## PROPOSAL FOR MINISTRY OF ENERGY - ISRAEL GAS AUTHORITY

# SYNERGI GAS Software

**Date:** 22 February 2022

| | |
|---|---|
| Company name: | Ministry of Energy - Israel Gas Authority |
| Report title: | SYNERGI GAS Software |
| Customer contact : | Michael Koblik - michaelko@energy.gov.il |
| Date of issue: | 22 February 2022 |
| Validity date: | 30/06/2022 |
| Project No.: | 20220222_IEC_SYNERGI GAS_Commercial offer |

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**MINISTRY OF ENERGY - ISRAEL GAS AUTHORITY**
**7 BANK OF ISRAEL STREET,**
**JERUSALEM**

Mr Michael Koblik

22 February 2022

Dear Michael Koblik ,

Thank you for your interest in DNV Digital Solutions.

According to your kind requirement, we are pleased to address you this SYNERGI GAS Software proposal for different configuration and modules and advisory services.

I hope that you will find this proposal suitable for your needs to conduct engineering analysis and it will help you in your best practices.

If you have any further question, technical or commercial, do not hesitate to contact us.

This proposal has validity until 30/06/2022.

Looking forward to hearing from you.

Best regards,

**Stephane Torrens**
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Digital Solutions

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# 1 DNV SYNERGI GAS SOFTWARE

## 1.1 SYNERGI GAS CORE:

Synergi Gas hydraulic modelling software is a robust, versatile tool used to simulate natural gas gathering, transmission, and local distribution systems.

In addition to pressure and flow calculations, Synergi Gas also has extensive gas component, gas property, and thermal tracing features. The hydraulic modelling software identifies, predicts and helps you address your asset's operational challenges, enabling day-to-day efficiency of gas distribution and transmission networks. Synergi Gas software gives the results you need to make crucial design, planning and operating decisions using robust equations.

In gas distribution and transmission networks, advanced hydraulic analysis is needed for decision support to attain optimal operational efficiency. Synergi Gas software will help you make daily operating decisions for load approval and operational support, size main extensions and replacements for economy and performance and create long-term strategic plans that maximize your existing gas network infrastructure.

- Link Synergi Gas software to your customer information system
- Determine the impact of isolating selected regions of your gas network on remaining network pressures and flows
- Determine optimum compressor and regulator operations with the goal of minimizing fuel cost, maximizing profitability and system capacity
- Understand and plan for complex dynamics between pipeline operations and economics
- Stay in compliance with system over-pressurization requirements
- Organize and maintain the large volumes of data inherent with over-pressurization protection
- Demonstrate results and compliance with regulatory requirements
- Compare the software's hydraulic analysis results to actual system behaviour
- Drive "what-if" or other operational analyses with the hydraulic modelling software

What you get?

- Synergi Gas is the leading natural gas network modelling and hydraulic simulation software
- Analysis of closed conduit networks of pipes, regulators, valves, compressors, storage fields, and production wells is done with Synergi Gas software
- Steady-state hydraulic modelling software for analysis with extensive composition and temperature tracing functionality
- Synergi Gas hydraulic simulation software can easily handle systems of 1,000,000 nodes or more
- Analysis engine in Synergi Gas software can combine with more than a dozen different available modules in the hydraulic simulation software system
- Full integration with GIS
- Over 50 years of gas network analysis expertise, innovation, and gas software domain knowledge in DNV

## 1.2 SYNERGI GAS UNSTEADY-STATE MODULE

The Unsteady-State module performs off-line unsteady flow condition analysis in natural gas networks. Its ease-of-use and compatibility with Synergi Gas make it the off-line transient module of choice for gas transmission planners and designers.

What you get ?

- Models of gas composition, heat content and specific gravity as it varies with time as system supplies change
- Models of simple or complex pipeline systems
- Integrated models can include all facilities, including pipes, valves, regulators, compressors, storage fields and other special facilities

With the Unsteady-State module you can:

- Model complex regulator and compressor stations with multiple series elements on several parallel runs
- Balance your network volumetrically or thermally, with options including both heat content tracing and component tracing
- Automatically or manually operate facilities during simulation

## 1.3 SYNERGI GAS AUTOMATED DESIGN MODULE

The Automated Design module is a software tool that enables you to optimize network efficiency and keep costs down by assessing pipe size options for your model with specified loading conditions, material and installation cost and location.

What you get ?

- Useful in designing new systems or expanding and reconstructing existing networks
- Enables optimized network efficiency
- Determines low-cost design for new service areas or major mains replacement efforts
- Clearly identifies incremental cost by designing to a higher minimum pressure

With Automated Design you can find the lowest possible pipe diameter capable of transporting sufficient quantities of gas to required delivery points safely and reliably.

- Quickly analyses system design and avoids over-design
- Operates in single-pressure level networks on data and criteria you provide
- Pipe installation parameters include internal diameter, material type and installation cost per unit length

## 1.4 SYNERGI GAS MODEL BUILDER MODEL (optional)

The Model Builder module is a software tool that provides a seamless integration between Synergi Gas and your geospatial information system (GIS) data. Its data management capability allows you to import data from a variety of external sources, including shape files, CAD files and ArcInfo coverages, as well as personal and enterprise ArcGIS geodatabases.

What you get ?

- Streamlines time required to build your Synergi Gas models, with automated processes for efficient model maintenance and revision
- Converts GIS point data, such as valves and regulators, into linear, non-pipe facilities
- Imports multiple pipe and facility source model layers simultaneously
- Maps source file attributes to Synergi Gas facility data and supplements incomplete GIS attributes with your model data
- Allows you to save your imported model attributes and configurations to rebuild your model whenever you choose

Model Builder lets you filter and query data from external sources. This means that you can build your model using only the data you need from each source. You can import multiple pipe and facility source model layers at once, rather than importing each layer individually. You can also map source file attributes to Synergi Gas facility data and supplement any missing or incomplete GIS attributes with your model data. This includes regulator station details, internal pipe diameters, pipe roughness values, source node properties, customer demands and specific node names. Save your imported model attributes and configurations to rebuild your model whenever you choose, including weekly and monthly.

# 2 DNV AS KEY STRATEGY PARTNER

# 3 COMMERCIAL PROPOSAL

## 3.1 General

The prices quoted in this section are quoted in EUR and exclusive of VAT or any other taxes if applicable. To have access to SYNERGI GAS Software extension modules, Synergi Gas Core license is mandatory.

## 3.2 License Pricing detailed

### 3.2.1 Maintenance Note:

*SLA, Service Level Agreement. SLA cover technical support, end-user support in operations of the program, program error corrections/bug-fixes, minor program updates, and program upgrades.
SLA fee is 20% of the purchase on perpetual license fee, adjusted annually according to the price index.
**First year included in perpetual license fee.**
Optional Annually thereafter.
Several years SLA can be signed ahead, considering fixed Annual SLA amount.

### 3.2.2 Option 1 - Network License configuration – Detailed

In Network license mode, a pool of licenses is available on the server, for use in any computer on the network. As many simultaneous users as active license numbers.
**The offer includes a 22% discount, valid until 30/06/2022**

| Software | Modules | Seats | Perpetual license | Annual SLA* |
|---|---|---|---|---|
| **SYNERGI GAS** | Core | 3 LAN | 24 942 EUR<br>~~30 429 EUR~~ | 5 868 EUR |
| | | 2 LAN | 18 070 EUR<br>~~23 166 EUR~~ | 4 633 EUR |
| **SYNERGI GAS** | Unsteady State | 3 LAN | 23 450 EUR<br>~~28 609 EUR~~ | 5 517 EUR |
| | | 2 LAN | 16 989 EUR<br>~~21 780 EUR~~ | 4 356 EUR |
| **SYNERGI GAS** | Automated Design | 1 LAN | 7 362 EUR<br>~~9 438 EUR~~ | 1 888 EUR |
| **SYNERGI GAS** | Model Builder | 1 LAN | 7 585 EUR<br>~~9 724 EUR~~ | 1 945 EUR |

### 3.2.3 Option 2 - Standalone License configuration – 5/3/2 licenses

Under a Standalone license, the software is constrained to a certain host computer. A license is needed for each computer the software will be installed on.
**The offer includes a 22% discount, valid until 30/06/2022**

| Software | Modules | Seats | Perpetual license | Annual SLA* |
|---|---|---|---|---|
| **SYNERGI GAS** | Core | 5 Standalone | 25 599 EUR<br>~~32 819 EUR~~ | 6 564 EUR |
| | | 3 Standalone | 19 455 EUR<br>~~24 942 EUR~~ | 4 988 EUR |
| | | 2 Standalone | 15 359 EUR<br>~~19 691 EUR~~ | 3 938 EUR |
| **SYNERGI GAS** | Unsteady State | 5 Standalone | 24 067 EUR<br>~~30 855 EUR~~ | 6 171 EUR |
| | | 3 Standalone | 18 291 EUR<br>~~23 450 EUR~~ | 4 690 EUR |
| | | 2 Standalone | 14 440 EUR<br>~~18 513 EUR~~ | 3 703 EUR |
| **SYNERGI GAS** | Automated Design | 1 Standalone | 6 257 EUR<br>~~8 022 EUR~~ | 1 604 EUR |
| **SYNERGI GAS** | Model Builder | 1 Standalone | 6 447 EUR<br>~~8 266 EUR~~ | 1 653 EUR |

## 3.3 License Key components – Summary

| Software | Modules | Seats | Perpetual license | Annual SLA* |
|---|---|---|---|---|
| **SYNERGI GAS** | 3 Core<br>3 Unsteady State<br>1 Automated Design | 3 LAN<br>+ 3 LAN<br>+ 1 LAN | **55 754 EUR** | 13 273 EUR |
| **SYNERGI GAS** | 2 Core<br>2 Unsteady State<br>1 Automated Design | 2 LAN<br>+ 2 LAN<br>+ 1 LAN | **42 421 EUR** | 10 877 EUR |
| **SYNERGI GAS** | 5 Core<br>5 Unsteady State<br>1 Automated Design | 5 Standalone<br>+ 5 Standalone<br>+ 1 Standalone | **55 923 EUR** | 14 339 EUR |
| **SYNERGI GAS** | 3 Core<br>3 Unsteady State<br>1 Automated Design | 3 Standalone<br>+ 3 Standalone<br>+ 1 Standalone | **44 003 EUR** | 11 282 EUR |
| **SYNERGI GAS** | 2 Core<br>2 Unsteady State<br>1 Automated Design | 2 Standalone<br>+ 2 Standalone<br>+ 1 Standalone | **36 056 EUR** | 9 245 EUR |

## 3.4 Services and Advisory

### 3.4.1 Advisory comments

#### 3.4.1.1 General comments

Data needed from Ministry of Energy - Israel Gas Authority on Data migration and model building.

- GIS data to include pipe diameter (either ID or OD and wall thickness)
- Flow and pressure data to be available in an Excel format.
- DNV would need an attribute including in the nodes in ArcGIS to define the customer names so that they can be linked to the flow and pressure data.
- For the USM, DNV would need flow and pressure time series data to create the Unsteady State Module scenarios.

The risk for DNV is really the linking of the nodes to the flow and pressure data as I mentioned below. Adding customer's info or reference to the GIS would help DNV enormously with the linking work and fixing the pricing.

#### 3.4.1.2 Steady State scenario

The steady state model is effectively a "snapshot in time" of the pipeline network.
This scenario is a very necessary and important first step in building a network model as it allows the user to confirm the connectivity of the model and to see the pressures and demands in the system.

Steady state can be used to show the min/max pressures in the system and can be used to find bottlenecks or pressure issues in the system.

Steady state would be the model used to determine the feasibility of adding new customers to the system and showing how the pressure in the system might be affected.

We would not recommend building a Unsteady State Model or transient model without first having a validated Steady State model.

### 3.4.2 Commercial proposal Advisory

| Services | | Details | Pricing |
|---|---|---|---|
| **Training** | Online<br>Standard Synergi Gas Core<br>(5 x 4hr online sessions)<br>Standard Synergi Gas Unsteady State Module<br>(5 x 4hr sessions)<br>Standard Synergi Gas Automated Design Module<br>(5 x 4hr sessions) | 8 participants | 10 200 EUR |
| **Advisory** | 1 day workshop, Models delivery and transfer<br>(2 x 4hr online sessions | 8 participants | 1 577 EUR |
| **Advisory** | Data migration – Steady State Model Building | Initial **Steady** Scenario | 24 480 EUR |
| **Advisory** | Data migration – Unsteady State Model Building | Initial **Unsteady** State Scenario | 13 230 EUR |
| | | Additional **Unsteady** State Scenario | 4 860 EUR |

# 4 BENEFITS OF A SERVICE LEVEL AGREEMENT (SLA)

## 4.1 DNV – Digital Solutions support centre

All clients with an SLA are entitled to technical support 24 hours Monday through Friday. The DNV – Digital Solutions support centre works from several regional support hubs. The team uses a common support model and a streamlined working process based on ITIL (the de facto world standard for service management).

## 4.2 New release upgrades

The SLA includes access to new release upgrades of your Software products. Updates are released following new standards and regulations and are the result of continuous product development.

## 4.3 Customer Portal - http://dnvs.force.com/

The customer portal includes important services for you as customer, such as:

- DNV– Digital Solutions support centre (technical support)
- User manuals and other documentation
- News on development, including recent and upcoming versions
- Hot fixes and patches
- Known bugs and workarounds
- Frequently asked questions (FAQs)

## 4.4 Global international and regional software meetings

Customers with an SLA are invited to global and regional software meetings. During these meetings you will receive the latest information about your product. You will also meet our product experts and other users with whom you can share experiences.

# 5 TERMS AND CONDITIONS

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| **SLA - MAINTENANCE & SUPPORT** | the SLA fee is 20% of the purchase fee, adjusted annually according to the price index. When leasing software, the SLA is included in the annual license fee. |
| **TERMS OF PAYMENT** | NET 30 days |
| **TAXES** | Customer is responsible for payment of any local taxes, duties or other tariffs that may be applicable, either to DNV or directly to the appropriate taxing authority |
| **RIGHT OF USE** | All licensing of Software from DNV is subject to the current DNV Standard License Agreement. This quote is subject to DNV Software's Standard License Agreement and Customer will agree to these during installation. |
| **TERMINATION** | The Agreement and/or the Maintenance is renewed automatically every year. Either party may terminate this Agreement by giving the other party at least three (3) months written notice prior to the renewal date. Different termination terms and provisions may apply for short time lease. |
| **VALIDITY OF OFFER** | 30/06/2022 |

# 6 APPENDIX

## 6.1 Appendix A – Technical clarifications

| Reply DNV | Date of reply | 16.02.2022 Description Questions | Date Dnv Reply | Reply DNV | NGA 17.02.2022 | Reply DNV 17.02.2022 | NGA 20.02.2022 | Reply DNV 22.02.2022 |
|---|---|---|---|---|---|---|---|---|
| ü GIS coordinates – with Synergi Model Builder Module | 12.08. 2021 | - | | | | | | |
| ü Dynamic calculations of consumption – with Synergi Gas Unsteady State Module (USM) | 12.08. 2021 | - | | | | | | |
| ü Dynamic calculations of pressure falls – with Synergi Gas Unsteady State Module (USM) | 12.08. 2021 | - | | | | | | |

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| ü Adding a well / storage field – with Synergi Gas Core | 12.08. 2021 | - | | | | | | |
| ü Adding a compressor – with Synergi Gas Core | 12.08. 2021 | - | | | | | | |
| ü Line pack – with Synergi Gas Unsteady State Module (USM) | 12.08. 2021 | - | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| Pipe data minimum: Material, Size, Roughness, coordinates Valve data minimum: Size, type and coordinates Regulator minimum data: Size, Set pressure, coordinates and another data from 24.01.2022 | 08.10.2021 | Please Show the Data in excel format we will need to Import, with exactly columns. | 16.02.2022 | GIS usually contains the following data:<br>XY coordinates - required by Synergi Gas<br>Pipe diameter (ID or OD and wall thickness) - required by Synergi Gas<br>Synergi Gas can read the GIS attributes through the SHP file, but the other flow and pressure data must be made availabe in Excel.<br>There must be a minimum of two columns: Node name and Flow or Pressure<br>Synergi Gas also must have:<br>Material - useful for Synergi Gas<br>Roughness - required by Synergi Gas<br>Valve Type - useful for Synergi Gas<br>Regulator Size - useful for Synergi Gas<br>Regulator Set Pressure - useful for Synergi Gas<br>Synergi Gas also must have Delivery/Customer Flow data<br>Pressures at regulators and compressors<br>Synergi Gas can read the GIS data from the SHP file, but the flow and pressure data need to be in an Excel format. The minimum requirement is | Please Show the Data in excel format we will need to Import, with exactly columns. | The data we need in Excel is simply flow and pressure. The format will be<br>Column 1 - Node<br>Column 2 - Flow<br>Column 3 - Pressure<br><br>All other data will be in the GIS | The flow for node its changed every time 24 hours ,please clarify the way to fill the data? Aditionaly the name of nodes its differnet between gis and excel. | During meeting it was explained what data was required as a minimum in order to build a model.<br>DNV to send an example of the excel timeseries data |

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| | | | | one column with node name and columns for flow and pressure | | | | |
| Synergi gas install will use approximately 1.2Gb, operational data will usually take up about 1 to 3GB and each model and version of model will have a | 08.10.2021 | Can the software to do the improvement of system automatically? Or advise what we need to improve? | 16.02.2022 | Synergi Gas will not automatically change the model size. There are tool sthat can be used to reduce the model size and there are toools to highlight bottlenecks in the system. | you mean it advise for the best size of pipe? Or may be also on the best way to supploy the gas? | The model size reduction tool will reduce the number of pipes in the model to allow the processes to run faster.<br>The bottleneck tool will highlight areas where the pressure drop is unusually high. This are would then be investigated to see if there was an | the work done mannualy ? Or the software suggest something ? | There has been some confusion as to what was required. This was clarified in the meeting to mean pipe sizing and minimisation of the pipe costs in a network.<br>DNV explained that this could be done using the |

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| minimum size of 6Mb (largest models we have seen like London are about 600Mb in size) | | | | | | issue with pipe diameter or flow. | | Automated Design Module (ADM). There was breif demo of ADM |
| YES, as Software license can be lease for a short period of time, | 08.10.2021 | Please show me again the link to demonstration of 4 modules , core, builder, management, steady state | 16.02.2022 | https://www.dnv.com/services/liquid-simulation-synergi-gas-liquid-steady-state-module-99006 https://www.dnv.com/services/synergi-gas-model-builder-4214 https://www.dnv.com/services/synergi-gas-customer-management-4182 https://www.dnv.com/services/synergi-gas-unsteady-state-4195 | where can we training today? Please end me the link to download the demo software. | No free video training available | we need the software for a couple of weeks, for free, to check it. Its legitimate request. | It was agreed that DNV would issue a demo licence for a number of days to allow familiarisation with the software. Duncan will give a brief trainign overview to allow the users to get started with the software. |
| There is no option to add any new flow, roughness equations or Equations of State. Synergi has all the industry standard | 08.10.2021 | Please describe witch kind of equitation? Follow ASME, Nen standards? Weymouth? | 16.02.2022 | There are 10 pipe equations. These are:<br>Fundamental with flow dependant friction (FM)<br>Fundamental with constant friction (FD)<br>General (GP)<br>IGT Distribution (IG)<br>Mueller (MU)<br>Panhandle A (PA) | ok | | | |

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| equations built in as well as some specific manufactures equations.. | | AGA?Prahandle? | | Panhandle B (PB)<br>Spitzglass (high pressure) (SP)<br>Spitzglass (low pressure) (SL)<br>Weymouth (WE)<br>The FM is the default and a good all round equation.<br>There are also 7 different firction equations available. these are:<br>AGA fully turbulent<br>Chen<br>Colebrook-White<br>GERG<br>Shacham<br>Smooth pipe law<br>Smooth pipe - rough pipe intersection<br>Colebrook-White is th edefault and works well with the FM equation. | | | | |
| Synergi Gas comes unstalled with multiple user guides for the core product and each of it's modules as well as a full scriptiong guide. Technical | 08.10.2021 | - | | | | | | |

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| support is available by either phone or email. | | | | | | | | |
| SLA is here to support users If the customer do not have active SLA, support will be minimum, only related to software license delivery and installation assistance | 08.10. 2021 | - | | | | | | |
| YES, commercial proposal will be based on number of models, data amount and complexity of models, with a number of | 08.10. 2021 | - | | | | | | |

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| hours dedicated to it | | | | | | | | |
| Synergi Gas is installed with 1700 coordinate systems that have been provided by ESRI | 08.10. 2021 | - | | | | | | |
| Synergi gas is a standalone product that is installed on a suitable PC | 08.10. 2021 | - | | | | | | |
| There is no security built into the product. The product should be installed on a secure machine and and model or data files also | 08.10. 2021 | - | | | | | | |

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| kept in secure areas. | | | | | | | | |
| Can be on premise, Ministry local computers, with specific computer licenses (Standalone), Network (LAN) or even Cloud access, (Microsoft Azzure) | 08.10. 2021 | - | | | | | | |
| See supporting documentation, è Please see installation note attached, “SynG493_InstallationGuide.pdf” | 08.10. 2021 | - | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| Windows 10 | 08.10.2021 | - | | | | | | |
| No ports required as all data is imported from files | 08.10.2021 | - | | | | | | |
| Data and model storage is free as long as the PC with the software installed is able to get access. | 08.10.2021 | - | | | | | | |
| Data and model storage is free as long as the PC with the software installed is able to get access. | 08.10.2021 | - | | | | | | |
| By email, with software installation files, Frequency | 08.10.2021 | - | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| depends on major releases, , usually yearly based | | | | | | | | |
| On premise with Standalone for dedicated computer, Network on server to share access across IGA network or Cloud based on Microsoft azzure partnership | 08.10. 2021 | - | | | | | | |
| Auditing can be set up in the produt to save users changes either per model or per session. | 08.10. 2021 | - | | | | | | |

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| The software is installed on a users pc or laptop. Therefore anyone with the ability to log onto the machine will be able to use the application. | 08.10.2021 | - | | | | | | |
| Yes, within Israel Electric Corporation Ltd (IEC), Synergi pipeline Simulator is in use since 2015 | 08.10.2021 | - | | | | | | |
| Windows 10 | 08.10.2021 | - | | | | | | |
| This will be done via any of the ESRI GIS data file formats such as shape file | 08.10.2021 | The connection between the software and Gis? And option | 16.02.2022 | Synergi Gas is able to read the SHP file format exported from the GIS. This SHP can then be conveted by Synergi Gas into a model. | | | | |

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| or personal geodatabase. | | for online updates from gis system | | | | | | |
| Existing data from network, see answer question 6 on blank data for simulation | 24.01.2021 | , System core data and calculation of construction costs, please clarify how the software answer to economical callculation of construction and overall costs of the system, please give me example. | 16.02.2022 | The standard Synergi Gas core application is not able to calculate the cost of construction of the network directly. It does allow the user to see the exact number of lengths of each size of pipe required in the network. Construction costs could be calculated for this information. | we need to do the conversation! We need the total costs for the system, you showed in presentation the pipe costs in the system! Its must! | There is another module called Automated Design Module (ADM) that will size new pipes and also allow you to calculate the cost of laying those pipes. This is a separate module and would mean additional licence cost and training. | on the Demo session we saw the costs price for the pipes, its can acumulate the data for all network? please demonstrate the ADM. | DNV did a short demo of ADM and its its functionality |

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|---|---|---|---|---|---|---|---|---|
| Synergi Gas is used in more several hundred companies across the world, since more than 20 years | 24.01.2021 | How the software is used in other countries in economic .a spects, please clarify | 16.02.2022 | Synergi Gas is used by all sorts of different users globally for a whole host of different tasks. | this is the question follow the the question before num. 30, we need the examples in excel format. | Typically Synergi Gas is used for the following tasks by users:<br>Capacity management<br>Pressure management<br>Network design<br>Operational Planning<br>Composition tracking<br>Energy or CV tracing | no economical usage? | Yes, there are a number of user around the world using Synergi Gas and ADM to design and build pipeline networks |
| 15.02.2022 attached proposal | 15.02.2022 | Proposal is still High , The price not include all the modules. Not include the economical aspects very important for us. Why its not include model builder? ,Customer | 16.02.2022 | ModelBuilder Module (MBL) is probably not needed if you do not need to build multiple models regularly. MBL is very useful if your network is continually changing and growing and if you need to build modles on a regular basis. Customer Management Module (CMM) is a very specialised module that will use historical flow and weather data to determine customer usage. It can also be used to show customer locations in the Synergi Gas model. CMM requires that you create an Oracle data base to manage the customer data. The setup of CMM will require a large investment in terms of time and | MBL- the network is growing all time, so I suppose its good for us. CMM - we would like to get in third line-proposal.but I repeat the proposal are very high. Even it not include these two anoter modules. Please send me the proposal for this two models | MBL is a separate module and additional licence and training.<br>It may be better to explain the CMM requirements in our meeting next week 22/02/2022 | MBL is part of the propposal on august, I really don't understand , why we speek about it today like it something new. CMM - we don't need at this time. | |

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|---|---|---|---|---|---|---|---|---|
| | | Management | | money. It may be something to consider once the core Synergi Gas is up and running. | separatly, and upgrade the first one follow the august. | | | |
| Please see installation note attached , “SynG493_InstallationGuide.pdf”, License will be managed by your server , software can be install in as many computer as wanted, without any limitation | 15.02.2022 | - | | | | | | |
| Please see installation note attached , | 15.02.2022 | - | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| “SynG493_InstallationGuide.pdf ” | | | | | | | | |
| This is covered in our SLA contract, see attached , “AGR902.pdf”, appendix B | 15.02.2022 | - | | | | | | |
| The risk for DNV is really the linking of the nodes to the flow and pressure data as I mentioned below. Adding customer’s info or reference to the GIS would help DNV enormously with the linking work and fixing the pricing. | 15.02.2022 | . Please clarify | 16.02.2022 | Each supply and delivery node will need to have a flow and/or a pressure assigned to it in order for Synergi Gas to work properly. Delivery (customer) flow data is not usually avialable in the GIS, so this information will need to be imported after the physical model layout has been converted from the GIS. For ArcGIS it is not possible to convert the node names into Synergi Gas. This is due to limitations with ArcGIS. DNV must therefore locate all the delivery nodes, get the node name and then assign a flow to that node name. This process is manual and will take some time to do. Adding an additonal attribute to the GIS that identifies the customer on the node will help speed this process up, but it still requires a certain amount of | flow and presuure its calculted, and not need to be assign, the single thing we need to import its consumption of each customer, we can do it for demand center and not for each coustomer, specialy in distribution network. 1. firstable I don’t like its not automaticly. 2. please think | Whether you define your flows as individual customers or as demand centres, those flows will need to be assigned to nodes in the model. The first time we do this, someone will need to link the model node name to a demand centre. The data for the entire model can be imported in one single file, however, it does take time to create that file with all | the data for distribution demand centre can safe the asiggnes to each coustomer, instead we can do it for all area. we not sure we can get you the data. | DNV will link the demand data with the nodes in the model accoridng to information in the GIS and the PipeFlow Expert software. |

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| | | | | effort to check and assign the flow data. | about my clarifacation and please update the proposal. | the demand centres in initially. | | |
| 15.02.2022 attached proposal | 15.02. 2022 | we would like to get some discount for first modeling | 16.02 .2022 | We are already at minimum cost for the consultancy work and include all the effort would can be done, without affecting the quality of the delivered work | we need to speek about. | Discuss over our meeting next 22/02/2022<br>Additional training for modules would be:<br>MBL (2 x 4hr sessions) – EUR 1,800<br>ADM (1 x 4hr session) – EUR 1,000<br>We will talk with them about CMM next week 22/02/2022 | training its ok but not payment for each module separattely . We start the proposal from 43 euro for all the demands like I described : GIS , dynamic simulation, | See proposal |

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| | | | | | | | economical costs. Its not fair to add issues today Gis, economical (Mbl, adm) like its some new demands... | |
| please check the proposal its more then 20% | | | | | | | please check the proposal its more then 20% | See proposal |
| in a case the coustumer plan to do the agreemat for a couple of years acceptable to make the price less than 20% | | | | | | | in a case the coustumer plan to do the agreemat for a couple of years acceptable to make the price less than 20% | See proposal |