

Who is i-APC?

i APC (Insight Advanced Process Control LLC and i APC Consulting Co.,Ltd.) is one of the most experienced Non-Linear Advanced Process Control (APC) consulting firms in the world focusing on specialty chemicals, polymers, cement, and power process specialist. We have 5 process consultants who are strategically located where we do business. Our current locations include the United States, China, South East Asia and soon to be Middle East. Our engineers have approximately 200 combined man-years experience in the APC business. i-APC consultants are innovators and leaders and are patent holders of Non-linear APC technologies including Aspentech's non-linear (Apollo) technology with a major contribution to software development and improvement with Aspen Polymers Production Control and Pavilion Process Perfector.

i APC is focused on delivering high quality applications that meet the customer's safety, economic, technical and environmental metrics. Applications will generate significant economic and operability improvements to their processes, and will provide sustained benefits throughout the life of the application and the plant.

i APC is focused on delivering high value across value chain in polymer industries via the following area of expertise

- Process Performance Improvement
- Polymer Innovation Practices
- Industrial Big Data Analytics
- Operator Round Mobility Solution

i APC Business

Process Performance Improvement

- Advanced Process Control Specialist
- Process Control Optimization
- Process Performance Monitoring
- Batch Optimal Control and Production Planning
- Integrated Sequence Automation Expert System
- Energy Network Optimization
- Process Engineering Support

Process Modeling Innovation Practices

- Polyolefins : HDPE/LLDPE, LDPE, PP
- Polyesters : PET, PBT

- Polyamides : Nylons 6, Nylon6-6, Nylon 9-T
- Elastomers : EPR, EPDM, SBR, NBR, polybutadiene
- Others : Polycarbonates, PVC, PVAC, polysilicones, PS, SAN, emulsion polymers, polyacrylates, polylactic acid, polyols (PEO/PPO)
- Refinery and Petrochemicals

Industrial Big Data Analysis

- Smart Sensor for Predictive Failure
- Predictive / Prescriptive Analytics
- Machine Learning (Non-linear Logistic Regression Model)

Operator Round Mobility Solutions

- Plant Mobile Data Management and Decision Support System
- Turn Field Data into Digital to support Industrial Big Data Analytics

i APC 3i Solutions and Applications

i APC is a technology independent company, with substantial experience in several commercially available control technologies including:

- Aspen Technology
 - Manufacturing Suite : Non-linear controller, DMC3, Aspen Process Sequencer
 - Aspen Statistical Analyser : AspenIQ Powertools for Polymers Inferential
 - Engineering Suite : OLC and Polymer Modeling
- Honeywell's ProfitSuite : Profit Controller
- Rockwell Pavilion Technology's APC Suite : Process Perfecter, RSlogix and Sequential Function Codes
- Yokogawa's APC : SMOC and Exapilot Sequencer

i APC is a technology independent APC service provider with insight experience in alternative APC software technologies with more attractive ROI including:

- BYT Technology
 - Model Predictive Control and Advanced PID : ICE Technology
 - Process Performance Monitoring : SPC and Alarms
- InfoTrol Technology
 - Model Predictive Control : HIECON-I MPC
 - Batch Optimal Control : HPBC Batch MPC
 - Batch Production Planning : PRDPLAN
 - Process Automation : IPOES Sequencer
 - Energy Network Optimization : ENetOPT

Company Strategies

- Keep customer satisfaction our top priority
- Adjust our services offering to match the customer's needs and ensure value delivery
- Remain a services company providing advanced technology expertise to the industries
- Maintain a technology independent position with respect to the major technology providers allows
 - Provide objective advice regarding commercially available technologies
 - Utilize the software that is most appropriate for each project – based on technical, commercial, or client requirements

Experience Summary

- i APC staffs have implemented advanced multivariable control systems on all major polyolefins and polystyrene licensor technologies. - 122 polymers multivariable controller applications to date.
- Customers include: QAPCO, SABIC, Tasnee, Yanpet, Saudi Kayan, LyondellBasell, Sinopec, BP, Samsung, Nova Chemicals, SCG Chemicals and many more
- Polymer processes include:
 - Polyethylene (PE) – LD, LL,HD, VLD,
 - Polypropylene (PP) – Random, Block, Impact, Terpolymers, Polystyrene – Crystal and Impact.
- Polymer technologies include :
 - Polyethylene (PE) – Gas phase, Slurry, Solution, Tubular LD, Autoclave LD,
 - Polypropylene (PP) – Gas phase, Slurry
- Polymer licensors include :
 - Polyethylene (PE) – Unipol(LL/HD), Nissan HD, Ineos, Nova Chemicals, LyondellBasell (Lupotech T/TM, Lupotech G, Hostalen), Mitsui, Enichem LD, Chemie LD, Carbide LD, Mitsubishi LD, DuPont LD.
 - Polypropylene (PP) – Novolen , LyondellBasell (Spheripol, Spherizone, Catalloy), Grace PP, Borealis Borstar, Chisso.
- Successful applications have been implemented in the chemical and polymer industries on a variety of production units.
- Professional and consulting services have been provided for plant-wide advanced process control benefit studies, single-unit benefit studies, performance audits, strategic studies, and training courses.

Key Differentiate Polymers

Experience

- One of the most experienced Non-Linear Advanced Process Control (APC) consulting firms in the world.
- Deep experience focusing on Polymer process technology with good experience in project successful implementation.
- 5 process consultants with approximately 200 combined man-years experience in the Polymer APC business

- Technology independent APC service provider - no obligation to any specific software company.
- Technical expertise with the major APC software technologies, and the major DCS systems

Implementation Strategy

- The maximum benefit are obtained by keeping a solution simple
- Always applied a simplified modeling approach as per i APC research
- i APC focuses on 1st Pass quality to minimize the re-pelletizing
- Technology transfer is always maximized during the project as a top priority.
- i APC is a technology independent and do not sell the next new version.
- Provide objective advice regarding commercially available technologies
- Utilize the software that is most appropriate for each project

APC Application Experiences

Polymers	Process	Technologies	No. of Successful Projects	Total
Polyethylene PE	High Pressure LDPE	Tubular	5	71
		Autoclave	8	
	Gasphase	LLDPE	15	
		HDPE Ziegler Natta	1	
		HDPE Chromium	4	
	Slurry	Loop	10	
		CSTR	24	
Solution	Solution PE	4		
Polypropylene PP	Gasphase	PP	10	30
	Slurry	Loop	11	
		CSTR	9	
Polystyrene	Gasphase	PS	21	21

Consulting Services

Consulting Area	Consulting Services Details
Process Performance Improvement	<ul style="list-style-type: none"> • Advanced Process Control Specialist • Process Control Optimization • Process Performance Monitoring • Batch Optimal Control and Production Planning • Integrated Sequence Automation Expert System • Energy Network Optimization • Process Engineering Support
Process Innovation Practices	<ul style="list-style-type: none"> • Polyolefins : HDPE/LLDPE, LDPE, PP • Polyesters : PET, PBT • Polyamides : Nylons 6, Nylon6-6, Nylon 9-T • Elastomers : EPR, EPDM, SBR, NBR, polybutadiene

	<ul style="list-style-type: none"> • Others : Polycarbonates, PVC, PVAC, polysilicones, PS, SAN, emulsion polymers, polyacrylates, polylactic acid, polyols (PEO/PPO) • Refinery and Petrochemicals
Site or Application Specific Training Courses (Intermediate and Advanced Training)	<ul style="list-style-type: none"> • Aspen Non-linear / DMC3 / Aspen Process Sequencer • Rockwell Pavilion Process Perfector and RSlogix • Honeywell Profit Controller • Yokogawa SMOC and Exapilot • InfoTrol Technology • ICE Technology
Benefit and Strategy Studies	<ul style="list-style-type: none"> • Facilities Wide Benefits Analysis • Facilities Wide APC Strategies • Single Unit Focused Benefits and Strategy Studies • Online Application Benefits Assessments
Control System Performance Audits	<ul style="list-style-type: none"> • Application Post Audits • Application Performance Reviews/Audits • Regulatory Control System Design, Analysis and Tuning • Maintenance Requirements Evaluations

Contact Details

USA Office : Insight Advanced Process Control

Address : 1795 N Fry Road, Suite 146, Katy, Texas, USA 77449

Telephone : +1-281-748-5894

SEA Office : i APC Consulting Company Limited

Address : 7/1 The Centro Ramindra, Kanjanapisek Rd., Kannayao Bangkok 10230

Telephone : +66-61-995-5452

Email : info@i-apc.com