



Welcome to the first issue of the Procontrol P13 Newsletter

Dear Readers,

I'm pleased to bring you our first Procontrol P13 Newsletter, intended for users of the ABB Procontrol P13 control system. You might wonder why we would start a newsletter now for a control system that was introduced to the Power Generation sector in 1982. It is not a marketing oversight, so let me assure you there are good reasons.

First, it's an opportunity to remind you of the fact that our Procontrol P13 control system family has now reached its fourth decade, and is still going strong. It might be hard to find another DCS that has been maintained for four decades, and is committed to reaching five.

Second, we would like to tell you about all of the upgrade possibilities designed to increase the performance of this system, which can help secure your equipment investments.

And finally third, we want to share with you news about ABB's R&D investments in this platform, investments that are designed to secure production and the availability of electronic components, and which enable 100 percent compatibility so your system is always ready for easy migration, the last step to making an investment future-proof.

We plan to issue three newsletters annually,

and will pack them with valuable information for you. In addition, we encourage feedback and invite you to share your interests and comments with us. We are delighted to provide any additional information or advice you may need.

I wish you happy reading.

Kind regards
Matthias Bolliger
VP, Head of Global Execution

Extending the life of the world's largest CSP plant

ABB has upgraded with state-of-the-art features the 22-year-old turbine control systems at the Harper Lake solar thermal power plant in the Mojave Desert, California.

Built in 1989 and 1990 respectively, the two 80 MW units that make up the 160 MW Harper Lake solar thermal power plant have been the largest solar thermal generating units in the world for well over two decades.

Along with five 30 MW units at Kramer Junction, and a 14 MW and 30 MW unit at Degget, Harper Lake is part of the vast 354 MW Solar Electric Generating Systems (SEGS) solar power facility, which was built between 1984 and 1990 and is the biggest and oldest solar thermal complex in the world.

ABB supplied the original Procontrol P13 turbine control systems for the two Harper Lake units and for two of the 30 MW solar thermal units at Kramer Junction, all of which are equipped with ABB steam turbines and generators from the same period. Although the original turbine control systems were still in perfect working order, they were no longer at the cutting edge. Plant owner, NextEra Energy, the largest generator of solar and wind power in the United States, required a cost-effective state-of-the-art upgrade with minimal disruption that would improve plant operations and reliability.

ABB began work on upgrading the four units in 2010 and executed the project in stages over the course of two years during scheduled outages and without additional downtime. In line with ABB's control system strategy of protecting as much of the customer's investment in hardware and software as possible, ABB retained the existing cabinets and I/Os to avoid new wiring and commissioning. The processor was upgraded to the latest 70PR05 processing module, the bus traffic director was upgraded to enhance the system's diagnostic capabilities, and the old HEX code-oriented program was converted into graphic-oriented tool.

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The result is a cutting-edge turbine control system that provides NextEra Energy with faster fault finding, better diagnostic capability, safer and more reliable operation, up-to-date documentation, fewer spare part requirements, and a built-in capability for the future addition of a redundant processor. «The Procontrol P13 platform is now in its fourth decade of providing safe and reliable power plant operation. ABB continues to actively maintain Procontrol P13 to safeguard the previous investments of its customers in the platform, ensuring seamless evolution to Symphony Plus.»



ABB control solution delivers big savings for Indian hydropower plant

The Ranganadi Hydroelectric Project is a 405 megawatt (MW) generating plant on the Ranganadi River in Arunachal Pradesh, northeastern India. A 68-meter tall dam diverts water south into a 10-km long headrace tunnel, which is then diverted into a 1,062 meter long penstock before it reaches three 135 MW turbines.

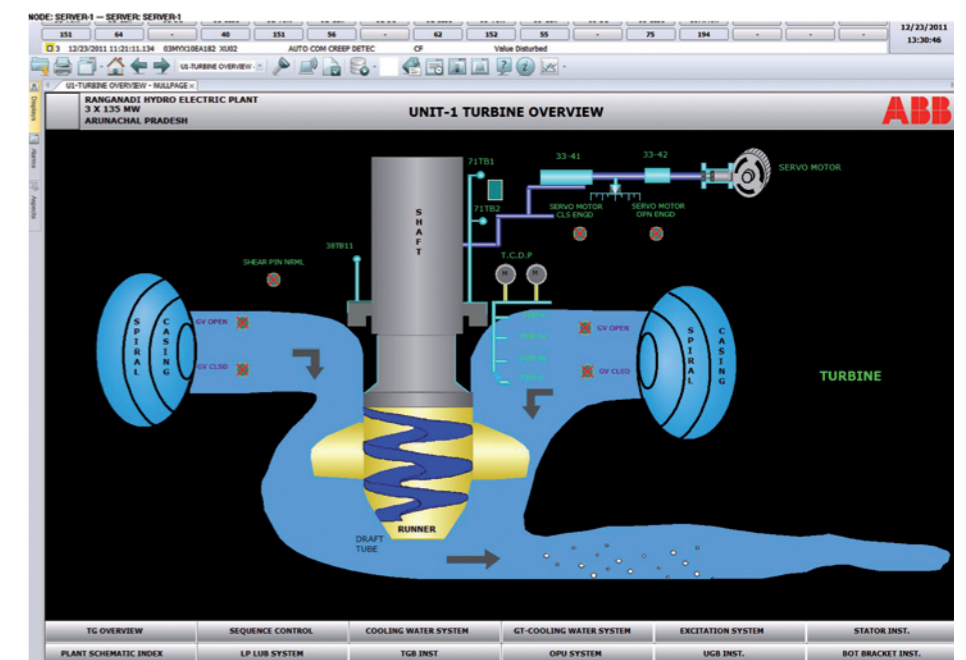
The plant is one of five completed hydro generation facilities operated by the state utility, North Eastern Electric Power Corporation Limited (NEEPCO), which currently oversees 1,130 MW of installed capacity. The Ranganadi generation plant uses a Procontrol P13/42 control system to auto sequence the complete operation of three turbines. Operation was enabled completely through the backup panel – there was no HMI (human machine interface) – which created difficulties for operation and maintenance, trip analysis, fault finding, etc, and provided no way to implement preventive maintenance steps.

Ranganadi plant technical array

There are 70 analog and 325 digital I/Os per turbine, and 52 common analog and 122 common digital I/Os for the three units. With respect to the control system, there is one redundant intra-plant bus connecting six stations with a total of seven 70PR05a processor modules – two per unit, and one common to all units.

Station 4 interfaces with the microcomputer bus, having the complete family of SK30 modules, and serves as the sequence-of-events recorder, and the PRAUT and SK03 interface. The PRAUT system, however, is nonfunctional today.

Rather than completely revamp the Ranganadi control system with the latest state-of-the-art hardware, NEEPCO listened to ABB's assurances that it would support the Procontrol P13/42 control system for the next 15 years at least with spares and lifecycle support. In addition, the ready-made connectivity solution for integrating Procontrol P13 into Symphony Plus, enabled the customer to retain the existing control system hardware while installing the latest state-of-the-art HMI at the same time.



The new Ranganadi HMI system features two Symphony Plus servers (only one operates during runtime; the other remains on cold standby mode) and three operator stations, one for each unit. Together with the latest windows-based engineering and diagnostic solution for Procontrol P13, Progress 3, this enables the operators to completely operate and maintain the plant with all possibilities in fault-finding, trip analysis, and even preventive maintenance.

To enable this comprehensive access to the plant, virtual process control (VPC) engineering was done on site for 204 drives,

and ABB provided four customized faceplates for the customer, in order to handle SetPoint/Manual Station functionality, due to non-standard logic usage. The ABB solution represents a huge cost savings for the customer because it avoids a total control system retrofit, while simultaneously delivering the desired goal of easier maintenance. ABB carried out the HMI implementation during the unit's planned maintenance outage, avoiding major generation loss. In addition to the cost savings and ease of operation and maintenance, ABB's solution for the plant reduces downtime and increases efficiency.

The ready-made connectivity solution for integrating Procontrol P13 into Symphony Plus enabled the customer to retain the existing control system hardware while installing the latest state-of-the-art HMI at the same time.

Taking the Procontrol P13 platform to the next level

Even a distinguished control system platform as ABB's Procontrol P13 needs an update at module and technology level from time to time. Therefore ABB is happy to announce the arrival of two new modules within the Procontrol P13 device family: the bus coupler 70BK08a-E and the drive control modules 70AM00/04a-E.

Originally introduced to the power generation market in 1982, ABB's Procontrol P13 platform is now in its fourth decade of providing safe and reliable power plant operation worldwide in more than 500 units. Not many control systems can make the same claim, especially with the same quality and reliability proven by Procontrol P13. The platform is currently in "Classic" product life cycle phase, which means it is actively supported and maintained and all core P13 parts are in production and fully serviced. As previously announced, ABB guarantees support for Procontrol P13 until at least 2025.

The bus coupler 70BK08a-E is the latest evolution of the successful and reliable P13 bus coupler 70BK06a-E featuring the same basic functionality as its predecessor: coupling the P13 local bus with ModBus RTU (master/slave) devices. It is augmented with a state-of-the-art ethernet interface providing ModBus

TCP connectivity (master/slave) and a flash-based memory (on-board and SD-Card) for storing configuration data. The new module is 100% backward compatible with the 70BK06a-E and can replace its predecessor with minimum changes and no impact to the running applications.

The ModBus TCP connectivity offers the easiest and most flexible solution available today for connecting Procontrol P13 to ABB's broad range of HMI solutions – System 800xA or Symphony Plus – by using the latest version of the Procontrol P13 OPC server. The flash-based configuration memory finally overcomes the tedious and time-consuming configuration of custom EPROMs while retaining the same flexibility and ease-of-use when replacing modules for maintenance: Simply exchange the SD-card from the old module to the new one without any further reconfiguration.

Designed for maximum durability and low maintenance the module features no components requiring long-term service while offering the same reliability and quality as every of its predecessor modules within the Procontrol P13 family.

The 70AM00/04a-E modules offer an attractive and easy to implement replacement for the well-established 70AS00/04a-E drive control modules with all their different use cases. By using the capabilities of a 70PR05b-ES processing module for its control applications, the new modules realize all I/O functions required to operate the respective field devices as before. By using the latest electronic design and manufacturing technologies the new modules require only a fraction of the space required before (1 slot) while still providing the same number of inputs and outputs and showing the full amount of diagnostic information on the front plate. This was previously only available with an additional 70ST01a control module for test runs. The required application Macros for realizing the actual drive control functions will be an integral part of the most advanced Procontrol P13 engineering tool available today – Progress 3. Their use offers the most easy way in configuring the complete control application within one engineering tool on one processing module without having to generate (and burn) separate code for each and every drive control function, as before.

Both modules will be available for general sale after they have passed a successful pilot run within the first customer project. This is expected for the second half of 2013. Please refer to the global execution center for Procontrol P13 in Switzerland for details about pricing and availability (see last page for contact details).



Facts

Local Bus/Ethernet/Serial Interface 70BK08a-E

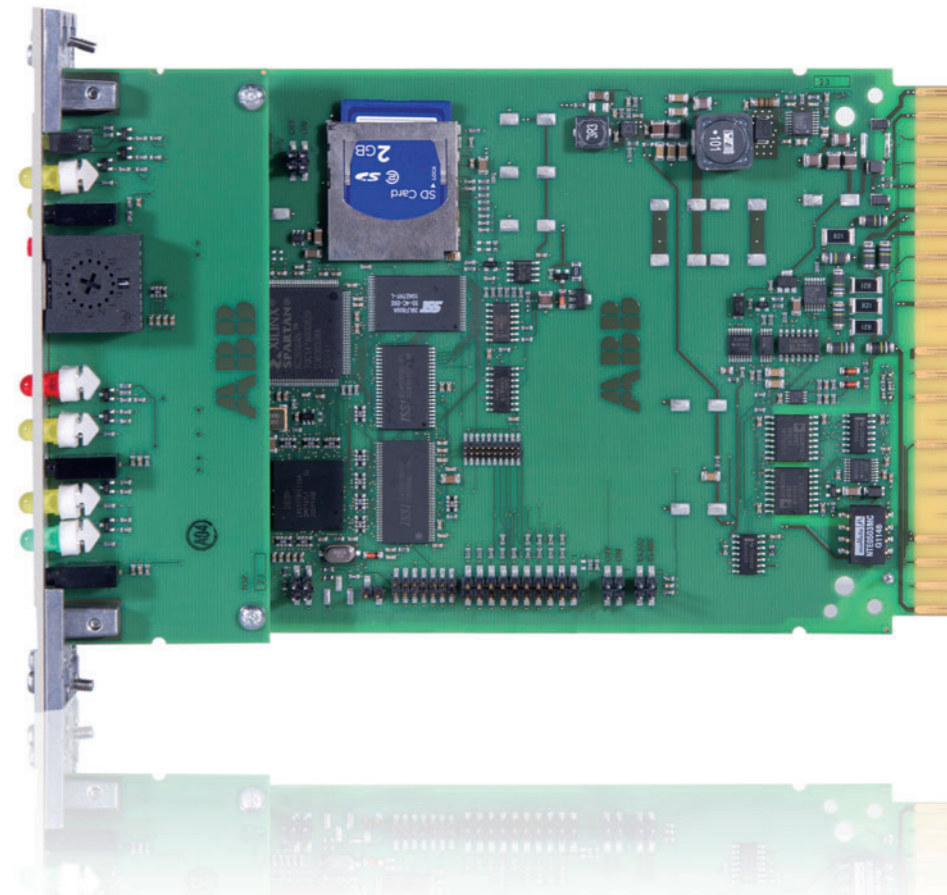
The 70BK08a-E bus coupler is the latest evolution of the successful and reliable 70BK06a-E coupler featuring the same basic functionality (ModBus RTU master/slave) with an additional state-of-the-art ethernet interface providing ModBus TCP connectivity (master/slave) and a flash-based memory (on-board and SD-Card) for storing configuration data:

- State-of-the-art technology
- Ethernet-based connectivity (ModBus TCP master/slave)
- Flash-based configuration memory (on-board and SD-card)
- Fully supported by the Procontrol P13 OPC-Server (ModBus TCP and RTU) and seamlessly integrated into the Progress 3 engineering tool.
- Designed for low-maintenance and outmost reliability
- Most easy implementation and usage
- 100% backward compatible with 70BK06a-E

Drive Control Modules 70AM00/04a-E

The 70AM00/04a-E combined input/output modules offer an attractive and easy to implement replacement for the well-established 70AS00/04a-E drive control modules with all their different use cases. By using the capabilities of a 70PR05b-ES processing module for its control applications, the new modules realize all I/O functions required to operate the respective field devices as before:

- State-of-the-art technology
- Most easy implementation together with 70PR05b-ES
- Space-saving (1 slot only)
- Combined inputs/outputs on the same module
- Full diagnostic information shown on front plate (previously only available with an additional 70ST01a control module for test runs)
- Designed for low-maintenance and outmost reliability
- 100% compatible with existing 70AS00/04a-E rack cabling



Procontrol P13 presence worldwide

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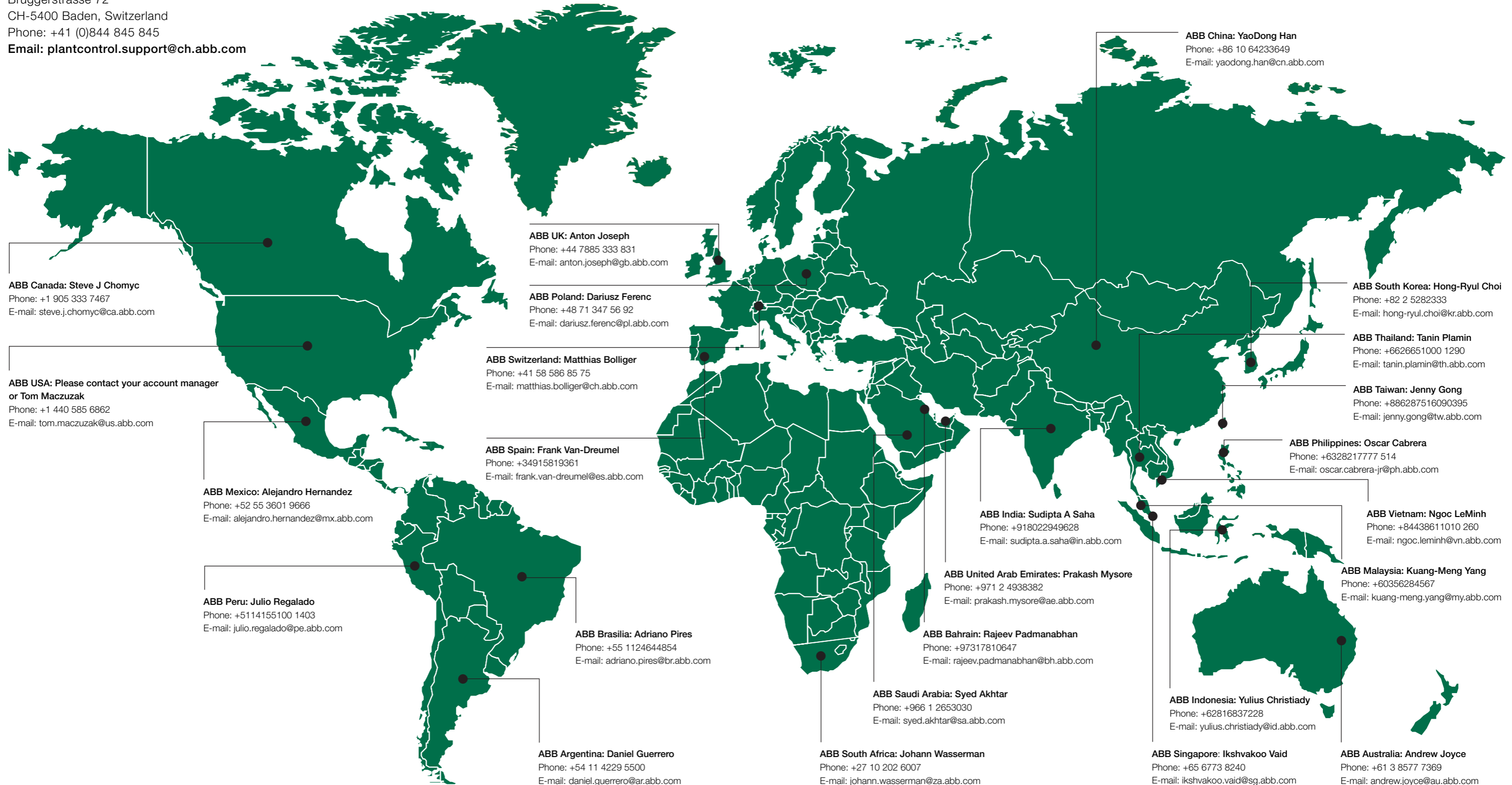


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