Dc Motors Speed Synchronization For Rolling Mills

electrical projects embedded technosolutions, pdf speed control of steel rolling mill using neural network, innovative projects for engineering students, basic of dc motor, applications of dc motor series shunt amp compound motor, synchronisation of dc motors for rolling mills, speed synchronization of master slave d c motors using, synchronous motors nidec industrial solutions, what guarantees the highest product quality in rolling mills, 8 36 rolling mill controls free, page 1 of 3 dc motors speed synchronization for rolling mills, simotics hv series metals drive technology siemens, advanced control solutions for flying shears to improve, which motor is used in rolling mills quora, wireless speed synchronization of motors in industry, dc drives used in hot rolling mill harambeehealthcenter org, dc motors deep corporation, dc motors nidec industrial solutions, for the highest continuous quality w3app siemens com, the advantages and disadvantages of dc motor haiyan, synchronous motors drive technology siemens, free download here pdfsdocuments2 com, fuzzy neural control of hot rolling mill iasj, microcontroller based speed synchronization of multiple dc, speed synchronization of dc motors by using microcontroller, dc motor wikipedia, what are the advantages of dc motor quora, synchronization speed amp direction control of dc motor, running run two dc motors in perfect synchronisation, speed synchronization of master slave d c motors using, 2 identical dc motors for steel plant in germany menzel, motors for metal rolling mills tmeic, drive selection for rolling mills millennium steel, large ac adjustable speed motors for metals rolling mills, set 320 dc motors speed control of steel rolling mill researchgate netdc motors speed synchronization for rolling mills 14 touch screen based digital devices control system this project is to build a graphical lcd touch screen interface for switching electrical devices the controlled devices can be of high voltage or low voltage 15 15 construction of central control unit for irrigation water pumps, in this paper a fully neural network based structure have been proposed to control speeds of rolling stands of a steel rolling mill the structure has property of controlling the motors speed such, dc motors speed synchronization for rolling mills timer based electrical oven temperature monitoring and control for metal industries timer based automatic power cutoff for industrial sealing packaging machines microcontroller based substation monitoring and control system, today dc motors are still found in applications as small as toys and disk drives or in large sizes to operate steel rolling mills and paper machines if external power is applied to a dc motor it, application of dc compound motor by compound motor we get high starting torque and nearly constant speed because of that compound motors are used where we require high starting torque and constant speed a compound motor is used in presses shears conveyors elevators rolling mills heavy planners etc why d c motors are used, synchronisation of dc motors for
rolling mills capacitive touch sensor energy meter matrix keypad sd card reader tachometer speed sensor nextion displays fuel sensors vibration sensor, in textile industry many processes require speed synchronization of more than one motors involved in the process rolling of cloth should be synchronized with the speed of weaving spindle to avoid damage and motor speed synchronization is vital in conveyor belt driven by multiple motors, our synchronous motors provide outstanding performance and reliability these ac synchronous machines are the preferred choice on large compressor and vertical pump applications they are also widely used for wind tunnel fans and cycloconverter applications, small rolling mill drives design im 1001 applications finishing stand motors for cold rolling mills coiler motors for cold and hot rolling mills power rating 0 6 3 mw speed 200 1500 rpm torque 1t 62 knm shaft height 630 800 mm compact rolling mill drives medium size design im 1001 applications drive for coilers finishing stands, 8 36 rolling mill controls k j jentzen 1985 1995 b g liptk 2005 speed control device because dc motor speed is proportional to voltage and motor torque is proportional to current the two machine rolls to maintain speed synchronization in a system with otherwise low accuracy slight changes in the, dc motors speed synchronization for rolling mills the project aims at designing a system which is capable of synchronizing the speed of the slave motor motor 2 with the master motor motor 1 this system finds very useful in paper mills steel industries etc the master motor speed can be set, simotics hv series metals for the highest continuous quality rolling mill main motors for a maximum reliability precision and dynamic performance high voltage synchronous motors specifically designed for main rolling mill drives set themselves apart as a result of their extremely smooth running properties and dynamic performance, advanced control solutions for flying shears to rolling mills the main benefits of the systems are the increase of safety and productivity the reduction of costs as well as the synch speed 2 synchronization the motor remains at constant speed from, which motor is used in rolling mills update cancel answer wiki 3 answers which one of these motors is used for rolling mills a dc shunt motor or a dc series motor what motor is used in a crane dc cumulative compound motor is used adjustable speed and high starting torque 721 views view 2 upvoters, wireless speed synchronization of motors in industry adapa v v d sai kumar1 m a s s prabhakar rao2 direct current dc motors have been widely used in many industrial applications such as electric vehicles steel rolling mills electric cranes and robotic manipulators due to precise wide simple and continuous control characteristics, dc motor for rolling mill stand promotional used rolling mill motor z series dc motor is used for mill auxiliary abb ac rolling mill drives hot flat read more gt gt rolling mills subscribe aist in hot rolling mills and low speed required by these mills the dc motor drives that were used for several decades have, aux mill duty d c motors to aise ipss standards crompton greaves ltd a name synonymous with rotating machines backed by its long proven expertise in the field of dc motors offers the entire range of state of art auxiliary mill duty 800 series dc motors in frames 802 to 818 from 7 5 kw at 900 rpm to 187 kw at 435 rpm to aise ipss standards, with over 100 years of experience in motor manufacturing nidec industrial solutions is the expert in special application machines dc machines continue to be used in a variety of markets thanks to their intrinsic value, siemens milestones in the area of drive
technology for rolling mill motors the power of innovation for rolling mills
for more than 100 years 1897 the first drive with dc motor for a trio rolling
mill dillinger htte 1907 the first siemens rolling mill motor with rolling
mill with dc motor and ilgner converter is used for a blooming mill be, this
is one of the main applications in which dc motors are widely used in fine
speed applications such as in rolling mills and in paper mills high starting
torque dc series motors are termed as best suited drives for electrical
traction applications used for driving heavy loads in starting conditions,
our rugged high voltage iec synchronous motors are used in a wide variety of
applications which call for the highest power and torques capabilities as
well as a maximum plant availability in applications such as central gas
compressor stations blast furnaces rolling mills or ore mills, vernier motor
is a pm motor and has a high torque at low speed rolling mills disadvantages
of pmdc motors compared with conventional dc shunt motors, fuzzy neural
control of hot rolling mill steel rolling using dc motors and neural network
3 lipo wang and yakov frayman in rolling systems speed synchronization
between different stands is very important to avoid system breakdown which is
very serious matter in rolling systems, microcontroller based speed
synchronization of multiple dc motors in textile applications lraksha a r
2kavya b the application can be in textile mills rolling mills paper mills
steel industries and robotics in textile mills many synchronized with the
speed of weaving spindle to avoid damage and synchronization of motor speed
is, speed synchronization of dc motors by using microcontroller dc motor
speed control direct current dc motors have been widely used in many
industrial applications such as electric vehicles steel rolling mills
electric cranes and robotic manipulators due to precise wide simple and,
small dc motors are used in tools toys and appliances the universal motor can
operate on direct current but is a lightweight brushed motor used for
portable power tools and appliances larger dc motors are currently used in
propulsion of electric vehicles elevator and hoists and in drives for steel
rolling mills, this is one of the main applications in which dc motors are
widely used in fine speed applications such as in rolling mills and in paper
mills high starting torque dc series motors are termed as best suited drives
for electrical traction applications used for driving heavy loads in starting
conditions dc series motors will have a staring, now a days the use of dc
motors applications in various fields id getting more as the use of dc motor
used the problems occurred also gets increased to control that problem i e
speed synchronization and direction control is the main vital role keeping in
mind e are designing this project and by using pwm method the speed, hi hope
someone can help i need some help in starting off i would like to run two dc
motors in perfect synchronisation i would like a secondary motor to run at
exactly the same speed and with the same angular shaft position at the same
time as a primary motor, i introduction dc motor speed control direct current
dc motors have been widely used in many industrial applications such as
electric vehicles steel rolling mills electric cranes and robotic
manipulators due to precise wide simple and continuous control
characteristics, menzel elektromotoren gmbh uses cookies on this website to
enhance the user experience and provide the best possible service by
continuing to browse the website you consent to our use of cookies dc motors
motors for rolling mills 2 identical dc motors for steel plant in germany
customer german high quality steel plant, ac adjustable speed motor drive systems are the preferred technology for new rolling mill installations and modernization projects tmeic designs and manufactures two types of ac solutions for this purpose salient pole synchronous motors that meet the high power and torque demands of a hot strip mill as well as roughing and finishing stands, drive selection for rolling mills long product rolling mills have stringent requirements for motor drives the speed drop during head end impact presents the greatest challenge and is dependent on total system inertia and the drives dynamic performance modern ac drives have demonstrated superior performance to dc drive systems, a dc motor m whereby m kw top speed 2 base speed that adjustable speed motors for rolling mill applications are equipped with a rotor large ac adjustable speed motors for metals rolling mills indd 9 10 24 2011 4 20 50 pm 10 temperature rise limit bearings, dc motors speed synchronization for rolling mills the project aims at designing a system which is capable of synchronizing the speed of the slave motor motor 2 with the master motor motor 1 this system finds very useful in paper mills steel industries etc, rolling mill motors used in the steel and aluminum industries rolling mill motors generally operate at low speeds and are designed for constant torque with a speed range of up to four to one some applications include continuous cold mills continuous hot strip mills and reversing hot mills, rolling mill dc motor rolling mill dc motor suppliers alibaba offers 884 rolling mill dc motor products about 55 of these are dc motor 8 are rolling mill and 5 are ac motor a wide variety of rolling mill dc motors for metal rolling mills tmeic ac adjustable speed motor drive systems are the preferred technology for new rolling, 4 dc motors 4 3 3 principle of operation consider a coil in a magnetic field of flux density b figure 4 when the two ends of the coil are connected across a dc voltage source current i flows through it a force is exerted on the coil as a result of the interaction of magnetic field and electric current, a simple explanation of how to control the speed of a dc motor learn how to control the speed of a series shunt and compound dc motor speed control of dc series motor speed control methods for a dc series motor can be m g set this method is best suited for steel rolling mills paper machines elevators mine hoists etc this, i want dc motor speed synchronization for rolling mills power point presentation ppt please send me like 1 traction 2 hoists and lifts 3 crane 4 rolling mills 5 conveyors 34 dc compound motor the dc compound motor is a combination of the series motor and the shunt motor it has a series field winding that is connected in series, dc motors speed synchronization for rolling mills touch screen based digital devices control system this project is to build a graphical lcd touch screen interface for switching electrical devices the controlled devices can be of high voltage or low voltage construction of central control unit for irrigation water pumps, dc motors speed synchronization for rolling mills page 1 of 3 dc motors speed synchronization for rolling mills the project aims learn more ride through improvements for dc drives ride through improvements for dc drives may including rolling mills increasing or decreasing the duty cycle of the rectifier changes the dc motor speed, in such types of applications the master slave technique is used as a software mechanism to synchronize the speed of different motors to avoid damage following video is better to understand the synchronisation of dc motors for rolling mills, speed control
of steel rolling mill using neural network steel rolling mill neural networks dc motor speed in synchronization of the rolling system

**Electrical Projects**

**Embedded Technosolutions**

April 15th, 2019 - DC Motors speed synchronization for rolling mills 14 Touch Screen based digital devices control system This project is to build a Graphical LCD Touch Screen interface for switching electrical devices The controlled devices can be of high voltage or low voltage 15 15 Construction of central control unit for Irrigation water pumps

**PDF Speed Control of Steel Rolling Mill using Neural Network**

April 15th, 2019 - In this paper a fully neural network based structure have been proposed to control speeds of rolling stands of a steel rolling mill The structure has property of controlling the motors speed such

**Innovative Projects for Engineering Students**

April 20th, 2019 - DC Motors speed synchronization for rolling mills Timer based Electrical Oven temperature monitoring and control for Metal Industries Timer based automatic power cutoff for industrial sealing packaging machines Microcontroller based substation monitoring and control system

**Basic of DC Motor**

March 15th, 2019 - Today DC motors are still found in applications as small as toys and disk drives or in large sizes to operate steel rolling mills and paper machines If external power is applied to a DC motor it

**Applications of DC Motor series shunt amp compound Motor**

April 18th, 2019 - Application of DC Compound motor ? By compound motor we get high starting torque and nearly constant speed Because of that Compound motors are used where we require high starting torque and constant speed ? A compound motor is used in Presses Shears Conveyors Elevators Rolling Mills Heavy Planners etc Why D C motors are used

**Synchronisation of DC motors for rolling mills**

March 9th, 2019 - Synchronisation of DC motors for rolling mills Capacitive touch sensor energy meter Matrix keypad SD card reader Tachometer speed sensor Nextion displays Fuel sensors Vibration sensor

**SPEED SYNCHRONIZATION OF MASTER –SLAVE D C MOTORS USING**

April 16th, 2019 - In textile industry many processes require speed synchronization of more than one motors involved in the process Rolling of cloth should be synchronized with the speed of weaving spindle to avoid damage and motor speed synchronization is vital in conveyer belt driven by multiple motors

**Synchronous Motors Nidec Industrial Solutions**

April 17th, 2019 - Our synchronous motors provide outstanding performance and reliability These AC synchronous machines are the preferred choice on large compressor and vertical pump applications They are also widely used for wind tunnel fans and cycloconverter applications
What guarantees the highest product quality in rolling mills
April 21st, 2019 - Small rolling mill drives Design IM 1001 Applications Finishing stand motors for cold rolling mills coiler motors for cold and hot rolling mills Power rating 0.6 – 3 MW Speed 200 – 1500 rpm Torque 1t 62 kNm Shaft height 630 – 800 mm Compact rolling mill drives medium size Design IM 1001 Applications Drive for coilers finishing stands

8 36 Rolling Mill Controls Free
April 13th, 2019 - 8 36 Rolling Mill Controls K J JENTZEN 1985 1995 B G LIPTÁK 2005 speed control device Because DC motor speed is proportional to voltage and motor torque is proportional to current the two machine rolls to maintain speed synchronization in a system with otherwise low accuracy Slight changes in the

Page 1 of 3 DC Motors speed synchronization for rolling mills
April 21st, 2019 - DC Motors speed synchronization for rolling mills The project aims at designing a system which is capable of synchronizing the speed of the slave motor motor 2 with the master motor motor 1 This system finds very useful in paper mills steel industries etc The master motor speed can be set

SIMOTICS HV Series Metals Drive Technology Siemens
April 13th, 2019 - SIMOTICS HV Series Metals For the highest continuous quality - Rolling mill main motors for a maximum reliability precision and dynamic performance High voltage synchronous motors specifically designed for main rolling mill drives set themselves apart as a result of their extremely smooth running properties and dynamic performance

Advanced Control Solutions for Flying Shears to improve
April 19th, 2019 - Advanced Control Solutions for Flying Shears to rolling mills The main benefits of the systems are the increase of safety and productivity the reduction of costs as well as the synch speed 2 Synchronization The motor remains at constant speed from

Which motor is used in rolling mills Quora
April 19th, 2019 - Which motor is used in rolling mills Update Cancel Answer Wiki 3 Answers Which one of these motors is used for rolling mills a DC shunt motor or a DC series motor What motor is used in a crane Dc cumulative compound motor is used Adjustable speed and high starting torque 721 views · View 2 Upvoters

Wireless Speed Synchronization of Motors in Industry
April 6th, 2019 - Wireless Speed Synchronization of Motors in Industry Adapa V V D Sai kumar1 M A S S Prabhakar Rao2 Direct current DC motors have been widely used in many industrial applications such as electric vehicles steel rolling mills electric cranes and robotic manipulators due to precise wide simple and Continuous control characteristics

dc drives used in hot rolling mill harambeehealthcenter.org
January 27th, 2019 - DC Motor For Rolling Mill Stand Promotional Used Rolling
Mill Motor ... Z Series DC Motor is used for mill auxiliary ABB AC rolling mill drives – Hot Flat Read More gt gt Rolling Mills Subscribe AIST In hot rolling mills and low speed required by these mills The DC motor drives that were used for several decades have

**DC Motors DEEP CORPORATION**
April 10th, 2019 - AUX MILL DUTY D C MOTORS TO AISE IPSS STANDARDS Crompton Greaves Ltd a name synonymous with rotating machines backed by its long proven expertise in the field of DC motors offers the entire range of state of art Auxiliary Mill Duty 800 series DC motors in frames 802 to 818 from 7 5 kW at 900 RPM to 187 kW at 435 RPM to AISE IPSS Standards

**DC Motors Nidec Industrial Solutions**
April 20th, 2019 - With over 100 years of experience in motor manufacturing Nidec Industrial Solutions is the expert in special application machines DC machines continue to be used in a variety of markets thanks to their intrinsic value

**For the highest continuous quality w3app siemens com**
April 9th, 2019 - Siemens milestones in the area of drive technology for rolling mill motors The power of innovation for rolling mills for more than 100 years 1897 The first drive with DC motor for a trio rolling mill Dillinger Hütte 1907 The first Siemens rolling mill motor with rolling mill with DC motor and Ilgner converter is used for a blooming mill be

**The Advantages And Disadvantages Of DC Motor Haiyan**
April 19th, 2019 - This is one of the main applications in which dc motors are widely used in fine speed applications such as in rolling mills and in paper mills High starting torque dc series motors are termed as best suited drives for electrical traction applications used for driving heavy loads in starting conditions

**Synchronous Motors Drive Technology Siemens**
April 18th, 2019 - Our rugged high voltage IEC synchronous motors are used in a wide variety of applications which call for the highest power and torques capabilities as well as a maximum plant availability In applications such as central gas compressor stations blast furnaces rolling mills or ore mills

**Free Download Here pdfsdocuments2 com**
April 8th, 2019 - Vernier motor is a PM motor and has a high torque at low speed rolling mills Disadvantages of PMDC Motors compared with Conventional DC Shunt Motors

**Fuzzy Neural Control of Hot Rolling Mill IASJ**
April 17th, 2019 - Fuzzy Neural Control of Hot Rolling Mill steel rolling using DC motors and Neural Network 3 Lipo Wang and Yakov Frayman In rolling systems speed synchronization between different stands is very important to avoid system breakdown which is very serious matter in rolling systems

**MICROCONTROLLER BASED SPEED SYNCHRONIZATION OF MULTIPLE DC**
April 2nd, 2019 – MICROCONTROLLER BASED SPEED SYNCHRONIZATION OF MULTIPLE DC MOTORS IN TEXTILE APPLICATIONS

RAKSHA A R

2KAVYA B

The application can be in textile mills, rolling mills, paper mills, steel industries, and robotics. In textile mills, many synchronized with the speed of weaving spindle to avoid damage and synchronization of motor speed is needed.

**Speed Synchronization of DC Motors by Using Microcontroller**

April 11th, 2019 – Speed Synchronization of DC Motors by Using Microcontroller

DC Motor speed control Direct current DC motors have been widely used in many industrial applications such as electric vehicles, steel rolling mills, electric cranes, and robotic manipulators due to precise, wide, simple, and continuous control characteristics.

**DC motor Wikipedia**

April 18th, 2019 – Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight brushed motor used for portable power tools and appliances. Larger DC motors are currently used in propulsion of electric vehicles, elevator, hoists, and in drives for steel rolling mills.

**What are the advantages of DC motor Quora**

April 16th, 2019 – This is one of the main applications in which dc motors are widely used in fine speed applications such as in rolling mills and in paper mills. High starting torque, dc series motors are termed as best suited drives for electrical traction applications used for driving heavy loads in starting conditions. DC series motors will have a starting torque.

**SYNCHRONIZATION SPEED amp DIRECTION CONTROL OF DC MOTOR**

April 20th, 2019 – now a days the use of DC motors applications in various fields is getting more as the use of DC MOTOR used the problems occurred also gets increased to control that problem i.e. speed synchronization and direction control is the main vital role keeping in mind e are designing this project and by using PWM method the speed can be controlled.

**Running run two DC motors in perfect synchronisation**

April 16th, 2019 – Hi Hope someone can help I need some help in starting off I would like to run two DC motors in perfect synchronisation. I would like a secondary motor to run at exactly the same speed and with the same angular shaft position at the same time as a primary motor.

**SPEED SYNCHRONIZATION OF MASTER –SLAVE D C MOTORS USING**

April 19th, 2019 – I INTRODUCTION DC Motor speed control Direct current DC motors have been widely used in many industrial applications such as electric vehicles, steel rolling mills, electric cranes, and robotic manipulators due to precise, wide, simple, and continuous control characteristics.

**2 identical DC motors for steel plant in Germany MENZEL**

April 13th, 2019 – MENZEL Elektromotoren GmbH uses cookies on this website to enhance the user experience and provide the best possible service. By continuing to browse the website you consent to our use of cookies.
Motors for rolling mills 2 identical DC motors for steel plant in Germany
Customer German high quality steel plant

Motors for Metal Rolling Mills TMEIC
April 19th, 2019 - AC adjustable speed motor drive systems are the preferred technology for new rolling mill installations and modernization projects. TMEIC designs and manufactures two types of AC solutions for this purpose: Salient pole synchronous motors that meet the high power and torque demands of a hot strip mill as well as roughing and finishing stands.

Drive selection for rolling mills Millennium Steel
April 18th, 2019 - Drive selection for rolling mills Long product rolling mills have stringent requirements for motor drives. The speed drop during head end impact presents the greatest challenge and is dependent on total system inertia and the drive’s dynamic performance. Modern AC drives have demonstrated superior performance to DC drive systems.

Large AC Adjustable Speed Motors for Metals Rolling Mills
April 14th, 2019 - A DC motor M whereby M kW × Top speed 2 Base speed that adjustable speed motors for rolling mill applications are equipped with a rotor. Large AC Adjustable Speed Motors for Metals Rolling Mills

SET 320 DC Motors speed synchronization for rolling mills
April 13th, 2019 - DC Motors speed synchronization for rolling mills. The project aims at designing a system which is capable of synchronizing the speed of the slave motor (motor 2) with the master motor (motor 1). This system finds very useful in paper mills, steel industries, etc.

Teco Westinghouse Custom DC Motors
April 17th, 2019 - Rolling Mill Motors. Used in the steel and aluminum industries, rolling mill motors generally operate at low speeds and are designed for constant torque with a speed range of up to four to one. Some applications include continuous cold mills, continuous hot strip mills, and reversing hot mills.

Motor for rolling mill kryzbyt eu
April 20th, 2019 - Rolling Mill Dc Motor. Rolling Mill Dc Motor Suppliers Alibaba offers 884 rolling mill dc motor products. About 55% of these are dc motor. 8 are rolling mill and 5 are ac motor. A wide variety of rolling mill dc motors are available. TMEIC AC adjustable speed motor drive systems are the preferred technology for new rolling mills.

4 DC MOTORS NUS UAV
April 21st, 2019 - 4 DC Motors. 4 3 3 Principle of operation. Consider a coil in a magnetic field of flux density B. When the two ends of the coil are connected across a DC voltage source, current I flows through it. A force is exerted on the coil as a result of the interaction of magnetic field and electric current.
Speed Control of DC Motor Shunt amp Series Electrical4U
April 21st, 2019 - A SIMPLE explanation of how to control the speed of a DC Motor. Learn how to control the speed of a series shunt and compound DC motor. Speed Control of DC Series Motor. Speed control methods for a DC series motor can be M G set. This method is best suited for steel rolling mills, paper machines, elevators, mine hoists, etc. This

Dc motor SlideShare
April 17th, 2019 - I want DC Motor speed synchronization for rolling mills. Power point presentation ppt please send me. Like 1 Traction 2 Hoists and Lifts 3 Crane 4 Rolling mills 5 Conveyors 34 DC Compound Motor • The DC compound motor is a combination of the series motor and the shunt motor. It has a series field winding that is connected in series.

ELECTRICAL ENGINEERING AND PROJECTS Electrical
April 15th, 2019 - DC Motors speed synchronization for rolling mills. Touch Screen based digital devices control system. This project is to build a Graphical LCD Touch Screen interface for switching electrical devices. The controlled devices can be of high voltage or low voltage. Construction of central control unit for Irrigation water pumps.

dc motor speed synchronization for rolling mills project
April 16th, 2019 - DC Motors speed synchronization for rolling mills. Page 1 of 3 DC Motors speed synchronization for rolling mills. The project aims » Learn More Ride Through Improvements for DC Drives. Ride Through Improvements for DC Drives. May including rolling mills increasing or decreasing the duty cycle of the rectifier changes the DC motor speed.

advantages and disadvantages for dc motor speed
March 7th, 2019 - In such types of applications the master slave technique is used as a software mechanism to synchronize the speed of different motors to avoid damage. Following video is better to understand the Synchronisation of DC motors for rolling mills.

Speed Control of Steel Rolling Mill researchgate.net
April 13th, 2019 - Speed Control of Steel Rolling Mill using Neural Network. Steel Rolling Mill Neural Networks. DC Motor speed in synchronization of the rolling system 1.