design engineer and consultant for the 26,404 sqm building. September , 2015

<u>City Mall – Surigao -</u> Surigao City. HVAC system design and consultancy for the 8,570.1sqm building. February, 2016

<u>City Mall – Pavia - Iloilo City.</u> HVAC system design engineer and consultant for the 9,989.04 sqm building. February, 2016

<u>NGCP Head Office Bir.</u> Rd. Cor. Quezon Avenue, Diliman, Quezon City. HVAC system design engineer and consultant for the 1,400 sqm building. Psychrometric Design and specifications of Coil for Make Up Air Units, ducting and fan system 2015

<u>Jollibee – MHVAC system design engineer</u> Ventilation CFD (Computerized Fluid Dynamics) <u>and consultant</u> Year 2015 to 2015 for the ff branches:

JOLLIB	EE VARI	OUS PROJECT	5	See .
PROJECTS	AREA( sqm)	PROJECTS	AREA( sqm)	
JOLUBEE AURORA	477.42	JOLLIBEE MAA ROAD	1,861.04	Jollibee.
JOLUBEE WWLTERMART	263.51	JOLLIBEE NORTH HARBOR	2,412.77	
OLLIBEE TUNGKONS MANSGA	767.01	JOLLIBEE SM FAIRVIEW ANNEX	275.33	
FOLLIBEE SHICITY BATANGAS	305.40	JOLLIBEE LEGARDA BUSTILLOS	1,753.40	
JOLLIBEE DAVAO LACHM	357.21	JOLLIBEE SM BICUTAN ANNEX	278.58	
JOLLIBEE WALTERMART CABAMATUAN	335.95	JOLLIBEE TANAY	2,286.12	Albee delber
JOLLIBEE RONQUELO	758.70	JOLLIBEE MOLAVE	1,905.89	
OLLIBEE GAISANO CATARMAN		JOLLIBEE ORION	1,576.68	
INCLUBEE PUREGOLD DEPARO		JOLLIBEE CASUNTINGAN MANDAUE	2,108.27	
JOLLIBEE TANDANG SORA	723.50			Jallihaa Manaway Lin
NUBEE PETRONDIEGO SILANG	659.42			<u>Jollibee – Marawoy, Lip</u> Batangas

**RBSanchez PME Consultants & Associates, Inc.** 

Jollibee – Marawoy at Lipa Batangas. HVAC system design engineer and consultant Year 2015.





<u>MERIDIAN PLAZA – BPO Call Center Commercial Building Double Dragon Plaza at MOA, EDSA Extension</u> <u>cor. Diosdado Macapagal Avenue. Pasay City</u>. Rbsanchez is the HVAC system design engineer and consultant for the 278,131 sqm x 11 floors. July, 2016



# <u>NESTLE WYETH DESIGN AND CONSULTANCY FOR NEW CLEANROOM DESIGN PROJECT.</u> Complete HVAC System design to ensure class 10,000 for Cleanroom. January 2015.

<u>Starmall Malolos, Bulacan Starmall Malolos</u> at McArthur Highway, Longos, Malolos City, Bulacan. HVAC system design engineer and consultant for the 30,654.22 sqm building. June 2016

<u>SMDC Showroom at FMC Property</u> Chino Roces Avenue, Makati City. Complete HVAC System design. 2015

<u>PEPSI CORPORATION. DESIGN AND CONSULTANCY FOR NEW PEPSI SNACKS PLANT IN LAGUNA.</u> Complete HVAC and fire-protection System design for new plants chilled water system. February 2015.

<u>Starmall San Jose Del Monte.Phase 2.</u> HVAC system design engineer and consultant for the 15,502.86 sqm building. September , 2015

<u>RCBC HEAD OFFICE BUILDING AT THE FORT, TAGUIG, Chilled water operations, AHU maintenance and cleaning project.</u>. September 2014 and ongoing.

HGA-14 DESIGN AND CONSULTANCY FOR NEW CLEANROOM DESIGN PROJECT. Hitachi Global Technologies, Laguna Technopark, Binan, Laguna. Complete HVAC System design to ensure class 1,000 for a 1,200 sqm Cleanroom with 750KVA equipment load, ensure moisture balance and uniform cooling and room pressures without the use of reheat. January 2014.

<u>STARMALL PRIMA TAGIUG</u> - PHASE 2 Starmall Prima Taguig at Levi Mariano avenue, beside Camella Grenville and Pacific Residences . HVAC system design engineer and consultant for the phase 2 of Starmall Prima Taguig. 2015

<u>Robinsons Office</u> – Davao at J.P. Laurel Ave, Lanag, Davao City, Davao del Sur. HVAC system design engineer and consultant for the 12, 500 sqm building.

<u>WELLS FARGO BANK BUILDING</u>, Mckinley Heights, Taguig, Metro Manila. RBSanchez provides operations and consultancy services to the Chiller Plant operations. RBS also supplies through Trane Phils Inc. the services in chiller operations of the chillers (2015 -ongoing).

MAGNOLIA MALL BUILDING PLANT FACILITIES, Aurora Blvd. QC, Metro Manila. RBSanchez provides operations and consultancy services to the Chiller Plant operations. RBS also supplies through Trane Phils Inc. the services in chiller operations of the chillers (2014 -ongoing).

HITACHI TROUBLE-SHOOTING AND ANALYSIS OF HGA-15 CLEANROOM SYSTEM PROJECT. Hitachi Global Technologies, Laguna Technopark, Binan, Laguna. Analysis and Consultancy for System Retrofit for class 10,000 cleanrrom to balance airflows among 3 units of AHUs, resize AHU fans, ducting, ACH, cooling and ensure proper room pressurization for the 1,150 sqm Cleanroom. September, 2013.

<u>HITACHI DESIGN FOR NEW MAU SYSTEM, COIL AND DUCT FOR CLEANROOMS PROJECT.</u> Hitachi Global Technologies, Laguna Technopark, Binan, Laguna. Psychrometric Design and specifications of Coil for Make Up Air Units, ducting and fan system to enable accurate RH control without use of REHEAT, ensure even cleanroom room temperatures and uniform movement, and balance cooling. December 2013.

GLAXO SMITHKLINE INC. OFFICES IN PASONG TAMO, MAKATI. Design and Installation of new chiller system, pipe and pumping system, AHUs, FCUs, and control system. August 2013.

ROBINSONS MALL BUILDING AT CALASIAO, NUEVA ECIJA, Chilled water operations, AHU maintenance and cleaning project. Year 2014-2015 ongoing).

MANUELA STARMALL BULACAN PROJECT at San Jose Del Monte, Bulacan. DESIGN AND CONSULTANCY SERVICES FOR THE NEW CHILLED WATER PLANT FOR THE 50,000 SQM MALL. Design of around 600 tons HVAC RBS is doing the HVAC design and consultancy services (Feb 2013). Energy efficiencies of System Energy were placed at 670watts per ton.

METROPOLIS STARMALL ALABANG NEW CHILLER SYSTEM PROJECT, Alabang Zapote Road, Muntinlupa City. DESIGN AND CONSULTANCY SERVICES FOR THE 3,400TON NEW CHILLED WATER PLANT FOR THE 100,000 SQM MALL. RBS is doing the design and consultancy services (August 2012-January 2013). Initial Reports by Manuela stated the new HVAC system has a savings in Meralco electricity bills amounting to PHP2M to PHP4.0M a month for August 2013 compared with the old aircon system.

MANUELA MALL AT EDSA AND SHAW BLVD. HVAC CHILLER PROJECT, EDSA, Mandaluyong City. DESIGN AND CONSULTANCY SERVICES FOR THE UPGRADE OF CHILLER SYSTEM TO A NEW CHILLED WATER PLANT FOR THE 50,000 SQM MALL. Design of around 2,000 tons HVAC design and consultancy. RBS is doing the HVAC design and consultancy services (August 2012-Dec, 2012). Reports by Manuela stated the new HVAC system has a savings in Meralco electricity bills amounting to PHP1.4M to PHP2.0M a month.

**DESIGN OF STEAM ABSORPTION CHILLER PLANT, OLEO FATS INC. Mercury Street**, Libis, Quezon City. serves as the Design Consultant to Oleo Fats Inc and PME Technic Inc. in the design, consultancy and commissioning of the 800 TON dual Steam Absorption Chiller systems using **THERMAX Lithium Bromide chiller units** as well as associated pumps piping, AHUs, cooling towers, ducting, control systems and all accessories. (Ongoing commissioning on Aug 2011).

ALLEGO CORPORATION - HEAD OFFICE – Bicutan, Paranaque, Metro Manila, DESIGN AND CONSULTANCY SERVICES FOR THE INSTALLATION OF NEW HVAC SYSTEM and ASSOCIATED REMODELLING OF FCUS. Design and consultancy for LedroMech Services. RBS is doing the design and consultancy HVAC services (January 2012).

#### <u>CORINTHIAN TOWERS - ALASKA MILK HEAD OFFICE – Legazpi, Makati, Metro Manila, DESIGN AND</u> CONSULTANCY SERVICES FOR THE INSTALLATION OF NEW 150 TON CHILLER SYSTEM and

**ASSOCIATED REMODELLING OF AHUS.** Design and consultancy under subcontract from Trane Philippines Inc. RBS is doing the complete design and consultancy services (April – June 2011).

MAKATI MEDICAL CENTER CHILLER FACILITIES, Ayala Avenue, Makati City. Engr. RBSanchez serves as the Consultant to Trane Phils Inc. on the Chiller operations and routine maintenance of the system. RBS also supplies the chiller operators for the operations of the chiller plant (Oct 2008-2011 Value PHP3.0M).

ASCOTT HOTEL AND GLORIETTA CHILLER PLANT FACILITIES, Ayala Avenue, Makati, Metro Manila. RBSanchez provides operations and consultancy services to the Chiller Plant operations. RBS also supplies through Trane Phils Inc. the services in chiller operations of the chillers (2008 -ongoing- Value PHP2.4M).

SUNPOWER FABRICATION PLANT 1 AND MODCO PLANT CHILLER FACILITIES, Carmona, Province of Laguna: Engr. RBSanchez serves as the Consultant to the Chiller system operations. RBS also supplies through Trane Phils Inc. services in the testing, measurements and verification as well as chiller operators for the commissioning of the chiller plant (2008 and 2011). Consultancy Value PHP3M).

KINGS COURT REPLACEMENT OF 400 TR CHILLERS– Makati, Metro Manila, DESIGN AND CONSULTANCY SERVICES FOR THE INSTALLATION OF A NEW CHILLER and ASSOCIATED REMODELLING OF PUMP AND PIPING. Design and consultancy under subcontract from Trane Philippines Inc. RBS is doing the complete design and consultancy services (June 2011).



FIRE PROTECTION SYSTEM FOR 6780 BUILDING. 14-STOREY BUILDING LOCATED IN 6780 AYALA AVENUE, Makati City owned by RCBC Corporation in Makati. RBS is doing the complete design and consultancy services of the Fire Protection Alarm and Sprinkler System including main firewater pump and jockey pumps for all the 15 storeys and Basement of the 6780 Ayala Building. (Sept 2009) Contract Design Value: PHP0.75M.

**MEGAWORLD CORP. FORBESWOOD PROJECT.** the design and consultancy for the RETAIL PROJECTS in Burgos Corcle, the Fort. Design of HVAC Aircon, All HVAC ducting, and ventilation works and all related accessories. (May 2010 – July 2010).

KINGS COURT RETROFITTING PROJECT, Makati City. the design, consultancy and commissioning of the new AHU and associated systems for Ground floor, 2<sup>nd</sup>, 3rd,4th, 5<sup>th</sup> and 6<sup>th</sup> floors, 500 tons total and effects on chiller units as well as associated ducting and accessories. (July 2010- Aug 2010).



ANIBONG SHELL TERMINAL DEPOT FACILITY, The design of the Anibong Depot, Ethanol and Blending Storage Facilities in Aibong, Leyte. The design includes pumps, piping, tanks and loading facilities system. Project management and construction is under the Shell's Gen Contractor Metallite Inc. and PME Technic Inc (August 2010 – Dec 2010). <u>KRAFT FOODS INC PLANT.</u>, Sucat, Paranaque City. <u>DESIGN OF AIR HANDLING UNITS AND CHILLER</u> <u>SYSTEM FOR CHEESE LINE "PROCESS COOLING TUNNEL".</u> Design and commissioning of cooling system for process areas consisting of a production tunnel, two (2) AHUs and three (3) chillers of 150 tons. RBS is doing the complete design and consultancy services (January 2010) for **TRANE PHILIPPINES INC.**.

ST. LUKE'S HOSPITAL PROJECT, FORT BONIFACIO GLOBAL CITY. COMMISSIOING AND TESTING Works by <u>RBS for TRANE PHILIPPINES INC.</u>. RBSanchez does the testing and commissioning of 750 units of FAN COILS and AIR HANDLING UNITS as well as 3 cx 1000 ton CHILLERS. RBS also supplies management and engineering services for the works. Troubleshooting and analysis functions (March 2009 – January 2010). Contract Consultancy Value: PHP1.5 M.



ADDITIONAL SHELL ETHANOL STORAGE FACILITIES, The design of Shell Depot, Ethanol and Blending Storage Facilities in Cabadbaran, Agusan, Mindanao, in Leyte, and Cagayan de Oro Shell Depots. The design includes pumping stations, piping and tanks and loading gantry system. Project management and construction is under the Shell's Gen Contractor Metallite Inc. and PME Technic Inc (June 2010 – August 2010).

KRAFT FOODS INC PLANT., Sucat, Paranaque City. <u>CHILLER SYSTEM DESIGN FOR DUCTING AND AHU WORKS</u> <u>OF CHEESE CLEANROOMS.</u> Design and commissioning of around 12 AHU's totaling 850 tons. Design and consultancy on ducting, Class 100 cleanroom, in the installation of new chillers and upgrade and refurbishment of old chillers, and other works. **RBS is doing the complete design and consultancy services** (February 2008). Value PHP0.25M).

TOYOTA MOTORS PHILIPPINES INC, Sta Rosa Plant, Calamba, Laguna. <u>CHILLER DESIGN FOR NEW 200</u> TON CHILLER SYSTEM FOR PAINT SPRAY BOOTH, WITH REFURBISHMENT OF DUCTING AND 200 TON <u>AHU REHABILTATION WORKS</u>. Design, and commissioning of a 200 ton FRESH AIR AHU for the painting booths with controlled dehumidified environment, with associated air-cooled chillers. **RBS is doing the complete design and consultancy services** as the Air-conditioning Consultant of EXTREME ENGINEERING, who is the main contractor for the works. (March 2008-June 2008).

ONE SHANGRI-LA (OSP) TOWER AND MALL COMPLEX –RBS Engineering Technologies is the special design and consultancy service for MEP contracted to Meinhardt Phils Inc. This 170,000 sqm gross floor area project consist of 38,000 sqm mall and condo units involves two(2) – 60 storey towers with 132,000 sqm located beside the Shangri-la Hotel at in EDSA Shaw Bldv. Detailed design is in progress by MPI. RBS provides the MEP review and design services for this mall (2008-2009). Value PHP1.1M).



**PENN PHILIPPINES INC., FTI Complex, Taguig, Pateros.** The HVAC design and consultancy services for the new 7,000 sqm TEXTILE PLANT in Calamba, Laguna. These includes chiller design for the Trane 600 ton chiller, cooling towers pumps and dehumidification using washers and scrubbers. Requirements are a tight control of temperature and humidity for the knitting and warping areas, Design project worth: PHP0.75M (May - October 2008).

SAUDI ARABIA CORN ICHE TOWERS. Kingdom of Saudi Arabia. The consultancy and CAD review of the Design of the HVAC drawings for the twin tower 50-storey HIGH-RISE TOWERS in Saudi. This is a project of MEINHARDT PHILIPPINES INC. of which the role of RBS is review all mechanical drawings and specifications for accuracy and correctness of design (i.e. duct and piping layouts, pressures, flows, temperatures and schematic drawings, etc.) (Done May –June 2007)



ST. LUKE'S HOSPITAL PROJECT, FORT BONIFACIO GLOBAL CITY. Works by MEINHARDT PHILIPPINES INC. RBS was given a sub-contract for the COMBINED COORDINATED SERVICES DRAWINGS (CCSD) production of AutoCad drawings for the multi-discipline project. RBS will review all consultant's drawings and combine them to a CSSD drawing to check for 3-dimensional conflicts and problems. This includes the design for wall penetrations, the block works and sleeving works.

RBSanchez also coordinates and supplies management support and engineers and/or CAD draftsmen to complement the resources of MEINHARDT PHILIPPINES INC. One of these is the review of designs and drafting works required (May 2007 – Dec 2009). Contract Value: PHP2.0 M.

#### AVON MANUFACTURING PLANT, Batino Exit, South Superhighway. The HVAC



analysis, trouble-shooting and consultancy services for the AVON PLANT in Laguna. These are Trane projects where Trane Philippines uses RBS for the consultancy expertise in HVAC, Design project worth: PHP0.4M (July-Nov 2007).

#### NCY PROJECT HANDLED PERSONALLY IN DUBAI, UNITED ARAB EMIRATES uary 2007):

HVAC DESIGN MANAGER Hitachi Plant Engineering - Voltas - ETA J.V. Inc P.O. Box No. 29384 Dubai United Arab Emirates



#### ABOUT DUBAI BURJ KHALIFA TOWER PROJECT IN DUBAI. UAE



RBSANCHEZ AS HVAC DESIGN MANAGER

#### - "THE TALLEST BUILDING IN THE WORLD"

- My company Voltas is part of the Joint Venture of ETA-Hitachi Plant Engineering - Voltas (EVH-JV)
- EVH serves as the MEP for the Design works under the Principal Contractor of Burj Tower – Samsung.
- Carpark Ventilation CFD (Computerized Fluid Dynamics)

IN MEETINGS WITH DUBAI BURJ TOWER ENGINEERS



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Featured from NEWS EMARATALYOUM: Issue Sept 29, 2006, page 38. Featured in an Dubai Arabic Newspaper (EMARATA in quarter page with Engr Sanchez picture) as the Filipino HVAC Design Manager to watch in the Dubai Burj Khalifah Project.

Engr RBSanchez was headhunted in 2005 and tracked to serve as the HVAC DESIGN MANAGER in 2006-207 under the Hitachi Plant Engineering - Voltas - ETA J.V. Inc. – a joint venture under Samsung Corporation's "Design and Build" MEP contract for the Dubai Burj Khalifa project. He was urgently deployed under Principalia Management Inc and was issued a Contract and a UAE Employment Visa as <u>"H.V.A.C. DESIGN MANAGER"</u> and in this capacity served the position for a period of 1 year. He was subsequently offered to transfer to PARSONS INTERNATIONAL CONSULTING in UAE and was issued a Labor Visa by Parsons in 2007 but has to decline and opted to practice mechanical engineering back in the Philippines.

#### <u>Duties and responsibilities as HVAC DESIGN MANAGER / CONSULTANT for the HIGH-RISE DUBAI BURJ</u> <u>TOWER PROJECT:</u>

- Serve as a Senior HVAC Design Manager for the Burj Tower. American SOM (Skidmore Owings and Meryll) did the concept design and our company, EVH JV Inc did the construction and workshop drawings. I was personally responsible for the overall HVAC design submissions in terms of correctness of data, design and operation, accuracy in drawings, constructability in the field as well as other factors: i.e.: cost-effectiveness, energy efficiency, serviceability, aesthetics, acoustics, etc. I handled a design team of 6 HVAC engineers and 40 draftsmen.

- **Responsible for applying HVAC good practices and methodologies** into the engineering design. Suggest revisions, concepts and modifications and translate these into workable shop drawings.

- Coordinate and review inter-discipline MEP drawings to ensure constructability, and ensure that no conflicts or confusion arises between disciplines.

- **Conduct multi disciplinary coordination meetings.** Review of individual drawings and resolve engineering issues and problems areas in Sanitary, Fire Protection, Plumbing, Electrical and HVAC designs. Resolves these based on health, safety and cost priorities.

-Coordinate the development of the design package with other parties as and when required.- Meet with owners, client's architects, consultants (Hyder) and Construction Contractor (Samsung), third-party subcontractors and various suppliers and subcontractors.

- Responsible for reviewing and signing all HVAC design drawings as "Engineer-on-Record" for the Burj Dubai Tower.

- Responsible for the timely completion of drawings in the quality and quantity as planned for the HVAC section.

- Evaluates the **materials and equipment specifications** and assist on specifications submittals that impacts on the HVAC design works for the Burj Tower.

From April 2001 – January 2006:

#### **COMPANIES:**

As Owner and Principal

RBS Engineering Technologies Unit E. Gold St. R. Medina Compound Sucat Road, Paranaque Metro Manila, Philippines

As Consulting Engineer (PME) **RBSanchez Consulting Engineers** Unit 919 Mega Plaza Tower Asian Development Bank Avenue & Garnet Sts. Ortigas Commercial Center, Mandaluyong Metro Manila, Philippines

# <u>SAMPLE LIST OF CONSULTANCY PROJECTS HANDLED PERSONALLY IN MANILA, PHILIPPINES (</u>April 2001 – Jan 2006)<u>:</u>



<u>HTMI CALL CENTER PROJECT.</u> Libis, Quezon City, Metro Manila. – the design and construction consultancy of a 2-storey 3,000 sqm new call center building in The HVAC system was designed and constructed by Trane Phils. RBSanchez served as the design consultant of Trane Philippines for the design, construction and commissioning works of the project. (June 2005 to Feb 2006). Contract value awarded to RBSanchez: PHP1.05M for Mechanical design.

FILINVEST CORPORATION, CYBERZONE PARK BUILDING, COMPUTER SERVER ROOMS HVAC DESIGN, Ventilation <u>CFD</u> (Computerized Fluid Dynamics) Office at lst, 2<sup>nd</sup>, 3rd Floor, Filinvest City, Alabang, Metro Manila. (July 2002- Dec 2004) using packaged water- cooled AHU and WPCU with UNDERFLOOR ducted system for the offices). The design and project management of H.V.A.C. air-conditioning and FIRE-PROTECTION (FM200) for the Filinvest MIS system Head Offices.

ASIAN HOSPITAL. SANGRATECH INTERNATIONAL CORP. CLEANROOM DESIGN FOR HVAC. The design of precision-type humidity control air-conditioning and 100% outdoor make-up air dehumidifier system for the Cleanrooms (Class 100) CFD (Computerized Fluid Dynamics). Precision DDC control of absolute humidity (blood requirements) and cleanliness is an absolute requirement because of the human blood and medical procedures that are done within the rooms. (November 2004)



<u>DRAGON MALL PROJECT</u> – a DESIGN of a single storey to 3-storey 30,000 sqm mall located at the Alabang Zapote Road, Las Pinas. Mall is previously the single storey structure Ever-Gotesco Mall. RBS did the design and consultancy of the HVAC (chilled water systems), FIRE PROTECTION and Structural designs. Project was discontinued in Jan 2006 due to oversupply of malls. (May 2005 and Jan 2006). RBS Mechanical Contract value: Paid PHP2.0M for the Mechanical and structural design.



ASIAN HOSPITAL HVAC TROUBLESHOOTING, REDESIGN AND RETROFIT for mitigating the water condensation problem, Alabang, Muntinlupa – A TROUBLESHOOTING AND ANALYSIS AND RETROFIT PROJECT INVOLVING MOISTURE, HEAT LOAD AND AIR-CONDITIONING ANALYSIS. Worked under a sub-contract as the Principal Consultant for TRANE PHILIPPINES, INC, who has the contract with Asian Hospital. (June 2005-August 2005). RBS Contract value: PHP0.3M for Mechanical design/services.

CALIFORNIA PIZZA KITCHEN, Greenhills, San Juan, Mandaluyong City FIRE AND HVAC DESIGN using MAU, and packaged rooftop AHU and SA ducted system with exhaust for large cooking hoods). The design and project management of Fire Protection and H.V.A.C. air-conditioning. (Feb 2005)

DOTS AND MORE. HARRISON PLAZA, MABINI ST. FIRE PROTECTION AND HVAC SYSTEMS FOR LPG PIPE DISTRIBUTION SYSTEM. The design of Fire Protection and H.V.A.C. air-conditioning. (July 2005)

<u>COATS MANILA BAY INC. PROJECT – a 1000 TR CHILLED WATER PLANT WITH SPRAY WASHER AHUS</u> (<u>YARN SPINNING PLANT</u>). A troubleshooting and retrofit project involving ENERGY ANALYSIS. A retrofit and re-design is required for the improvement of cooling and energy consumption of the facility. Successful results as company managed to reduce chiller operation by 50% for the whole year saving around PHP1.7M per month. Awarded 2<sup>nd</sup> highest honors in Energy Efficiency by INternation body as a result of this study. RBS was given a commendation (May 2005-july 2005).

TAGAYTAY HIGHLANDS PROJECT BY BELLE CORPORATION FOR. Mechanical HVAC and Natural Ventilation CFD (Computerized Fluid Dynamics) Strategies and Design for the GreenLands Court. A 10 badminton court covered stadium applying a new concept in natural ventilation by use of a foot level louvers for player's comfort. (February 2005).



CENTURY PARK SHERATON HOTEL at P. Ocampo St. Malate, Manila. Investigation, Assesment, Trouble-shooting and Cooling Load Analysis of the chilled-water HVAC system and AHU duct distribution for four (4) areas serving the hotel: AHU 23/ AHU17/ AHU 10/ AHU13 total tonnage of 400 tons. Successful completion of the project saved PHP8M from the purchase of new 400 TR AHUS by improving performance of old 25 year old AHU and chillers. (January 2005) <u>PBCOM Building</u>, Ayala Avenue, Makati , Metro Manila. (*May 2005*), for 19<sup>th</sup> floor of PBCom building, Trane 70 tonner chilled-water, and AHU ducted system). The duct design, trouble-shooting and project consultancy of H.V.A.C. chilled-water air-conditioning.

<u>CENTURY PARK SHERATON HOTEL at P. Ocampo St. Malate, Manila</u>. Investigation, Assessment, Troubleshooting and RE-DESIGN of the CAFÉ IN THE PARK SMOKING ROOM. (March- 2005).

<u>CENTURY PARK SHERATON HOTEL at P. Ocampo St. Malate, Manila</u>. Investigation, Assessment, Troubleshooting and RE-DESIGN OF the EMPLOYEES CAFETERIA for the odor and smoke problems. (April- 2005).

MANILA MANDARIN HOTEL – Makati Avenue, H.V.A.C. Project design and consultancy for the 3 projects: Tivoli Room, Chinese Restaurant and Clipper's Lounge (April- 2005).

<u>CENTURY PARK SHERATON HOTEL at P. Ocampo St. Malate, Manila</u>. Investigation, Assesment, Troubleshooting and RE-DESIGN OF of the 6 - floors PARK TOWERS APARTMENT for the cooling, kitchen exhaust and odor problems.

<u>YREVERRE BUILDING. MINDANAO AVENUE, QUEZON CITY, A 9-STOREY BUILDING</u>. The design and project inspection of H.V.A.C. air-conditioning system design for the new commercial building (October 2004).

**CONSULTANT OF TRANE PHILIPPINES FOR SPECIAL PROJECTS**, Trane Air-conditioning Inc., with offices at King's Court, Pasong Tamo, Makati City has engaged and paid for my services for special HVAC projects and applications: notably, cleanroom designs, dehumidifier design, Indoor Air Quality, psychometrics and design of positive pressurization of spaces, calculation for solar and cooling loads. (October 2004 - present).



SHELL MARINE VESSELS SWIFTER PROJECT. The Design consultancy for Shell Marine Oil Blending Facilities on board oil tankers consisting of new pumps, mixers, Solartron analysers, and piping design with DDC CONTROLS instrumentation and web-enabled controls of three (3) Fuel Oil Tankers. The whole system is intended to replace the Pandacan Oil Blending Facility (March-July, 2004).

VETERANS BANK'S NEW CALAMBA MAIN OFFICE BUILDING, Calamba, Laguna, a 4-storey new building. The design of the mechanical HVAC, structural & electrical systems for the bank's building (Sept 2003).



HVAC LABORATORY - TABANGAO SHELL REFINERY HVAC redesign and retrofit of the Laboratory Building HVAC equipment system including duct design, ref. piping, This was because of persistent water condensation problems and fumehood retrofit (Oct 2003 -Jan 2004).

<u>DELMARINE CORPORATION</u>, (Maintenance and Performance Contracting of Cargo Lifting Heavy Equipment of WG&A Shipping Corp. at Pier 18, Manila Harbor), using RCM-II techniques. I served as a consultant for the trouble-shooting, analysis, and repair of difficult & recurring works, and helped in the development of RCM maintenance programs to avoid costly repairs. Most problematic systems tackled were hydraulic system breakdowns, etc.

<u>MANILA MANDARIN HOTEL – 3 projects</u>, Makati Avenue, H.V.A.C. Project design and consultancy for **Smoking** room and Kitchen Duct Ventilation, Design of HVAC @ Mandarin Restaurant Branch in Cubao, QC (July-2004).

<u>PBCOM Building</u>, Ayala Avenue, Makati , Metro Manila. (*July 2002-Sept 2003*), for 20-21<sup>st</sup> floor of PBCom building, Trane 70 tonner chilled-water, and AHU ducted system). The duct design, trouble-shooting and project consultancy of H.V.A.C. chilled-water air-conditioning.

FIRE PROTECTION SYSTEM FOR Allied Domenecq Philippines. The design of Fire Protection and Sprinkler System for their Offices, located in One San Miguel Avenue Building, Ortigas Center. Mandaluyong, Philippines, (December 2004).

<u>GREENBELT AREA 3, PRIMA LINEA BOUTIQUE</u>, Greenbelt Phase 3, Makati, Metro Manila. (April 2002). The design and project management of H.V.A.C. air-conditioning (water-cooled ceiling-concealed condensing units), electrical, and fire-protection system designs for the commercial space of Linea Boutique.

FORT BONIFACIO DEVELOPMENT CORPORATION GAS PLAZA STATION BUILDING, Manila, Philippines (April 2001 – September 2001). Design and project consultancy works for Diesel-driven Electric Generator Set Plant, H.V.A.C., FIRE-protection and the electrical works. I also served as consultant for EEI Corporation and the Fort Bonifacio Management Corporation for the project.

ALLIED DOMENECQ PHILIPPINES. The design of Fire Protection and Sprinkler System for the 8<sup>th</sup> Floor Offices, located in One San Miguel Avenue Building, Ortigas Center. Mandaluyong, Philippines, (December 2004).

<u>DIGITEL CROSSING CORPORATION</u>, J.G.C. ROBINSON'S SUMMIT BUILDING, Ayala Avenue, Makati , Metro Manila. (*March 2002-April 2002*). The design and project management of HVAC air-conditioning (chilledwater precision-type aircon for network rooms), electrical, and fire-protection systems design (using FM500 fireprotection system),

<u>TECHNISTOCK CORPORATION, CALL CENTER OFFICES</u>, 19<sup>th</sup> Floor, PhilamLife Building, Ayala Avenue, Makati, Paseo De Roxas, Metro Manila. *(started June 2002- July 2002)*. The design and project management and construction of HVAC air-conditioning, electrical, and fire-protection systems design (FM500system) for the whole Call Center Offices of Technistock Corporation.

N.A.I.A. AIRPORT TERMINAL-3 PROJECT (MANILA INTERNATIONAL AIRPORT), Pasay City (March 2001 to March 2002). RBSanchez Consulting Engineers served as one of the 2 consultants for EEI Corporation on the design, analysis and field inspection for compliance of the mechanical structures and the integrity of scaffolding used in the elevated roadway works. (Predicted the collapse of Bridgeway sections in a report submitted to EEI. months prior to accident).

BRUNEI CONSULTANCY, YURA OILTOOLS SENDIRIAN BERHAD (NEGARA BRUNEI DARUSSALAM) ( September 2000 - March 2001). Served as consultant of Yura Oiltools in the design, estimates, and execution of Offshore Well Completion Equipment and Drilling accessories for offshore oil rig contracts.

TRANS CARGO LIFT INC., SWIFTER FUEL OIL PROJECT. Re-design and retrofit of 4 Marine Vessels Fuel Oil Cargo (1.5M liters capacity). Design, consultancy and project management works for the installation of Blending Pumps, Viscosimeters, Densitometers, associated piping and DDC instrumentation & and Web PDAbased controls. The Fuel Oil blending facility is on board the vessel. (April 2004).

#### SOFTWARE CONSULTANCY, SCAFFPRO PURCHASE AND TRAINING FOR E.E.I. CORPORATION ON SCAFFOLDING WORKS. Held on November 18-21, 2001 attended by 18 engineers and personnel from E.E.I. Corporation. The 3 day course was handled by myself through the use and operation of "ScaffPro"- a scaffolding design, material calculation, CAD drawing and load analysis software.

TECHNICAL MAINTENANCE & SUPPORT PRODUCTS CORPORATION (TMSP), MANILA, PHILIPPINES (May 2000- June 2001). andled engineering and technical projects support for company's Siemens Air Quality Assessment and EPA (Equipment Pollution Equipment & Accessories).

VARIOUS B.P.I. (BANK OF THE PHILIPPINE ISLANDS) BANK AND BANKING CENTERS, INCLUDING NEW BUILDING FIRE AND HVAC SYSTEMS (SINCE JUNE 2002-Feb 2006). The design of H.V.A.C air-conditioning for the bank's office. Other BPI Projects: Iloilo BPI Main Office building, San Fernando BPI Retrofit, Paseo Makati Branch, Eastwood City Branch, Iloilo Main Offices, New San Fernando Main office , various Makati offices, etc.

VARIOUS FIRE AND HVAC MECHANICAL DESIGN WORKS FOR EAST WEST BANKING CORPORATION OFFICES (as SOLE MEP CONSULTANT) for all their building and branch design works (approx 78 buildings and branches whose HVAC was designed nationwide) (since March 2002- Feb 2006).

#### From Aug 1991 – March 2001:

EMPLOYER:

Mashhor Group of Companies

Head Office, **G-22 Lot 3698 Jalan Pangsa Seria 7000, Negara Brunei Darussalam** (the largest local company in Brunei with 1500 employees and 22 companies dedicated to the oil and gas industry)

Dates inclusive: August 1991 - March 2001 (10 years)

- 1995-1997 Project Manager and Contractor Representative of Shell Offshore Construction Contract – the Winsertor Offshore Construction & Maintenance Contract, Brunei Shell Petroleum Co involving construction & Maintenance of the offshore complexes
- 1998-2000 Contracts Manager and Representative of SCO/4 Offshore Construction project, Brunei Shell Petroleum Co.
- 1994-2000 Brunei government accredited HVAC Design Engineer for the following projects of which I was the official HVAC (Refrigeration and Air-conditioning) Engineer of Mashhor Aircoole Sdn. Bhd. Co:
- 1993-1995 Contracts Representative Project Engineering Services Contract for Brunei Shell
   Petroleum Co.
- 1991- 1992 Project Engineer and Contractor Representative Brunei Shell Marketing Muara
  Terminal and Bitumen Plant Upgrading Contract
- Member of the Technical Consultancy Group of Mashhor Engineering

#### From Aug 1989 – July 1991:

 EMPLOYER:
 Advanced Technology and Solutions, Inc. (a Singapore-based engineering design and CAD company)

 102, 103, Unit 118AA & 119AA

 Ground Floor

 The Atrium of Makati

 Makati Avenue

 Dates inclusive:
 August 1989-July1991

 Position Held:
 Assistant Manager (Philippine-wide)

 Immediate Superior:
 Mr. Ang Thian Soo

Duties & Responsibilities:

- Head of Mechanical Software Development Team (as in-house consultant of **engineering design** solutions in H.V.A.C., CAD and mechanical designs and programming).
- Conducts training & development courses on structural, H.V.A.C. and CAD software use
- Manages the IT center as an Assistant Manager for country-wide operations
- Serves as back-up Marketing Representative to Clients
- Helps in Cost Estimating Software package solutions for clients

EMPLOYER: ATS-RYCF Group

Plaza Building

Dates inclusive: February 1986-July1989 Position Held: ATS Branch Manager / Co-owner

#### Duties & Responsibilities:

- Manages the ATS-RYCF Group in Zamboanga City, Philippines
- In-house consultant for structural, HVAC & mechanical engineering software design solutions
- Local Technical and Marketing Representative to Clients
- Conducts training & development courses in CAD, HVAC, FemVisions and StructE.

#### From May 1979 – Jan 1986:

#### EMPLOYER:



PROJECT ENGINEER Pilipinas Shell Petroleum Corp. Tabangao Shell Oil Refinery Plant Tabangao, Batangas Philippines

#### PROJECT ENGINEER

Job Description as PROJECT ENGINEER (from September 1981 to January 1984):

Level: Senior Executive Job Group 6

Immediate Superior: Engr. A.D. Moredo

Manager, Shell Office Projects Engineering

Shell Refinery

#### FIELD MECHANICAL ENGINEER

# **Job Description as Maintenance Field Engineer of Shell Tabangao** (from May 1979 to September 1981):

Level: Junior Executive Job Group 7

Immediate Superior: Engr. J.T. Bonot, Chief Engineer

Tabangao Shell Refinery

#### PARTIAL LIST OF PROJECTS HANDLED (PILIPINAS SHELL PETROLEUM):

- 1. Construction of Refinery Recreation facilities
- 2. Upgrade of 24inch crude oil piping to jetty-1
- 3. Hydrotreater and associated piping HTU-2 Project
- 4. Cooling tower 1 & 2 re-design and refurbishment
- 5. Pump and pump selections for Refinery equipment
- 6. Crude Tank Construction T101
- 7. Bullet LPG Sphere Construction V-10 finishing works
- 8. Jetty 1 Pump, pipe and tank modifications design and construction
- 9. Refrigerated Tanks for LPG Entrepot Tank Construction Piping Tie-in projects
- 10. Shell Refinery Fire System and Buoy Design
- 11. Malitam River reclamation project for LPG refrigeration entrepot
- 12. General Refinery Shutdown Maintenance Planning and others...





AWARDED SEVERAL NATIONAL HONORS AND CITATIONS. As Mechanical Engineering Board Exam Topnotcher, No. 1 with the Highest Score Achievement in the government Licensure Examinations from PRC for Mechanical Engineers in 1981. As CUM LAUDE honors graduate in the University of the Philippines. As University Scholar Award and Engineering College Scholar Award, given by the President and Dean of College of Engineering for excellence, University of the Philippines and as STATE SCHOLAR of the Department of Education and Culture and Sports (DECS) in Manila.

<u>CITED IN NEWSPAPER PUBLICATIONS AS HVAC DESIGN MANAGER OF BURJ KAHLIFAH (the tallest</u> building in the world"... As engineer merited publishing as NEWS ITEM in **Arabic NEWSPAPER EMARATALYOUM. Issue Sept 29, 2006**. Featured in an Arabic Newspaper (EMARATA in quarter page with Also featured in **PHILIPPINE DAILY INQUIRER**. **Issue Sept 21,2008**. "Engineer finds progress in Dubai" (half page with picture) as the Filipino Engineer in Dubai as the HVAC Design Manager - tallest building in the World. The Burj Dubai Khalifa Tower.

## OTHER PICS ON WORK EXPERIENCE:

1.



Shell Troubleshooting & Analysis of AHU moisture problems in Pilipinas Shell



SHELL LNG ENTREPOT (Consultancy - Year 2003)



Have done design and consultancy works for oil refinery plants, marine vessels, malls, high rise, textile plants, hotels, food processes, hospitals, offices, warehouses, recreation centers, luxury recreational facilities, semiconductor plants, cleanroom facilities, call centers, BPOs, mixed used centers, etc.

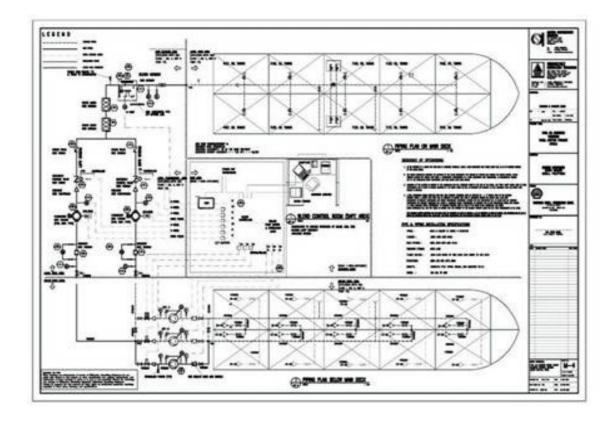


OFFSHORE SHELL BRUNEI Winsertor Offshore Contract

for Brunei Shell MV Winsertor Contract-Mashhor Offshore)



**Compressor Plant & Chilled** Water Piping (as HMM Construction Manager (EPS Works-as Project Engineer (Year 1998) Construction



SAMPLE OF MECH. DESIGNS BY RBS ENGG. TECHNOLOGIES OIL BLENDING FACILITY- VESSEL MIXING SHELL (2003-2004)



# Western Digital Storage Technologies (Philippines) Corp.

HGST Plant. 109 Technology Ave SEPZ, Laguna Technopark Sta Rosa, Laguna, from February Years 2022-2023.

DESIGN and CONSULTANCY SERVICES for

70,000 sqm WD PLANT EXPANSION to capacity of 150mu with CLEANROOMS designed to ISO CLASS 100.



RBS will design the ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, MECHANICAL, ELECTRONC, I.T. & DATA INFRASTRUCTURE of the WD PLANT.



Western Digital



WD has contracted RBS as a "singlepoint responsibility" for the engineering design of the plant's new 3000sqm CLEANROOM to ISO CLASS 100 levels.

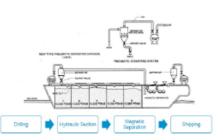
## CFD FOR PUMPING OF HETEROGENOUS FLUIDS IN MINING OPERATIONS SERVICES FOR THE PHILS. LARGEST OFFSHORE MINING PROJECT

Offshore in Cagayan, Phillippines, July 2021 and ongoing to yr 2022.

RBS supplies the CFD Mathematical Modelling and Mechanical Engineering expertise for for Offshore Pump Platform for Sand Extraction and On board MB Siphon 1 vessel of JDVC Corp.

The operation requires a verical suction of heavy magnetitie particles of 120 meters depth on average and a pump power of 1MW sized pumps. Complete with three (3) full sets of magnetic separators, ejector system for deep-sea pump-up siphoning from down to 200 meters after the sea bed, washer apparatus, drying apparatus, and loading facilities for mineral transfer to export vessels. CFD for fluid flow and materials processing.





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lo Global Capita

Corporation



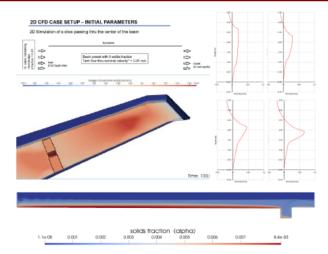
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## CONSULTANCY SERVICES FOR BALARA WATER TREATMENT PLANT 1

Solver: OpenFOAM v1902 – driftFluxFoam Post-processing: Paraview

CFD simulation to predict the sedimentation through the basins and sludge accumulation. The results to be used as a confirmatory for design and reference for sludge pumping system. This includes parametric study of bed slopes and sludge pump pit intervals in the reference of velocity profile, effluent turbidity quality and concentration prediction along the depth of the basin.





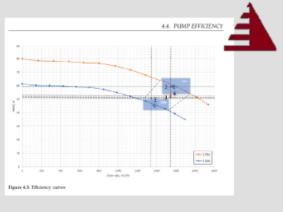
# CONSULTANCY SERVICES AND PUMP PERFORMANCE ASSESSMENT of MAYNILAD PUMP STATIONS



Maynilad Pump Stations in Metro Manila and Cavite | December 2018 to October 2019

RBSanchez Inc. is the Mechanical Consultant for the Maynilad Water System Assessments, measurements and analysis for 120 pumping units in various pumping stations to 1100 hp water pumps.







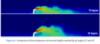


RBS supplies consultancy for the CFD Engineering and environmental marine expertise for the diffusion and dispersal of inflows and outflows from the Plant.

MANILA EAST BAY WATER TREATMENT RO PLANT (REVERSE OSNOSIS plant) Tadagua with Philippina construction company First Ballour secured a contract in December 2020 for the design and construction of the East Bay Drinking Water TreatmentPlant







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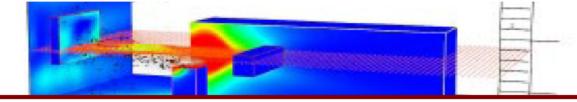
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LAGUNA LAKE PROJECT. The contract is for the design and construction of a Drinking Water Treatment Plant (DW/TP) sludge with a preduction capacity of 50,000m3 per day in the Pakil Lake area, Laguna Lake, east of Marnia.

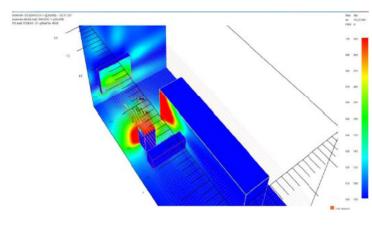


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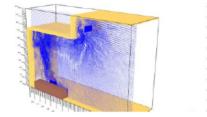


Page 4

### CFD ANALYSIS OF ALUMINUM-DIE CAST WAREHOUSE AT ZAMA PRECISION



INVITED AS A RESOURCE SPEAKER:



LOCAL EXHAUSTS VENTILATIONS SUCH AS PUSH-PULL OPTIONS WITH MULTIPLE CFD SCHEMES

Different schemes were exercised and validated to identify the optimum solution for the exhaust of the particles from the furnaces. The following options were derived from different validated cases and studies and investigated if applicable in the warehouse situation.



ne, 2017

LECTURES & TRAINING PICTURE UP National Engineering Center Training Seminars ...

MAIN RESOURCE SPEAKER FOR SEVERAL H.V.A.C. TRAINING COURSES (2003- 2005): on "Improving Energy Efficiency in HVAC Systems" at the NATIONAL ENGINEERING CENTER, University of the Philippines, Diliman (with speaker fees paid for invited speaker)

LECTURER UPON INVITATION BY THE INSITUTE OF INTEGRATED ELECTRICAL ENGINEERS OF THE PHILS. INC. (I.I.E.E.) on "HVAC Energy Savings Techniques", Sta. Rosa, Laguna, July 2004.(with speaker fees paid for invited speaker)

**RESOURCE SPEAKER** FOR **"EQUIPMENT OPTIMIZATION** <u>**TECHNIQUES"**</u>, Sponsored by <u>**ENERGY MANAGEMENT**</u> <u>**ASSOCIATION OF THE PHILIPPINES (ENMAP)**</u>, held at MERALCO Foundation, Inc., Ortigas Ave (2005). (with speaker fees paid for invited speaker)



**ENERGY EFFICIENCY, HVAC ECONOMICS, New and emerging HVAC Technologies**, etc. on several occasions including one done for the Yuchengco Group of Companies in Landev Corporation Offices, RCBC Building, Makati City..

<u>RCM- "RELIABILITY CENTERED EQUIPMENT MAINTENANCE"</u> as assigned by Amarra Consulting Services for the WG&A Shipping Equipment Services of Delmarine Corporation. (with speaker fees paid for invited speaker)

<u>RESOURCE SPEAKER</u> for various <u>"PSME HVAC Design Seminars"</u>, PSME (Philippine Society of Mechanical Engineers) Makati Chapter (2009- 2016 ongoing)

TECHNICAL PAPERS PRESENTATION for various <u>"PSME National Congress Seminars"</u> delivered to the PSME-NATIONAL CONVENTION of the Philippine Society of Mechanical Engineers), SMX Convention, Mall of Asia, Manila (2011-annually)

4. EDUCATION:-

June 1974- April 1980	<b>B.S. degree in Mechanical Engineering</b> (with <b>CUM LAUDE HONORS</b> ) from the country's premier <b>University of the Philippines (U.P.)</b> , Diliman, Quezon City, Metro Manila.		
June 1970 - April 1974	Secondary High School (Form Level), University of South Eastern Philippines, Davao City, Philippines (Salutatorian Honors)		
June 1964 - March 1970	Elementary Levels, Stella Maris Academy, Davao City		

#### OTHER DETAILS:

Phil. Passport No. EE-627531

Professional Mechanical Engineers License No. 2999