Applying the Fundamentals

PSRI and Polyolefin Technology

PSRI has over 200 years of cumulative experience in design, development, and troubleshooting, most of which focus on issues/technologies typically related to polyolefin plants, such as resin conveying, purging, storage, electrostatics, catalyst delivery, reactor hydrodynamics, etc. We understand these operations and we have been solving problems in these areas for over 45 years. The benefit of such is being on the ground floor in new technology and new design concepts.

PSRI Particulate Solid Research, Inc.

Applying the Fundamentals

Polyolefin technology has been around for over 75 years; but, the technology continues to grow. With business drivers such as a competitive global market and rapidly changing economies, the polyolefin industry can no longer afford to have laps in modernization and upgrades. Today's units need to be at peak performance to squeeze out that additional profit margin which will make all the difference.

PSRI'S research and technical knowledge base have provided solutions to our clients that directly impact their bottom line by continually keeping abreast of new developments and technologies essential to the Polyolefins world. For example, PSRI has designed and helped implement solutions including catalyst attrition, electrostatics mitigation, sheeting detection, eductor design and operations, condensing operations, purge bin designs, conveying designs and relief of floss and fines. We have done so by using both experimentation and computations using the state-ot-the-art computational tools and equipment at our disposal.

Having an electrostatic concern? We have designed spargers that minimize electrostatic at the sources. With a reduction in water or by using antistatic agents, catalyst productivity can be significantly improved making the process more cost-effective. Having an issue with the particle size distribution of the product? PSRI has done detailed attrition audits to ensure process integrity and continuity is maintained . Plant capacity are an issue? We have detailed models to provide optimum performance for reactors, feeders and purge bins. Do pellets have high levels of floss and fines? Chances are your pneumatic conveying line is the culprit, and changes in operation may be all that is needed.

At PSRI we have had experience with many aspects of polyolefin units since their inception. If we have not seen your problem, we still have you covered. PSRI has the research talent and facilities to bridge the gap of what is unknown but required to move your potential process into commercialization. We have 110,000 sq. feet (10,000 sq. meters) of research space with 10,000 SCFM (17,000 NCMH) of blower/compressor capacity, 4160 VAC and 55 to135 feet (17 to 41 meters) of height in our high bays that give us the tools to take what is unknown known and what is a concept into an application.

In addition, PSRI has a 0.6-meter (2-foot) diameter by 7.5-meter (25-foot) tall high-pressure fluidized beds designed explicitly for polyolefin research and is capable of reaching pressures of 45 barg (650 psig). The unit is capable of operation with a wide range of analytics including electrostatic changes, bubble hydrodynamics, solids tracers, pressure responses, and acoustics. Furthermore, PSRI has several conveying lines and hoppers that are well suited for polyolefins.

The biggest obstacle to plant design and operation is having the tools to drive to success. PSRI knowns particle technology and its relation to system integration. Furthermore, we have the resources and tools to get you where you need to go.

Applying the Fundamentals

PSRI Process Development Experts

Dr. S.B. Reddy Karri, Consulting Director: Reddy has 28 years experience in particle technology and fluidization. He has worked on FCC technology, cokers, polyolefins, methanol to olefins, maleic anhydride, acrylonitrile, TiO_2, polycrystalline silica, gasification, pyrolysis, sulfur capture, CO2 capture, biomass and radioactive materials.

Dr. Ted Knowlton, Fellow: Ted has 46 years experience in particle technology. He has worked on FCC technology, cokers, polyolefin, MTO, maleic anhydride, acrylonitrile, TiO_2, polycrystalline silica, gasification, pyrolysis, sulfur capture, CO2 capture, and mining. He has developed well-known processes such as HYGAS, U-GAS, PEATGAS, RENUGAS, HYTORT, PFH and is the developer of the L-valve.

Mr. John Findlay, Technical Consultant: John has 34 years of experience in particle technology and fluidization. He has worked on FCC technology, cokers, polyolefin, TiO2, coal gasification, pyrolysis, sulfur capture, CO_2 capture, and biomass.

Dr. Ray Cocco, President and CEO: Ray has 27 years experience in reactor engineering, modeling, fluidization, and particle technology. He has worked on ceramic processing, oxydehydrogenation, pharmaceutical hydrogenation, catalytic oxidation, hydrogenation, hydrodesulfurization, composite materials, biomass, chemical looping, polyolefin, chlorination and oxychlorination.

Dr. Greg Mehos, Technical Consultant: Greg has 20 years of experience in hopper and feeder design, design of gravity reclaim systems, spray dryers, and analysis of purge columns.. He has worked with pharmaceutical formulations, wet granulation, fumed metal oxides, biomass gasification, pigments, and emulsification.

Dr. Ben Freireich, Technical Director: Ben has 8 years of experience in particle technology and has recently been listed as one of AIChE's 35 under 35. He as worked on a wide range of reactor engineering and solids processing problems including catalyst deactivation and attrition, bin design, fluidized beds, pneumatic conveying, mixing and blending, segregating systems, size reduction, etc.

Dr. Manuk Colakyan, Technical Consultant: Manuk has 30 years experience in reactor engineering and solids processing. Notably, he was instrumental in the R&D efforts for the commercialization of the Unipol process. He also has experience with multiphase flow systems, heat and mass transfer and super critical fluids.

Dr. Ulrich Muschelknautz, Technical Consultant: Ulrich has 27 years experience in particle technology with emphasis on cyclone design and optimization as applied to the energy and chemical sectors. Of late, he has been involved in the R&D efforts for the next generation of axial separators.


PSRI