Sava Kovac, M.Sc.

Principal Developer, Advanced Process Control

Summary

Mr. Kovac joined ANDRITZ in 1995. He has over 26 years of experience in development of real-time industrial control software packages, with detailed experience in design of process control strategies, and installation and commissioning of process control solutions in various industries. He holds a U.S. patent in the area of model predictive-adaptive control for a unique integrating predictive-adaptive regulatory controller and has published numerous papers on the application of Advanced Process Controls (APC). He has also presented scientific papers regarding advanced process control and hosted workshops at various conferences. Mr. Kovac has over 20 years' experience in process system analysis, design methods analysis, and development of real-time Supervisory Control, Data Acquisition (SCADA) system software and Advanced Process Control. Using BrainWave and IDEAS as key components, Mr. Kovac has developed unique engineering application solutions for various industries including Pulp and Paper, Mining, Chemical, Glass, Food, Tabaco, and wood processing markets.

Experience

ANDRITZ (Richmond, British Columbia, Canada)

Over 20 years of experience in development and implementation of industrial application solutions using advanced process controls in pulp and paper, glass, specialty chemicals, building materials, plastics, food products, wood processing industries (MDF, OSB..) and mining industry.

Research, development and implementation of a new predictive-adaptive process controller that is ideally suited to control marginally stable processes.

Designed and developed a process simulator using MFC library. This is a Windows based program that monitors changes in specified inputs and produces a process response in specified outputs.

Key player of a team that developed a unique predictive-adaptive regulatory controller.

Designed and developed graphical user interface with trending and logging for the controller under Windows operating system.

Designed, programmed and developed MIMO (Multiple Input Multiple Output) version of Predictive-Adaptive process controller using MS Visual Studio.

Designed and implemented industrial process control operator interface under the OS/2 operating system.

Designed and developed a Factory Link task that converts signals between PLC units and engineering units and provides filtering (Data Conditioner).

Ported controllers code from a 16-bit to a 32-bit compiler using Visual Age C++ under OS2.

Project experience in mining, APC applications since 1995-present

Major Copper Mines in Chile including MLP, Collahuasi, Escondida and many others

Developed and Implemented Advanced Process Control Solutions in many areas of operations such as Crashers, SAG and Ball Mils, Flash/Rougher Flotation Cells and Thickeners using ANDRITZ ACE and BrainWave technology.

PT Vale Nickle Mine (Sorowako Indonesia)

Advanced Process Control for reduction kilns

Soled, developed and commissioned APC for five reduction kilns at PT Vale in Sorowako mill. The implemented solution helped the customer to significantly improve mill production and energy usage.

Newmont Gold Mine (Penasquito site, Mexico)

Developed advanced process control of six Thickener applications using IDEAS and BrainWave technology.

Gibralter Mine (Williams Lake, British Columbia, Canada)

Advanced Process Control for Floatation Cells

Developed and commissioned for advanced control of Flotation cells using BrainWave technology. The implemented solution delivered significant improvement in product recovery and production.

Codelco Mine (Chile)

Advanced Process Control for Smelter

Developed and commissioned an advanced control strategy for bad and feed temperature as well as for Absorber Acid Concentrator using BrainWave technology.

Project experience in Pulp&Paper, APC applications

Veracel (Porto Seguro, Brazil) International Paper (US, France, Brazil), Arauco (Chile), CMPC (Chile), Klabin (Brazil), Aracruz, (Brazil)

Implementation of an Advanced Process Control trough Pulp and Paper industry

ENGINEERED SUCCESS

Developed and commissioned advanced control for various areas in Pulp and Paper including: digester, washing, bleaching, evaporation, kiln and steam control. The control systems were installed multiple times at many Pulp and Paper mills around the world.

Kronoply, Pfleiderer, KronoSwiss, Massisa, Daiken (Germany, Swiss, Brazil, New Zealand)

Advanced Process Control for MDF

Developed and implemented advanced control system for moisture control. The system demonstrated significant savings in energy, decrease of product rejects, better product quality, decrease in operator load.

General Electric Plastics, Global Sites (Mt. Vernon, Selkirk, USA)

Advanced Process Control for Chemical Reactors

Developed a variety of custom advanced control applications to optimize the control of Lexan Polycarbonate continuous polymerizing reactor viscosity control.

Johns Manville (City, State, Country)

Advanced Process Control in Glass Industry

Engineered and commissioned an advanced control system to optimize the temperature control of molten glass in melter furnaces and distribution of fore hearths. The system demonstrated significant increases in production and reduced fuel consumption and was installed at over ten plants in the USA.

Lola Computer, (former) Yugoslavia – since 1990-1995

Designed and developed operative system for PLC based on Allen-Bradley design (macro assembler, 8031, 8051, 80C652)

Designed and developed compiler in C for PLC that translates application program (ladder instructions) into executable code (assembler instructions). Designed and developed over 40 new ladder instructions and functional blocks for PLC programming. Created software for digital and analog I/O module family, ability to program channels, set ranges and gains. Created real-time ladder program for rapid accounting and packaging of electrodes. Designed and developed GUI for complex distributed real-time SCADA system. Designed and developed software and designed hardware for hand monitor and operator panel.

Special Vehicles Factory, (former) Yugoslavia

Designed and developed ladder program for step motor control

ENGINEERED SUCCESS

Developed communications between PC and PLC based on RS232 standard interface. Created and implemented software modules for historical and trending functions. Developed software for online editing and monitoring of requested analog and digital inputs/outputs. Designed specialized program for CNC cutting that automatically translates every kind of shape into executable code for CNC cutting. Designed and developed specialized program for resizing garment patterns.

Education

- Bachelor of Science (Computer Science), Military and Technical Facility, Zagreb, former Yugoslavia, 1990
- Master degree of Computer Science, Electrical Engineering, Belgrade, Yugoslavia, 1992

Professional Development

Computer Languages
- C/C++, MS Visual Studio, Pascal, Modula-2, Fortran, PLM/86, Macro Assembler and PLC programming
- MATLAB, Graphical User Interface libraries, ORCAD, AutoCAD R12
- MS Windows, OS/2, DOS, UNIX, VMS, NOS, IBM PC, SUN WS, HP9000, CYBER

Associations

- List

Presentations and Publications

[1] B. Gough, **S. Kovac**, M. Huzmezan, Long Le, Gary Roberts, "*A New Generation of Adaptive Model Based Predictive Controllers Applied in Batch Reactor Temperature Control*", IEEE Industrial Applications Society, Advanced Process Control Workshop, Vancouver, British Columbia, April 1999.

[2] M. Huzmezan, G.A. Dumont, B. Gough, **S. Kovac** "*Time delay integrating systems a challenge for process control industries a practical solution*", IEEE Industrial Applications Society, Advanced Process Control Workshop, Vancouver, British Columbia, September, 2000

[3] B. Gough, J. Kay, M. Weaver, **S. Kovac**, B. Deobald, "*Advanced Predictive Adaptive Control of Steam Header Pressure, Saveall Consistency and Reel Brightness in a TMP Newsprint Mill*", TAPPI ISA/PUPID PCE&I Conference, San Antonio, Texas, March 2001.

[4] B. Gough, J.Kay, **S. Kovac**, S.Holmes, B.Deobald "*Advanced control of steam header pressure and reel brightness*", IEEE Industrial Applications Society, Advanced Process Control Workshop, Vancouver, British Columbia, January, 2001

[5] B. Gough, **S. Kovac**, Adam Webster "*Advanced predictive adaptive control of after tower pH control at Androscoggin Mill*", IEEE Industrial Applications Society, Advanced Process Control Workshop, Vancouver, British Columbia, January, 2002

ENGINEERED SUCCESS

[6] B. Gough, J. Kay, **S. Kovac**, S. Holmes, B. Deobald, "*Advanced Predictive Adaptive Control of Steam Header Pressure and Reel Brightness*", Pulp and Paper Canada, Ontario, Jan 2002.

[7] B. Gough, J. Kay, **S. Kovac**, S. Holmes, B. Deobald, "*Advanced control of steam header pressure and reel brightness - It virtually eliminated the venting of steam*", Pulp and Paper Canada, Ontario, Jan 2002.

[8] B. Gough, Mihai Huzmezan, **Sava Kovac**, "*Advanced Control of Batch Reactor temperature*", Conference Paper, Feb 2002.

[9] Huzmezan M., B. Gough, G. Dumont, **S. Kovac**, "*Time Delay Integrating Systems -A Challenge for Process Control Industries - A Practical Solution*", Control Engineering Practice – Feb 2002.

[10] Bassett C., R. Akkerman, **S. Kovac**, D. Lillfors, "*Reducing Variability in Pulp Brightness at the Blandin Paper Company*" Pulp and Paper Magazine, Jan 2003, pp. 48-50.

[11] Mihai Huzmezan, B. Gough, Guy A. Dumond, **Sava Kovac**, "*Adaptive control of delayed integrating systems: A PVC batch reactor*", IEEE Transactions on Control Systems, Jun 2003.

[12] Gough B., **S. Kovac**, L. DeVito, D. Quick, "*Model Predictive Control of Batch Temperature*" WBF 2004, Chicago, IL, May 16-19, 2004.

[13] Sava Kovac, "*Achieving Maximum Value from Steam at a Pulp & Paper Mill by Implementing Advanced Control*", PACWEST, Whistler, Canada, 2015.

Patents

[1] US Patent Number 6,643,554, November 4, 2003, Sava Kovac, "*Method and Apparatus for Adaptive Control of Marginally Stable Systems*".

Languages

English, Serbian

ENGINEERED SUCCESS