

# CNC Power Engineering

## Always on the move

### CNC, Drives, and Software Training Catalog 2026

## Who has the best expertise in your area of business?

The answer is obvious and quite simple: **you are the expert in your field**. Similarly, no one other than NUM could claim to have the deepest expertise of our extended range of drives and CNCs. After all, this has been our business for sixty years. This is why **we** are your number one partner for the training of your teams.

Whether you are an end-user, an OEM, a maintenance specialist or a system builder; NUM has a large variety of all kinds of training sessions in its catalog dedicated to your applications and for all generations of NUM products that are running production on machines today.

Of course, each customer has their own requirements, and each machine and each application has its own special features; and that is why we can also offer customized training sessions that are tailored to focus on your particular and individual needs.

As a provider of CNC High End Applications, we have organized our training sessions by features and level of knowledge required, in order to help you acquire all the information you need to be successful. These sessions are conducted by training specialists and application engineers so you can be assured that you are receiving the most accurate and helpful answers, whatever your question or concern might be. Give us a chance to help you be successful and develop a cooperative relationship between our companies for the benefit of all.

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## Training with NUM: your advantages

- All technical data and information is up to date
- If you need to learn about a specific function, you will get in depth information
- Partnership development
- You will be in touch with the experts in every domain of NUM activity
- Whatever your area of expertise might be (Maintenance, Service, Programming, Setup...), you will find the courses you need
- Full range of products and software in one location

## Training Centers

All NUM technical centers are equipped to provide training. These sessions will take place either in our premises or in your facility.



Some training facilities



# Training Courses

The different training modules are linked in a way to provide a logical path for mastering our application solutions in your area of expertise.

|                                     | FX | TR | 3 | 0 | 1 |
|-------------------------------------|----|----|---|---|---|
| <b>Control Series</b>               |    |    |   |   |   |
| Flexium <sup>+</sup> und FlexiumPro | FX |    |   |   |   |
| Flexium <sup>+</sup> only           |    | FL |   |   |   |
| FlexiumPro only                     |    | FP |   |   |   |
| <b>Training</b>                     |    |    |   |   |   |
| <b>Type</b>                         |    |    |   |   |   |
| Product Knowledge                   |    |    | 1 |   |   |
| Operation and Diagnostics           |    |    | 2 |   |   |
| Maintenance                         |    |    | 3 |   |   |
| Engineering and Integration         |    |    | 4 |   |   |
| <b>Modifier</b>                     |    |    |   |   |   |
| <b>Expertice Level</b>              |    |    |   |   |   |
| Beginner                            |    |    |   | 1 |   |
| Advanced                            |    |    |   | 2 |   |
| Specialist                          |    |    |   | 3 |   |

## Generic Training Sessions

|         |  |
|---------|--|
| FXTR101 | Flexium system description                       |
| FXTR102 | Flexium and Safety                               |
| FXTR201 | Operation and basic maintenance                  |
| FXTR202 | Advanced part programming                        |
| FXTR213 | Flexium 3D                                       |
| FXTR223 | Dynamic operators in C                           |
| FXTR233 | High speed cutting – 5-axis functions            |
| FXTR301 | Flexium system maintenance with Flexium Tools    |
| FXTR321 | Flexium system maintenance without Flexium Tools |
| FXTR433 | Extended NCK Access (ENA)                        |
| FXTR463 | Safety including NUM-SAMX                        |

### Flexium<sup>+</sup> Specific Training Sessions

|         |  |
|---------|--|
| FLTR312 | Flexium <sup>+</sup> system advanced maintenance |
| FLTR314 | NUMDrive X advanced maintenance                  |
| FLTR401 | Flexium <sup>+</sup> system initial setup        |
| FLTR402 | Flexium <sup>+</sup> system advanced setup       |
| FLTR443 | Flexium <sup>+</sup> HMI personalization         |
| FLTR453 | Communication with Flexium <sup>+</sup>          |

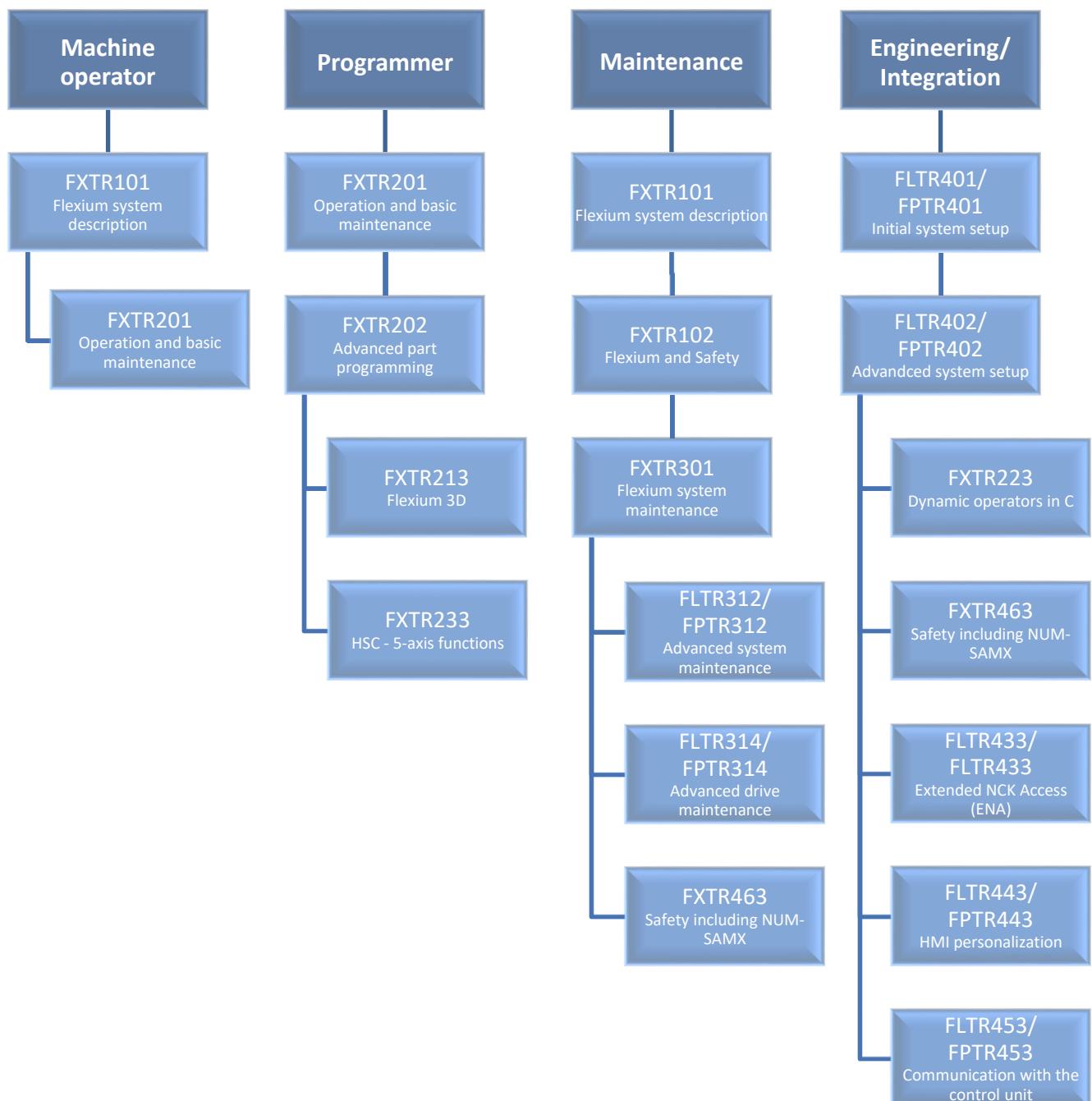
### FlexiumPro Specific Training Sessions

|          |  |
|----------|--|
| FPTTR312 | FlexiumPro system advanced maintenance |
| FPTTR314 | NUM DrivePro advanced maintenance      |
| FPTTR401 | FlexiumPro system initial setup        |
| FPTTR402 | FlexiumPro system advanced setup       |
| FPTTR443 | FlexiumPro HMI personalization         |
| FPTTR453 | Communication with FlexiumPro          |

### Axium Power Specific Training Session

|         |                                |
|---------|--------------------------------|
| APTR201 | Axium Power system maintenance |
|---------|--------------------------------|

## Proposed Training Paths



## Your training contacts

**USA:**

**Engineering Department**

Phone: +1 630 505 7722

Fax: +1 630 505 7754

[sales.us@num.com](mailto:sales.us@num.com)

For other countries, please contact your local sales representative or NUM Switzerland  
([sales.ch@num.com](mailto:sales.ch@num.com)).

## Course Descriptions

### Flexium system description

**FXTR101**

#### Your area of interest

General knowledge

#### Prerequisite

None

#### Objectives

- ✓ Understanding the Flexium range structure (CNCs and Drives)
- ✓ Understanding the main functions
- ✓ Ability to define a configuration with the Flexium catalogue

#### Supports

Training materials

- Individual components
- Simulator

#### Deliveries

- Course presentation (on memory stick)
- Flexium catalogue (on memory stick)

#### Training Content

##### Flexium CNC presentation

- The different models of CNCs
- Hardware structure – Software functions

##### The panels

- PC Panels
- Machine panels

##### The PLC

- Structure
- Programming languages
- IOs

##### NUMDrive X presentation

- Hardware structure
- Drives functions and performances
- Axis and spindle motors

##### NUM DrivePro presentation

- Hardware structure
- Drives functions and performances
- Axis and spindle motors

##### Tools

- PLC programming
- Web tools

##### Applications

- From the single unit CNC to the multi CNC - multi panels configurations

Questions and answers (1/2 hour)

#### Duration

1 day

#### Date / Costs

Please consult your local training contact

# Flexium and Safety

# FXTR102

| Your area of interest   | Prerequisite  |
|---|---|
| General knowledge   | None  |
| Objectives  | Supports  |
| <ul style="list-style-type: none"> <li>✓ Understanding the Flexium safety concepts</li> <li>✓ Understanding the various safety features</li> <li>✓ Ability to define the components and development required for a particular configuration</li> </ul>  | <p>Training materials</p> <ul style="list-style-type: none"> <li>○ Individual components</li> <li>○ Simulator</li> </ul> <p>Deliveries</p> <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> <li>○ Flexium catalogue (on memory stick)</li> </ul> |
| Training Content  |   |
| <p>Safety: What is it?</p> <ul style="list-style-type: none"> <li>○ Safety PLCs</li> <li>○ Safe motions</li> <li>○ Safety level</li> </ul> <p>General on EtherCAT and FSoE</p> <p>The Safe PLC</p> <ul style="list-style-type: none"> <li>○ Structure</li> <li>○ Programming languages</li> <li>○ I/Os</li> </ul> | <p>Safety and Motions</p> <ul style="list-style-type: none"> <li>○ SAMX, STOX and NUMDrive X or NUM DrivePro</li> </ul> <p>Questions and answers (1/2 hour)</p>   |
| Duration  | Date / Costs  |
| 1 day   | Please consult your local training contact  |

# Operation and Diagnostics

**FXTR201**

## Your area of interest

Machine operator – 1<sup>st</sup> level maintenance

## Objectives

- ✓ Ability to run a machine equipped with Flexium system
- ✓ Understanding and adjusting the coordinate systems and tools offsets
- ✓ Understanding operators message and status indicators to perform a first level maintenance

## Prerequisite

Knowledge of NUM products or FXTR101

## Supports

- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (on memory stick)
  - Programming manual (on memory stick)

## Training Content

### Operation

- Using the HMI
- Modes of operation
- ISO concepts (interpolation – feedrate – tools offsets – main canned cycles)
- Coordinate systems – programmable axis
- Work preparation, tools offsets, origin presets
- Basic of parametric programming

### Maintenance

- Status indicators
- Operators messages
- LED indications
- Backup of essential data
- Adding a system option

### Tools

- Web tools
- Flexium license loader

Questions and answers (2 hours)

## Duration

2½ days

## Date / Costs

Please consult your local training contact

# Advanced part programming

**FXTR202**

## Your area of interest

Advanced part programming – custom macros – special functions for OEM

## Objectives

- ✓ Mastering the advanced ISO functions of the system
- ✓ Ability to create a custom macro (tool changer – milling head exchange – probing etc.)

## Prerequisite

FXTR201

## Supports

- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (on memory stick)
  - Programming and advanced programming manual (on memory stick)

## Training Content

### Advanced ISO functions

- Polar programming
- Probing management
- Pocket cycles
- Complements on parametric programming
  - Detailed information on E parameters
  - Relation with the outside via the PLC
- Structured programming
- Dynamic operators
- Customized G codes

### Exercises

### Questions and answers

## Duration

2½ days

## Date / Costs

Please consult your local training contact

# Flexium 3D

**FXTR213**

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## Your area of interest

Machine operation - Programming

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## Prerequisite

Knowledge of NUM products or FXTR201

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## Objectives

- ✓ Using Flexium 3D to simulate and validate a part program
- ✓ Interacting with Flexium HMI to correct possible programming faults
- ✓ Optional : Customizing Flexium 3D for machine simulation

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## Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (on memory stick)

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## Training Content

### Flexium 3D presentation

- Principle of operation
- The different screens

### Running Flexium 3D

- Program configuration
- Defining the blank and the tools
- Off line and On line simulation

### Exercises

### Optional

- Designing a machine model

### Questions and answers (2 hours)

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## Duration

1 day + 1 day optional

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## Date / Costs

Please consult your local training contact

# Dynamic operators in C

**FXTR223****Your area of interest**

Customized CNC extensions

**Prerequisite**

FXTR202 and programming C language

**Objectives**

- ✓ Develop an application using dynamic operators in C

**Supports**

- Training materials
  - Individual components
  - Simulator

**Deliveries**

- Course presentation (on memory stick)
- Flexium catalogue (on memory stick)

**Training Content**

- Principle of dynamic operators
- Short example using classic dynamic operators
- Review list of parameters
- The compiler
- Examples
- Trace and debug

**Duration**

1 day

**Date / Costs**

Please consult your local training contact

# High Speed Cutting – 5-axis functions

**FXTR233**

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## Your area of interest

5-axis parts machining

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## Prerequisite

FXTR202

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## Objectives

- ✓ Mastering 5-axis machining functions
- ✓ RTCP (Rotating Tool Centre Point)
- ✓ Inclined plane
- ✓ High speed cutting

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## Supports

- Training materials
  - Individual components
  - Simulator
- Deliveries
  - Course presentation (on memory stick)
  - Flexium catalogue (on memory stick)

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## Training Content

- NC 5-axis functions
- RTCP and inclined plane parameterization
- Application
- High speed machining functions
- Speed and acceleration controls
- Optimization of parameters
- Axis adjustments
- Flexium Tools instruments
- Practical case

Questions and answers (1/2 hour)

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## Duration

2 days

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## Date / Costs

Please consult your local training contact

# Flexium system maintenance with Flexium Tools

FXTR301

## Your area of interest

Maintenance

## Prerequisite

FXTR102

## Objectives

- ✓ Ability to detect and replace defective components in a short time
- ✓ Predictive maintenance

## Supports

- Training materials
  - Simulator
- Deliveries
  - Course presentation (on memory stick)

## Training Content

### Flexium system maintenance

- System structure
- Components
- System start up
- Diagnostics
- Software updates
- Service tool
- Safety
- Backup and Restore procedures
- Part replacement

### Drives maintenance

- Product knowledge
- Drives exchange procedure

### Questions and answers (1 hour)

## Duration

2½ days

## Date / Costs

Please consult your local training contact

# Flexium system maintenance without Flexium Tools

FXTR321

| Your area of interest   | Prerequisite   |
|---|--|
| Maintenance   | FXTR102  |
| Objectives  | Supports   |
| <ul style="list-style-type: none"> <li>✓ Ability to detect and replace defective components in a short time</li> <li>✓ Predictive maintenance</li> </ul>  | <ul style="list-style-type: none"> <li>Training materials <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> </li> <li>Deliveries <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> </ul> </li> </ul> |
| Training Content  |  |
| <ul style="list-style-type: none"> <li>Flexium system maintenance <ul style="list-style-type: none"> <li>○ System structure</li> <li>○ Components</li> <li>○ System start up</li> <li>○ Diagnostics</li> <li>○ Software updates</li> <li>○ Service tool</li> <li>○ Safety</li> <li>○ Backup and Restore procedures</li> <li>○ Part replacement</li> </ul> </li> <li>Drives maintenance <ul style="list-style-type: none"> <li>○ Product knowledge</li> <li>○ Drives exchange procedure</li> </ul> </li> </ul> |  |
| Questions and answers (1 hour)  |  |
| Duration  | Date / Costs   |
| 2½ days   | Please consult your local training contact   |

# Flexium<sup>+</sup> system advanced maintenance

FLTR312

| Your area of interest   | Prerequisite  |
|---|---|
| Maintenance   | FXTR301   |
| Objectives  | Supports  |
| <ul style="list-style-type: none"> <li>✓ Ability to detect and replace defective components in a short time</li> <li>✓ Predictive maintenance</li> </ul>  | <p>Training materials</p> <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> <p>Deliveries</p> <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> </ul>   |
| Training Content  |   |
| <p>Flexium<sup>+</sup> system maintenance</p> <ul style="list-style-type: none"> <li>○ Detailing the product structure</li> <li>○ Exchange zone</li> <li>○ Troubleshooting with Flexium HMI</li> <li>○ Flexium Tools</li> <li>○ Parameters modification</li> <li>○ Debugging with the PLC</li> <li>○ PLC program adjustments</li> <li>○ Backup and restore</li> </ul> | <p>NUMDrive X advanced maintenance</p> <ul style="list-style-type: none"> <li>○ Detailed analysis</li> <li>○ Drives instruments</li> <li>○ Drives exchange procedure</li> <li>○ Safety application maintenance</li> </ul> <p>Questions and answers (1 hour)</p> |
| Duration  | Date / Costs  |
| 3 days  | Please consult your local training contact  |

# FlexiumPro system advanced maintenance

**FPTR312**

## Your area of interest

Maintenance

## Objectives

- ✓ Ability to detect and replace defective components in a short time
- ✓ Predictive maintenance

## Prerequisite

FXTR301

## Supports

Training materials
 

- Simulator

## Deliveries

- Course presentation (on memory stick)



Training course  
in preparation

## Training Content

### FlexiumPro system maintenance

- Detailing the product structure
- Exchange zone
- Troubleshooting with Flexium HMI
- Flexium Tools
- Parameters modification
- Debugging with the PLC
- PLC program adjustments
- Backup and restore

### NUM DrivePro drives advanced maintenance

- Detailed analysis
- Drives instruments
- Drives exchange procedure
- Safety application maintenance

Questions and answers (1 hour)

## Duration

3 days

## Date / Costs

Please consult your local training contact

# NUMDrive X advanced maintenance

FLTR314

| Your area of interest   | Prerequisite  |
|---|---|
| Machine maintenance   | FXTR301   |
| Objectives  | Supports  |
| ✓ Ability to detect and replace components or adjust parameters   | Training materials <ul style="list-style-type: none"><li>○ Simulator</li></ul> Deliveries <ul style="list-style-type: none"><li>○ Course presentation (on memory stick)</li></ul> |
| Training Content  |   |
| Review <ul style="list-style-type: none"><li>○ Range description</li><li>○ Troubleshooting with Flexium HMI</li></ul>   |   |
| Components connections <ul style="list-style-type: none"><li>○ Structure of a NUMDrive X application</li></ul>  |   |
| Adjustments <ul style="list-style-type: none"><li>○ Using Flexium Tools for diagnostic</li><li>○ Main drive parameters</li><li>○ Adjustment and control</li></ul> |   |
| Questions and answers   |   |
| Duration  | Date / Costs  |
| 2½ days   | Please consult your local training contact  |

# NUM DrivePro advanced maintenance

**FPTR314**

## Your area of interest

Machine maintenance

## Objectives

- ✓ Ability to detect and replace components or adjust parameters

## Prerequisite

FXTR301

## Supports

Training materials

- Simulator

## Deliveries

- Course presentation (on memory stick)



## Training Content

### Review

- Range description
- Troubleshooting with FlexiumPro HMI

### Components connections

- Structure of a NUM DrivePro application

### Adjustments

- Using FlexiumPro Tools for diagnostic
- Main drive parameters
- Adjustment and control

### Questions and answers

## Duration

2½ days

## Date / Costs

Please consult your local training contact

# Flexium<sup>+</sup> system initial setup

FLTR401

|   |  |
|---|--|
| <b>Your area of interest</b>  | <b>Prerequisite</b>                        |
| Engineering and Setup   | FXTR201                                    |
| <b>Objectives</b>   | <b>Supports</b>                            |
| <ul style="list-style-type: none"> <li>✓ Create a first Flexium<sup>+</sup> application for a simple machine</li> <li>✓ Control basic functions – Run two axes and a spindle</li> </ul>   |  |
| <b>Training Content</b>   |  |
| Understanding Flexium <sup>+</sup> structure  | Questions and answers                      |
| Flexium Tools presentation  |  |
| <ul style="list-style-type: none"> <li>○ Getting familiar with the package</li> <li>○ Languages</li> <li>○ Variables</li> <li>○ Structure of a project</li> </ul>   |  |
| Practical exercise  |  |
| <ul style="list-style-type: none"> <li>○ Creating the control structure</li> <li>○ Integrating IOs (CANopen and Ethernet)</li> <li>○ Integrating a panel</li> <li>○ Handling modes, manual and automatic commands</li> <li>○ Operator messages</li> <li>○ Power on, security</li> <li>○ Integrating axis and spindle</li> <li>○ First level of parameterization</li> <li>○ Running a simple part program</li> <li>○ Introduction to the custom visualization</li> </ul> |  |
| <b>Duration</b>   | <b>Date / Costs</b>                        |
| 5 days  | Please consult your local training contact |

# Flexium<sup>+</sup> system advanced setup

**FLTR402**

| Your area of interest   | Prerequisite   |
|---|--|
| Engineering and Setup   | FLTR401  |
| Objectives  | Supports   |
| <ul style="list-style-type: none"> <li>✓ Commissioning a Flexium system on any kind of machine</li> </ul>   | <ul style="list-style-type: none"> <li>Training materials <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> </li> <li>Deliveries <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> <li>○ Full set of Flexium manuals – Flexium Tools <ul style="list-style-type: none"> <li>– Example project (all on memory stick)</li> </ul> </li> </ul> </li> </ul> |
| Training Content  |  |
| Detailed analysis of exchange variables   | Questions and answers  |
| Flexium Tools complements <ul style="list-style-type: none"> <li>○ Project simulation and debug</li> <li>○ Application control (Tasks – automated checks)</li> <li>○ Field bus control</li> <li>○ Advanced functions (Probing – tool wear – shutdown etc.)</li> <li>○ Custom screens complements</li> <li>○ Optional functions (multi NCK – multi panels etc.)</li> <li>○ Writing custom libraries</li> </ul> |  |
| Duration  | Date / Costs   |
| 5 days  | Please consult your local training contact   |

# FlexiumPro system initial setup

**FPTR401**

|   |  |
|---|--|
| <b>Your area of interest</b>  | <b>Prerequisite</b>                        |
| Engineering and Setup   | FXTR201                                    |
| <b>Objectives</b>   | <b>Supports</b>                            |
| <ul style="list-style-type: none"> <li>✓ Create a first FlexiumPro application for a simple machine</li> <li>✓ Control basic functions – Run two axes and a spindle</li> </ul>  |  |
| <b>Training Content</b>   |  |
| Understanding Flexium <sup>+</sup> structure  | Questions and answers                      |
| FlexiumPro Tools presentation   |  |
| <ul style="list-style-type: none"> <li>○ Getting familiar with the package</li> <li>○ Languages</li> <li>○ Variables</li> <li>○ Structure of a project</li> </ul>   |  |
| Practical exercise  |  |
| <ul style="list-style-type: none"> <li>○ Creating the control structure</li> <li>○ Integrating IOs (CANopen and Ethernet)</li> <li>○ Integrating a panel</li> <li>○ Handling modes, manual and automatic commands</li> <li>○ Operator messages</li> <li>○ Power on, security</li> <li>○ Integrating axes and spindle</li> <li>○ First level of parameterization</li> <li>○ Running a simple part program</li> <li>○ Introduction to the custom visualization</li> </ul> |  |
| <b>Duration</b>   | <b>Date / Costs</b>                        |
| 5 days  | Please consult your local training contact |

# FlexiumPro system advanced setup

**FPTR402**

## Your area of interest

Engineering and Setup

## Objectives

- ✓ Commissioning a Flexium system on any kind of machine

## Prerequisite

FPTR401

## Supports

Training materials

- Simulator



Training course in preparation

## Deliveries

- Course presentation (on memory stick)
- Full set of Flexium manuals – Flexium Tools – Example project (all on memory stick)

## Training Content

Detailed analysis of exchange variables

Questions and answers

### FlexiumPro Tools complements

- Project simulation and debug
- Application control (Tasks – automated checks)
- Field bus control
- Advanced functions (Probing – tool wear – shutdown etc.)
- Custom screens complements
- Optional functions (multi NCK – multi panels etc.)
- Writing custom libraries

## Duration

5 days

## Date / Costs

Please consult your local training contact

# Extended NCK Access (ENA)

**FXTR433**

| Your area of interest   | Prerequisite                               |
|---|--|
| Engineering and Setup   | FLTR402 or FXTR402                         |
| Objectives  | Supports                                   |
| <ul style="list-style-type: none"> <li>✓ Exchange of additional data between NCK and PLC</li> </ul>   |  |
| Training Content  | Deliveries                                 |
| <p>Structure of internal communication in Flexium systems</p>   |  |
| <p>ENA library</p> <ul style="list-style-type: none"> <li>○ Available parameters and functions</li> </ul>   |  |
| <p>Application</p> <ul style="list-style-type: none"> <li>○ Reading parameters</li> <li>○ Writing parameters</li> <li>○ Files management</li> </ul> |  |
| <p>Questions and answers</p>  |  |
| Duration  | Date / Costs                               |
| 2 days  | Please consult your local training contact |

## Your area of interest

Engineering and Setup

## Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of script languages

## Objectives

- ✓ Creating Flexium HMI custom pages in HTML/JavaScript

## Supports

Training materials

- Simulator

## Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Example (on memory stick)

## Training Content

Introduction in the architecture of Flexium<sup>+</sup> HMI

Abstract of development tools

Explanation of the Flexium<sup>+</sup> HMI components

Exercises related to practice using HTML and JavaScript

- FXBrowser
- FXServer
- FXLib
- FXLog

- Object instancing of the classes of the development components
- Using of the development components

Structure of configuration files

- Characteristics of the array structure of event classes
- Programming examples

- FXServer.ini
- FXUser.ini

Explanation of the FXServer architecture

Questions and answers

- Event handling
- task management
- ...

## Duration

3 days

## Date / Costs

Please consult your local training contact

| Your area of interest  | Prerequisite   |
|--|--|
| Engineering and Setup  | <ul style="list-style-type: none"> <li>○ FXTR101</li> <li>○ Windows knowledge</li> <li>○ Knowledge of object oriented programming (OOP) and use of COM server</li> </ul>   |
| Objectives   | Supports   |
| <ul style="list-style-type: none"> <li>✓ Using of FXServer for the communication with the different components of Flexium<sup>+</sup>. This allows connections to other systems, independent HMIs, etc. to be realized.</li> </ul> | <p>Training materials</p> <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> <p>Deliveries</p> <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> <li>○ Software Development Kit access</li> <li>○ Programming examples in C# and C++ (on memory stick)</li> </ul> |
| Training Content   |  |
| Introduction in the architecture of FXServer   | Exercises related to practice using C#   |
| Explanation of the Flexium <sup>+</sup> HMI components   | <ul style="list-style-type: none"> <li>○ FXBrowser</li> <li>○ FXServer</li> <li>○ FXLib</li> <li>○ FXLog</li> </ul>  |
| Structure of configuration files   | Questions and answers  |
| <ul style="list-style-type: none"> <li>○ FXServer.ini</li> <li>○ FXUser.ini</li> </ul>   |  |
| Explanation of the FXServer architecture   |  |
| <ul style="list-style-type: none"> <li>○ Event handling</li> <li>○ task management</li> </ul>  |  |
| ...  |  |
| Duration   | Date / Costs   |
| 2 days   | Please consult your local training contact   |

## Your area of interest

Engineering and Setup

## Objectives

- ✓ Creating FlexiumPro HMI custom pages in C#

## Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of C#

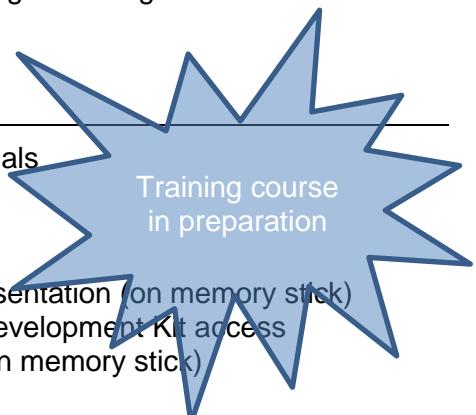
## Supports

Training materials

- Simulator

## Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Example (on memory stick)



Training course  
in preparation

## Training Content

Introduction in the architecture of FlexiumPro HMI

Explanation of the FlexiumPro HMI architecture

Structure of configuration files

Abstract of development tools

Exercises related to practice using C#

- Programming examples

Questions and answers

## Duration

3 days

## Date / Costs

Please consult your local training contact

# Communication with FlexiumPro

FLTR453

## Your area of interest

Engineering and Setup

## Prerequisite

- FXTR101
- Windows knowledge
- Programming knowledge of C#

## Objectives

- ✓ Use of the FlexiumPro SDK for communication with the various FlexiumPro components. This allows connections to other systems, independent HMIs, etc. to be realized.

## Supports

Training materials

- Simulator

Training course in preparation

Deliveries

- Course presentation (on memory stick)
- Software Development Kit access
- Programming examples in C# and C++ (on memory stick)

## Training Content

Introduction in the architecture of FlexiumPro SDK

- Exercises related to practice using C#
- Programming examples

Questions and answers

## Duration

2 days

## Date / Costs

Please consult your local training contact

# Safety including NUM-SAMX

FXTR463

| Your area of interest   | Prerequisite  |
|---|---|
| Engineering and Setup   | FXTR102 or FPTR402  |
| Objectives  | Supports  |
| <ul style="list-style-type: none"> <li>✓ Understand concept.</li> <li>✓ Program and setup a safety application on a Flexium<sup>+</sup> or FlexiumPro system</li> </ul> | <p>Training materials</p> <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> <p>Deliveries</p> <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> <li>○ Software Development Kit access</li> <li>○ Example (on memory stick)</li> </ul> |
| Training Content  |   |
| Hardware structure  |   |
| Safety functions  |   |
| Safety application concept  |   |
| Safe PLC programming  |   |
| Drive functions   |   |
| <ul style="list-style-type: none"> <li>○ NUM-STOX setup</li> <li>○ NUM-SAMX setup</li> </ul>  |   |
| Questions and answers   |   |
| Duration  | Date / Costs  |
| 2 days  | Please consult your local training contact  |

# Axium Power system maintenance

APTR201

| Your area of interest   | Prerequisite   |
|---|--|
| Maintenance   | None   |
| Objectives  | Supports   |
| <ul style="list-style-type: none"> <li>✓ Ability to detect and replace defective components in a short time</li> <li>✓ Predictive maintenance</li> </ul>  | <ul style="list-style-type: none"> <li>Training materials <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> </li> <li>Deliveries <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> </ul> </li> </ul> |
| Training Content  |  |
| <ul style="list-style-type: none"> <li>Axium Power system maintenance <ul style="list-style-type: none"> <li>○ System structure</li> <li>○ Components</li> <li>○ System startup</li> <li>○ Diagnostics</li> <li>○ Software updates</li> <li>○ Service tool</li> <li>○ Safety</li> <li>○ Part replacement</li> </ul> </li> <li>Drives maintenance <ul style="list-style-type: none"> <li>○ Product knowledge</li> <li>○ Drives exchange procedure</li> </ul> </li> <li>Questions and answers (1 hour)</li> </ul> |  |
| Duration  | Date / Costs   |
| 5 days  | Please consult your local training contact   |

## Individual trainings

| Your area of interest         | Prerequisite  |
|-------------------------------|---|
| Something around NUM controls | Depending on the training content   |
| Objectives                    | Supports  |
| ✓ Will be defined with you    | <ul style="list-style-type: none"><li>Training materials<ul style="list-style-type: none"><li>○ Simulator</li></ul></li></ul>                       |
| Training Content              | Deliveries <ul style="list-style-type: none"><li>○ Course presentation (on memory stick)</li><li>○ Example (on memory stick) if available</li></ul> |
| Duration                      | Date / Costs  |
| To be defined                 | Please consult your local training contact  |

Individual trainings can happen at NUM locations or customer site.

# Seminar

| Your area of interest   | Prerequisite   |
|---|--|
| General   | None   |
| Objectives  | Supplementary Items  |
| <ul style="list-style-type: none"> <li>✓ Present NUM's newest innovations in CNC, servo motors and drive technology</li> </ul>  | <p>Training materials</p> <ul style="list-style-type: none"> <li>○ Simulator</li> </ul> <p>Media</p> <ul style="list-style-type: none"> <li>○ Course presentation (on memory stick)</li> <li>○ Example (on memory stick) if available</li> </ul> |
| Training Content  |  |
| Topics include the newest innovations in CNC, servo motors and drive technology. Additional topics include NUM services, maintenance techniques and a range of innovative complete solutions for CNC and machine tool retrofits |  |
| Duration  | Date / Costs   |
| 0.5 days  | <ul style="list-style-type: none"> <li>○ Refer to Course Schedule</li> <li>○ Free of charge</li> </ul>   |

## Organization

### Training Facilities United States

NUM USA  
603 E. Diehl Road Suite 115  
Naperville, IL 60563

Phone +1 630 505 7722  
Fax +1 630 505 7754  
sales.us@num.com

**Cost** Contact your local NUM office.

**Time** Classes begin at 08:30 a.m. and end at about 5:00 p.m., with 1-hour lunch break.

**Booking** All classes require a minimum of 3 persons. Insufficient enrollment 3 weeks prior to the class date will result in course cancellation.

Student cancellations will not be accepted within 3 weeks prior to the course start date. Student will be invoiced as if attending the course.

## Booking form

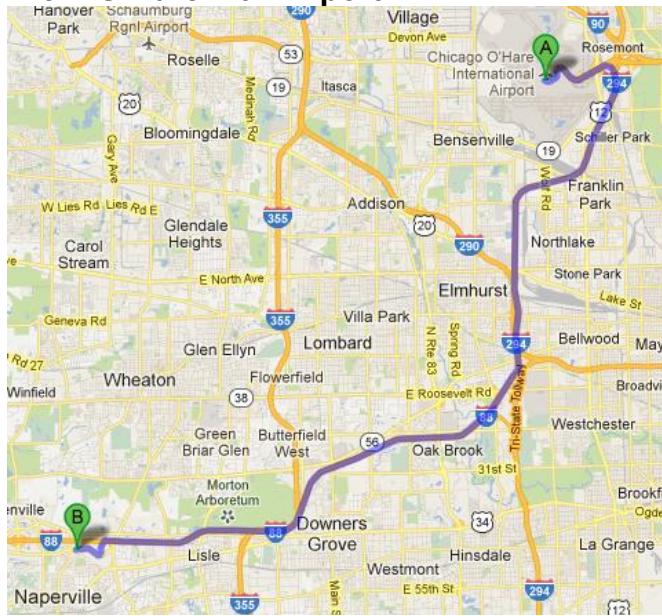
For booking of training, please send an e-mail to [sales.us@num.com](mailto:sales.us@num.com) with the following information:

- Company name
- Contact person
- Phone
- Address
- Purchase order number
- Training number
- Training date
- Training location
- Names of the participants

For other countries, please contact your local sales representative or NUM Switzerland ([sales.ch@num.com](mailto:sales.ch@num.com)).

## Journey to NUM USA

### From O'Hare Int'l Airport

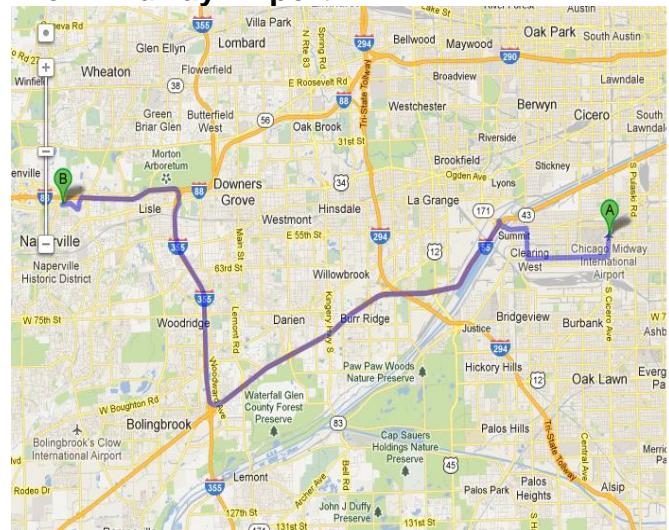


 **Chicago O'Hare International Airport**  
10000 West O'Hare Avenue, Chicago, IL 60666

1. Head southeast  
About 2 mins
2. Take the ramp onto I-90 E
3. Take exit 1D toward I-294 S/Indiana/S Tollway
4. Merge onto I-294 S  
Partial toll road  
About 11 mins
5. Take the Interstate 88 West E-W Tollway exit toward Aurora  
Toll road
6. Merge onto I-88 W  
Toll road  
About 15 mins
7. Take the exit toward Naperville Road
8. Turn left onto Freedom Dr
9. Turn right onto E Diehl Rd  
Destination will be on the left  
About 2 mins

 **Num Corporation**  
603 E Diehl Rd, Naperville, IL 60563

### From Midway Airport



 **Midway International Airport**  
5700 S Cicero Ave, Chicago, IL 60638

1. Head south on S Cicero Ave
2. Turn right onto W 63rd St
3. Turn right onto S Harlem Ave
4. Turn left onto S Archer Ave
5. Continue onto IL-171 N
6. Take the I-55 S ramp to St Louis
7. Keep left at the fork and merge onto I-55 S
8. Take exit 269 for Interstate 355 Tollway N/Interstate 355 Tollway S toward Northwest Toll road
9. Keep right at the fork, follow signs for Interstate 355 N/Northwest Suburbs and merge onto I-355 N Toll road
10. Take the exit toward Aurora  
Toll road  
About 2 mins
11. Merge onto I-88 W  
Toll road  
About 3 mins
12. Take the exit toward Naperville Road
13. Turn left onto Freedom Dr
14. Turn right onto E Diehl Rd  
Destination will be on the left  
About 2 mins

 **Num Corporation**  
603 E Diehl Rd, Naperville, IL 60563

### Hotels with NUM discount

#### Hampton Inn

1087 E. Diehl Road  
(630) 505-1400

Continental breakfast included. Area shuttle, exercise room and seasonal outdoor pool available. Ask for NUM USA rate to get a 25% discount.

#### Hotel Indigo Naperville Riverwalk - Downtown

120 Water Street  
(630) 778 9676

Some customers prefer this downtown River walk location with walking distance to shopping, restaurants, bars, etc... The Hotel has free wifi with full service restaurant serving breakfast, lunch, dinner, exercise room, free weights and cardio equipment. Complimentary shuttle service to and from NUM offices and within 5 mile radius of hotel - based upon availability.

Ask for the NUM Corporation rate. 15-25% off. (Corp ID 786866549, IATA# 99502056)